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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

DECEMBER 10, 1922

First of weekly ed.

—Posed by Baby Edwin Hubbel

SEND YOUR MAIL ORDERS!

WE GUARANTEE SATISFACTION

Half Million Dollar Stock U. S. Army Goods!

Mention Order Numbers

New U. S. Army Nose Bags 95c

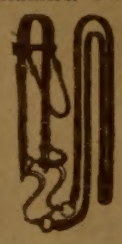
—No. EX205—Here's a bargain! Brand new U. S. Army Feed Bags; made of best quality canvas and leather; heavy leather head strap; extra well made. Special—95c.

—No. EX206—Same nose bag, slightly used but good as new, 45c!

Heavy U. S. Army Like New Halters 75c

—No. EX20—Bought from the Government; made from the best bridle leather, heavy and strong; 1¼-in. leathers, sewed and riveted; large rings and squares; used but little and are good as new. Each 75c.

—No. EX201—Same halter, brand new, $1.50.



Bridles $1.95

—No. EX202—Extra quality leather, well made, long reins; extra good condition; each $1.95.

—No. EX203—Same bridle, brand new, $2.95.

Straps 35c

No. EX204—Fine halter straps, like new; 7 ft. long, 1¼ in. wide; snap end; extra strong; each 35c

Good as new O. D. Wool Serge Army Shirts, No. Ex. 236 ..... **$1.95**

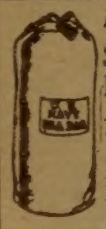
New U. S. Army Halter Chains, 54-inch, big value, No. Ex. 237 ..... **20c**

We Guarantee

—to ship your goods promptly, no long waits; and we guarantee that you'll be pleased. Return them if you are not; only high-class merchandise at the lowest possible prices.

References: Any bank or business house in Los Angeles; also The Examiner knows us well and will tell you that we are perfectly reliable. You run no risk in ordering from this advertisement!

New U. S. Navy Sea Bags 95c



—No. EX-209—Made of heavy waterproof duck; for carrying clothing, bedding, etc. Makes a fine fruit and vegetable bag. Worth two dollars or more! Extra special, 95c.

New U. S. Army Knit Gloves

All Wool, heavy and warm. No. EX211 ..... **20c**

New U. S. Army Folding Buckets 50c

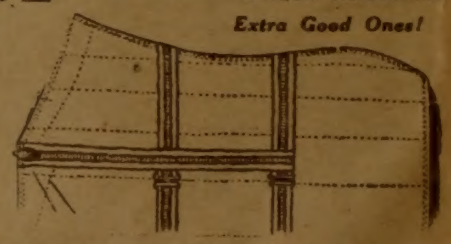
No. EX210—Heavy, olive drab color, waterproof, 5-gallon, folding water bucket, handy for motorists—can be carried under auto seat; may be used for carrying fruit and vegetables; extra strong handle; at a fraction of its value, 50c.

Reg. $1.00 New Barrack Bags 50c

—No. EX212—Extra heavy blue denim, heavy cord at top for closing; makes the handiest laundry bag! Handy for many purposes. You'll want some of them—order all you need, 50c each.

½ Price New U. S. Army Horse Blankets

Extra Good Ones!



—No. EX207—We were fortunate in securing 5000 of these fine army horse blankets—new and perfect—at ½ price! Heavy duck with blanket lining; reinforced with wide webbing, well made and full size. A $5.00 blanket for $2.45!

—No. EX208—Horse blankets, heavier than above, $3.45.

$2.45 & $3.45

U. S. Wool Breeches $1.45

No. EX214—Good as new, olive drab wool serge army breeches, — heavy and warm, extra well made. Why pay five dollars? Extra special — $1.45!

—No. EX215—Reclaimed U. S. Khaki Breeches—75c.

No. EX-216

75c

—Keep your head and neck warm! Army caps—Can be worn two ways as shown, heavy khaki, wool lined, new, 75c. Or like lower cut, new, 95c.

Good as New Sweaters No. EX218 $2.95

—All wool, olive drab color, heavy, warm army sweaters like sketch, clean and like new, all sizes—$2.95.

—No. Ex. 219—New all wool slipon sleeveless army sweaters, $1.95.

Heavy Wool SOCKS 4 Prs. $1.00

—No. EX220—Extra heavy wool socks, gray, at half their value, 4 pairs $1.00!

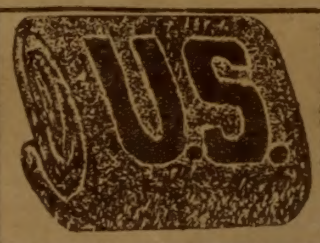
Army Socks 8 Prs. $1.00

No. EX222—Real army olive drab cotton socks, with linen heels and toes; they wear! Neat finish and for service no sock will outwear them. 8 prs. $1.

No. Ex. 226 — *Reg. $5.00 New* — U. S. Army Hammock **$1.95**

No. Ex. 227 — *Reg. $1.25 New* — Trench Shovel .. **75c**

No. Ex. 228 — *Good as new, U.S.* — Waist Belt **5c**



NEW U. S. ARMY BLANKETS $6.45

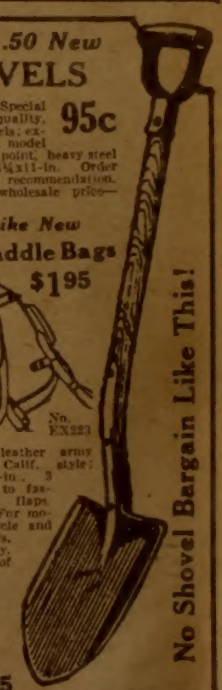
—No. EX229—The best army blanket—5 lbs.—olive drab color—66x84-in.—warranted all wool. They keep you warm and outwear any blanket you can buy. Also make a dandy auto robe. Extra special—$6.45.

Olive Drab Blankets, $3.95

—No. EX230—New army style olive drab blankets, 80% wool, 62x82-in.; big value at $3.95.

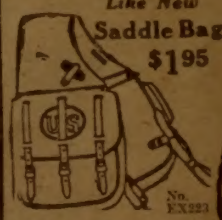
Reg. $1.50 New SHOVELS 95c

No. EX222—Special purchase fine quality, brand new shovels; extra quality steel, model D handle, oval point, heavy steel straps; blade 8¼x11-in. Order a supply on our recommendation. At less than wholesale price—95c each!



No Shovel Bargain Like This!

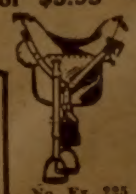
Like New Saddle Bags $1.95



No. EX223

—High class leather army saddle bags, Calif. style; pockets 12x12-in., 9 leather straps to fasten the wide flaps. Good as new. For motorists, motorcycle and horseback riders, etc. Very handy. At a fraction of their value—$1.95!

A $15 Saddle for $5.95

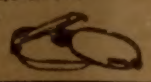


No. Ex. 225

Saddles $5.95

N. EX224—The strongest, easiest riding saddle you can buy; used but little and are as good as new. The genuine McClellan saddle; many have cost over $20 to make. Extra special—$5.95!

Mess Pans 25c



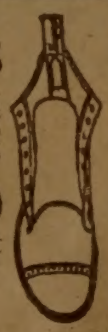
Reg. $5.00 Values

U. S. Army Shoes $3.75

No. EX233—No better army shoes—bought last spring and worth $5 on today's market; all leather; army Munson last, soft cap toe, low wide heels and all other army shoe features; all men's sizes; guaranteed to the limit! Extra special—$3.75.

Reg. $5.00 Puttees $3.50

No. EX234—"Warrior" brand leather puttees, new, fine leather, mahogany color; all men's sizes—$3.50



Spiral Puttees 35c

No. EX235—Used but little, like new; olive drab wool spiral or wrap puttees. Bargain, 35c pr!

"Old Baldy" Brand WORK SUITS $2.45

No. EX231—The best one-piece Overall suit you can buy! Made of extra heavy twill—fast color, full size and made as good as can be! All sizes. Extra special, $2.45!

New, Fine Leather Jerkins $3.25

No. Ex. 232—Heavy, warm, waterproof, good looking; extra quality leather, lined with wool Melton cloth; sleeveless. As we have only sizes 38 and 44 we are closing them out. Extra special—$3.25!

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ORCHARD and FARM
Section of the Sunday Examiner

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Early Layers Are Best Payers

How to Cull the Pullets—Importance of an Early Start—Evidence of Heavy Production—Has the Trapnest Served Its Day?

By PROF. JAMES DRYDEN

Proprietor of "Fenway Poultry Farms," Concord, California. For many years head of the poultry department, Oregon Agricultural College. Produced the first hen in the world with a trapnest record of 300 eggs. A regular contributor to ORCHARD and FARM.

IN a way the trapnest has served its day. That is to say, the information as to the egg-laying characteristics of the hen that the poultryman has gained from the records of the trapnest makes it possible for him now to select his layers with a fair degree of certainty.

The discoveries made by the trapnest have been marvelous. More than that, they have been practical, profit-making discoveries.

One of the characteristics of the hen that has been brought to light is that a good layer differs from a poor layer in that she develops more rapidly from babyhood on to laying maturity, beginning to lay at an earlier age than the slacker. In other words, she spends less time in getting ready for the business of life. The slacker prolongs her youth as well as the "agony" of the poultryman, who is waiting patiently for eggs and more eggs.

THE REVEALING TRAPNEST

Without keeping a daily record of eggs laid in a year by each hen in the flock by means of the trapnest, it would probably never have been known that there was any difference in the age at which good and poor layers lay the first egg.

This knowledge makes it possible for the poultryman to pick out the slackers without the aid of trapnests. Knowledge is power in the chicken yard, as in any other inclosure. So that, in the matter of culling pullets, the trapnest may be said to have served its day. Of course, there will always be use for the trapnest. It will be a necessity for the breeder in developing a strain of high producers and in maintaining their laying qualities when once he gets them.

Culling is very accurately done near the end of the year when the hens stop laying. Those that stop laying early have been the slackers throughout the year and will be the slackers in subsequent years. That discovery, also, has been made from trapnest records.

ACTUAL RECORDS CITED

In a compilation of records made by the writer at the Oregon station, it was shown that pullets that began to lay at 200 days of age or less, approximately 6½ months, averaged practically 200 eggs in the year. Those that began to lay at 300 days or more averaged a little better than 100.

Another fact brought out was that the pullets which laid first laid for the longest period of time. They were the last to quit as well as the first to start. The slackers were slow starters as well as early quitters.

These findings have been corroborated by tests at the Ohio station. In a lot of 300 pullets of the same age, 50 of the earliest maturing birds were put in one pen and 50 of the poorest or slowest maturing pullets in another pen. All the pullets in the first lot began to lay in October or November, but the slow birds did not begin until December 15.

The results were that the earliest maturers averaged 160 eggs in the year and the late starters 118 eggs. Kennard, in reporting the experiments, drew this conclusion: "Fifty choice, early-maturing birds at $2 per bird would be a better investment than 100 slow-maturing at $1 a bird."

Culling the pullets by this method implies the ability of the poultryman to tell those that are laying and those that are not. If trapnests are used, of course the record will show the slackers: but without trapnests the poultryman must be able to pick out the birds by their appearance.

FIRST VISIBLE EVIDENCE

The first visible evidence of laying is the large red comb and wattles. When a pullet shows the "bloom" in the comb and wattles she is either laying or about to lay. The earlobes, also, enlarge. As the ovary develops and the ova grow into full-size egg yolks, the comb, wattles and earlobes respond. The size and condition of these characters is an indication of the activity of the ovary, or sexual organs. The comb shows large and red just before and after laying.

There is no mistaking this test, especially in the Leghorns or other large-comb breeds. Breeds with naturally small combs and wattles may deceive the observer, but close inspection will show a difference.

Another sure test of laying or non-laying is the condition of the abdomen. The layer is deeper in the rear than the non-layer, due to the enlarged condition of the intestines. If measured with the hand, the hen that is laying will show three and four fingers deep between the pelvic bones and the rear point of the keel, while the non-layer may show about half the depth. Then there is a wider spread between the points of the pelvic bones in the layer than the non-layer.

Again, in the layer the abdomen is soft and flexible to the touch, while in the non-layer it is relatively hard and contracted. The vent is larger in the layer than the non-layer.

LOSS OF COLOR

When the pullet has been laying for some time, there is a loss of yellow color in the shanks, beak, vent and other parts. But that is another story. In this story we are concerned only with the laying and non-laying condition, not with the length of the laying period.

So far I have given facts, and yet I have told only half the truth. The whole truth is that the culling of the pullets can be done properly only under certain [*Continued on Page 18*]

Our New Farm Bureau Policy

Plenty of Work Ahead—Many Helpers Needed—Newly Elected Official Discusses Plans

By A. C. HARDISON

President, California Farm Bureau Federation

In an Interview with the Editor of Orchard and Farm

WE are more concerned with plas for the future than discussion of past events. But the directors and officers of the California Farm Bureau Federation are unanimous in agreeing upon one point of policy — namely, that the work and responsibility shall be divided among officials and committees all engaged or directly interested in agricultural production.

A. C. HARDISON

Proceeding upon the theory that many heads are better than one in solving problems which affect producers in general, and that all activities of the Federation, in so far as possible, should be undertaken with the consent and knowledge of the majority of the members, we are endeavoring to organize our work upon this basis.

BROAD MARKETING POLICY

In general, I am in favor also of "decentralizing" agricultural marketing, and financing crop movements whenever possible through local banks. True, the producers may be able, by dealing with some great financial institution, to secure a lower rate of interest; but, on the other hand, such a move tends to concentrate the control of the crop and to limit the independence of the various members.

As a rule, I think the local banks of California are willing and able to finance our producers, either singly or in units. And since the prosperity of the State depends upon the prosperity of communities, it seems advisable to encourage local development.

I do not mean to suggest that co-operative marketing, as carried on in California, has been a mistake. On the other hand, as a member and official of marketing organizations, I have given hearty support and much of my time to the development of this movement. But co-operative selling usually may be accomplished, as our successful organizations have repeatedly demonstrated, by the handling of growers' or associations' paper through local banks for rediscount by the Federal Reserve.

As for co-operative buying, this is an important yet very dangerous branch of organization work. Many small and some large associations have failed through placing too much stress upon the purchasing end of the business. Association members who pool their orders may save considerable money, and this plan is both feasible and advisable as long as the organization proceeds along cautious, conservative lines. But it is never safe to "load up" with goods in anticipation of future needs.

The organization purchasing agent, fortified by definite orders for certain goods or materials, signed by a number of individual members, may with confidence go out and buy the required quantities, making quick delivery and "turnover." But were he to enter the open market and lay in a large supply of various articles, disaster might follow upon the heels of price fluctuations.

In general, I think the Farm Bureau Federation should stand for conservative, proven policies, and should not be in haste to adopt new and untried theories. This may be accomplished by allowing open consideration of all questions. The member who has a new idea should be given every opportunity to express it. Then it should become a subject of general thought and discussion, and should be neither adopted nor discarded until it has been studied from all angles and passed upon by the majority.

It is a mistake to "squelch" the member who has a new plan or idea; it is equally undesirable to jump at hasty conclusions.

MANY PROBLEMS AHEAD

Let the California Farm Bureau Federation maintain an atmosphere of confidence and solidarity. The public, as well as the members, should look upon this great organization with profound belief and respect.

Retiring officers have given much of themselves to Federation activities; they are to be congratulated upon their many fine accomplishments. And we who now take the reins appreciate the gravity of our responsibilities. There are many problems ahead—problems which demand for their solution the help of many heads and many hands.

I Am at Your Service

GREETINGS! I am the new weekly ORCHARD and FARM, published as a section of the two great newspapers of the Pacific West—the San Francisco Examiner and the Los Angeles Examiner.

Henceforth I shall be a regular visitor to tens of thousands of country and suburban homes, where the Sunday Examiner, with its costly features and unequaled news service, is so eagerly received every week.

Thus I have attained immediately a circulation greater than that of all other California agricultural publications combined.

That such wide distribution and such important connections involve grave responsibility is fully recognized. My one mission, therefore, is to be of genuine service to farmers and all others who love growing things. I shall strive ever to interest and please you, but most of all to offer practical assistance.

And as I serve, in equal measure shall I achieve success.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of the
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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.

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The work of this unequaled staff of associate editors is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

Pithy Paragraphs

THE INCONSISTENT BREEDER

Recently we visited the ranch of a prominent breeder of registered cattle; his is one of the finest herds in the West. But we were met at the gate by a mongrel dog, and on the way to his beautiful home passed the poultry yard, populated by a lot of nondescript crossbreds. In an adjoining pasture were some hogs which showed traces of the blood of three breeds. A team on the way to work consisted of one very good black grade Percheron and one smaller sorrel animal which, although it seemed to be a good worker, was a sorry match for its teammate. And we wondered at the inconsistency of the owner!

SELL THE AGRICULTURAL COLLEGE?

It has become a popular pastime to criticise the California College of Agriculture. As a matter of fact, however, the Golden State has one of the finest and best-manned institutions of its kind in America. But it hasn't been sold to the people. When the individual farmer feels that the University is a part of his life; essential to him in business, and not simply a place to send his sons and daughters—then, and then only, will it receive the support it deserves. Granting that there is plenty of opportunity to strengthen the existing structure, many are of the opinion that less destructive criticism and more constructive publicity would do much to improve the situation.

CITY AND COUNTRY UNITED

Ten years ago the line between city and country was very distinct; now it has almost faded away. California rapidly is becoming just one great community of modernized homes. Nearly a million automobiles have annihilated space, and a great system of wonderful highways has brought the farmer and the city dweller together in a common bond of understanding The city has given much to the country; but the country has even greater gifts to bestow. And in the mutually profitable game of give-and-take, cityman and countryman have settled down to a "50-50" basis.

IN DIVERSITY THERE IS SAFETY

It is said California produces more important crops than are grown in any similar area in the world. From long-staple cotton to mountain apples; from subtropical fruits to superior barley, and through a list of more than one hundred valuable soil products, the glorious Pacific West enjoys a diversity of production that gives perpetual insurance against economic disaster. During the recent agricultural "slump," California felt the depression least and was first to recover. "There's a reason."

BEAUTIFUL GROUNDS HAVE CASH VALUE

Aside from the aesthetic satisfaction it brings, a well-planned ornamental garden has real cash value. Recently a small ranch was sold at an attractive figure, while an equally valuable and highly productive place across the way went begging at a lower price. The only difference in desirability lay in the treatment of the grounds. A few shrubs and vines, interspersed with flower beds, together with an expanse of velvety lawn, made the sale. The new settler in California, fired with a vision of his ultimate home, is attracted immediately by beautiful grounds. And the effect may be obtained so quickly and easily here that we wonder, sometimes, why every country home is not embellished!

"What's New?"—Keeping Abreast of Agricultural Progress

Strychnine Kills Gophers

POLK COUNTY (Oregon) farmers appear at last to have found a sure method of exterminating gophers. Clover tops soaked in strychnine are scattered in the runways—one ounce of the poison to ten pounds of the clover. Under the direction of Ira N. Gabrielson, of the United States Biological Survey, four square miles of land have been treated for this pest at a cost of a nickel an acre. A charge of one dollar for eight acres is made, the remaining funds being used for going over the land a second time and for incidental expenses connected with the campaign. More land is being signed up and it is expected 20,000 acres will be treated next spring. If the success of this work can be duplicated elsewhere, it will mean the saving of many millions of dollars' worth of farm crops.

Building a Butcher Business

WILL farmers buy fresh meat during the summer if it is delivered at their doors? Luther M. Stotts decided to find out by giving them a chance, something the town butchers refused to do. He accordingly employed a professional meat cutter, built a big refrigerator, and enployed a man to make deliveries. A total of 117 calves were converted into veal during the past summer and sold to neighboring farmers at profitable prices. Four routes were covered once a week and one route twice a week. An ice box on the back of the delivery car kept the meat in good condition, after it had been cooled over night on the farm. It cost $8 a day to do business, but furnished a good market for all the bull calves on Stotts' dairy farm and for many others which were purchased of neighbors. The service was discontinued in October, when farmers begin killing their own meat.

Long Pruning Pays

C. B. SEXMITH has a ten-acre apricot orchard at Owensmouth which is yielding very heavy crops of fruit as a result of the long system of pruning and other proper cultural methods. Yields as high as nine tons per acre have been secured. A few years ago Mr. Sexmith was much discouraged with the orchard business. Then he heard the late Dr. J. C. Whitten describe long pruning and other advanced methods of orcharding and decided to put these theories into practice. Check trees which were headed back in the usual way yielded almost nothing, while those which were left with longer limbs bore a bountiful crop.

Go After Green Worm

THE alfalfa caterpillar, unworthy brother of the army worm, did a great deal of damage to California meadows the past season, especially in Yolo County, in some instances stripping the stalks entirely bare of foliage. While these greedy little green worms are seldom noticed unless guilty of excessive damage, after they turn into tiny yellow butterflies they are often seen flitting over the alfalfa fields. Where there are butterflies, worms are bound to follow.

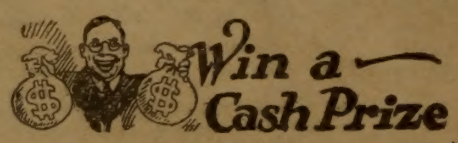
This injurious insect often passes the winter in the pupal stage in waste alfalfa along fence rows or irrigation ditches. The moral is plain: See that every bit of alfalfa is cut and removed from the field. Winter cultivation of alfalfa fields, fence rows and ditch banks will destroy large numbers of the pupae. Excessive moisture does not agree with them and therefore ample irrigation will materially reduce their numbers. According to authorities who have been experimenting in the control of the pest, the best way to destroy the worms is first to mow the field and then drag it with short brush, the butts of which have been fastened to a pole 14 feet long. Weight the drag down with a spike-toothed harrow. This is also a good rig for killing army worms.

Chickens Relish Rape

C. E. ARMSTRONG, the Corvallis, Oregon, poultryman who has made a great success of the "back-to-nature" method, has found rape to be a very valuable green feed for poultry, given either alone or in connection with winter grain. In using it alone, Mr. Armstrong advises planting one yard to rape about the middle of April and preparing another for kale, both yards having been plowed as early as possible. The kale yard should be cultivated occasionally until the plants are set out in June. While the kale is growing the rape will furnish the hens plenty of green feed.

By the latter part of September the rape patch will be picked clean. The hens may then be turned in on the kale, which will keep them in succulent feed until spring, when they may begin on a third yard which has been sowed to winter oats or rye. These three crops may be rotated, furnishing a continuous supply of green feed the year around.

Manure should be applied first to the rape and kale, as they are gross feeders and will absorb all excess of plant food, leaving the ground in fine condition for the grain crop.



FIRST PRIZE	$25
Second Prize	15
Third Prize	10
Fourth Prize	5
Five Prizes of $1 each	5

"WHAT I THINK SHOULD BE PUBLISHED IN THE NEW WEEKLY ORCHARD AND FARM SECTION"

The Editor wishes to hear from the great new family of readers who receive this publication.

What kinds of articles and pictures do you think should be included in order to make the ORCHARD and FARM section most helpful and interesting?

Cash prizes will be awarded for the best letters of not more than 1000 words on the above subject.

All letters must be postmarked not later than December 17. Contestants are urged to make as many specific suggestions as possible. Only one letter may be submitted by each contestant. Write on one side of paper and give full name and address.

A committee of disinterested judges, whose names will be announced later, will select the winning letters. You may win $25 with practically no effort. Write your letter today.

Address: ORCHARD and FARM Editor, Broadway at Eleventh, Los Angeles.

Pruning Peaches

J. P. BOLTON, a Kerman grower, has for years made a careful, experimental study of peach pruning and as a result has adopted a madified long system. The old-style short system, which Mr. Bolton regards as little less than tree butchery, must be discarded, he asserts, for it not only puts the tree back so that a good share of its vitality is used up in reproduction of the top, but also leaves the main branches bare, inviting sunburn, breakage and borers. Mr. Bolton has found it best to leave some bearing wood all the way from the crotch to the top, especially long, hanging twigs inside the tree, one of which sometimes will bear ten pounds of fruit. If this system is followed and the top gradually renewed by taking out a large limb occasionally, Mr. Bolton thinks the profitable life of a peach tree may be continued to 25 years.

Pure-Bred Bulls

THE high cash value of pure-bred dairy bulls was strikingly illustrated by an exhibit in the dairy demonstration tent at the Riverside Fair. No. 1, a scrub cow, gave in one year 3,875 pounds of milk containing 193 pounds of butterfat, while her calf, cow No. 2, which was sired by a pure-bred bull, produced 6,956 pounds of milk and 266 pounds of butterfat. Cow No. 3, the progeny of Cow No. 2, which was also sired by a pure-bred bull, gave 12,804 pounds of milk and 483 pounds of butterfat.

It is reasonable to assume that the use of a scrub bull would not have increased the milk and butter yield; yet in two generations a yearly gain of $144 in the produce of the progeny was obtained by the injection of better blood through the use of a pure-bred bull. This affords an argument for better bulls which should appeal to the pocketbook of the most penurious.

Sow Saves Farm Waste

ONE of the best ways to save waste fruits and vegetables on a small ranch is to keep a sow. Hogs are gross, omniverous feeders and will consume almost anything in the line of provender. Bad weather and markets, lack of harvesting help, or other unfavorable conditions often result in quantities of crops being left to rot on the ground, where they are a stench to the nostrils and have little fertilizing value. A sow, in addition to consuming table scraps, will solve this problem.

Waging War on Scrub Sires

Sonoma and Marin Counties Point the Way—Organized Effort Gets Results—A Remarkable Demonstration

By R. P. ROYCE

TWO California counties have completed an amazing demonstration of the power of organized effort to banish the unworthy "scrub."

The importance of their accomplishment may be judged by the fact that, despite years of campaigning on the part of educational institutions, the United States Department of Agriculture, and leaders everywhere, only about 4 per cent of our livestock population is purebred, and probably not more than 10 per cent of our herds and flocks are headed by purebred sires!

R. P. ROYCE

Today the big problem still to be solved is how best to reach the other 90 per cent. Obviously, to interest owners of grade stock in the possibilities of purebred sires is first of all a matter of education, and then one of salesmanship, as these progressive communities have demonstrated.

In Sonoma and Marin counties dairying constitutes one of the most important industries, Marin being credited with an annual production of 3,500,000 pounds of butter and more than 600,000 pounds of cheese, while Sonoma produces more than 4,000,000 pounds of butter and nearly 600,000 pounds of cheese. Each of the counties has over 20,000 dairy cows.

Despite such impressive figures, however, Sonoma and Marin long have been counted among the most backward dairying communities in the State, and the average production per cow has been low.

SURVEY TELLS TALE

For example, a survey made among 27 dairies that patronized the Petaluma Co-operative Creamery disclosed the fact that 14 herds, owned by men who were using purebred bulls, containing 530 cows, showed a sale of 147,381 pounds of butterfat for the year of 1921—an average production of 278 pounds of fat per cow.

In contrast, 13 herds, of 530 cows, headed by scrub bulls, sold during the same period 90,533 pounds of fat—an average of 171 pounds per cow.

The value of the production of the first group was $73,196.32 and of the second group $43,433.90, a difference of $29,762.42. In other words, each dairyman in the second group received $2289.47 less during the year than his neighbor of the first group!

The results of that survey caused the dairymen and the business interests to do some "tall thinking." There are about 1000 dairy herds in the two counties, and if half of them were operating under as heavy a loss as the lower half covered by the survey, more than a million dollars was being lost each year. And if that loss was due, as indicated, to the scrub bulls of the two counties, the logical thing to do was to replace the scrubs by purebreds.

Furthermore, such a situation was just as much a community problem as an individual problem. The more the case of the scrub bull was studied the more determined were the leaders to do something about it.

ALL AGENCIES AID

Arrangements were made to enlist the aid of the extension division of the College of Agriculture and, through it, the United States Department of Agriculture as allies in the proposed war. Subsequently aid was received from the California Dairy Council and each of the State dairy cattle breeders' associations.

The extension division drafted the plan of the campaign and the leadership was vested in the extension specialist in dairying. His assistant leaders were the farm advisers of the two counties. The campaign then was organized with the object of replacing 100 scrub and grade bulls with 100 purebred bulls.

The plan of organization followed was the most complete the writer has ever seen, and, because it proved successful, a brief outline should prove of interest. Aside from the agencies mentioned, the farm bureaus, farm centers, banks, cow testing associations, business associations, manufacturers and distributors of dairy products, granges, newspapers, school superintendents, agricultural teachers, feed dealers and hardware companies of the two counties were interested and given active work. (Note that the different agencies were given work to do.)

The banks each appointed a representative and agreed to urge their customers to buy purebred bulls, to regard the owner of a purebred sire as a better risk than the owner of a scrub, to adopt a sale contract of liberal terms, and otherwise to assist in financing the campaign. Each of the other co-operating agencies contributed personal work and publicity.

MEETINGS GET RESULTS

The campaign got under way about June 1. A preliminary survey indicated that about 500 dairymen were prospective buyers of better bulls. Meetings were arranged and held in every section. Before long the bull campaign was the talk of the two counties. Clubs and other organizations gave it a prominent place on their programs; preachers preached about it; schools taught it and conducted essay contests; the newspapers were liberal with their space; in short, the whole community became so thoroughly aroused that to admit ownership of a scrub bull was almost grounds for social and business ostracism.

The campaign was continued along such lines until September 15, when the actual selling of bulls was begun. This was accomplished by dividing up the territory and assigning certain committees, whose members were acquainted with the prospective buyers, to visit each prospect and make every effort to close a contract for a bull. No effort was made to influence the buyer in the matter of breed preference, nor was he appealed to on any other basis than just the proven dollar-and-cents worth of well-bred bulls over scrubs.

Thirty days were given over to the selling campaign and at the end of that time more than 100 purebred bulls had been sold to replace scrubs. It is of interest to know that the standard set for the bulls required that they be from dams with production credits of at least 400 pounds of butterfat in a year.

Furthermore, the prices paid were entirely satisfactory to sellers and the leading dairy breeds were quite evenly represented in the selections. There were no minimum nor maximum price limits, for, naturally, breeding and individuality would be expected to govern the price.

To Livestock Breeders: A Declaration of Principles

ORCHARD and FARM believes in more and better livestock for the entire Pacific West, realizing that here is the key to permanent prosperity in this great region of diversified agriculture.

This publication pledges itself to work for and with those far-seeing men and women who recognize and are striving to fulfill the destiny of California as the purebred livestock center of the world.

To you who have blazed the trail; to you who have refused to recognize obstacles; to all of you who love fine animals, ORCHARD and FARM extends the hand of fellowship and good-will. For in serving you we know we shall serve also the fruit-growers, the farmers; yes, every citizen of this favored land in which we dwell.

The Editor

Good Livestock Builds Permanent Agriculture

The herd of Shorthorns shown above has been in existence over a quarter of a century and has always been profitable. A few more "better sire campaigns" in California should result in the establishment of many herds like this one belonging to H. M. Elberg, Woodland, Yolo County.

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Money to Be Made With Persimmons

Great Possibilities for Profit in Growing the Oriental Fruit—Early Difficulties Overcome and Acreage Increasing

By ROBERT W. HODGSON

University of California Agricultural Extension Service

Upper Left—The persimmon is prolific in California; overbearing constitutes a real problem. (Fuyu variety.) Center—Typical specimens of Hochiya persimmons as sold in local market. Right—Persimmons are packed in ordinary peach crates, weighing from 20 to 24 pounds.

AMONG California's wealth of horticultural products none is of more interest at this season of the year than the persimmon. And when we speak of persimmons in California, we mean the Japanese or Oriental varieties, for not only is it a fruit superior in every way to the Eastern article, but it is practically the only persimmon now grown in California.

ROBERT W. HODGSON

Although introduced into the United States in 1856 by Commodore Perry and into California as early as 1870, the persimmon has not been cultivated on a commercial basis to any considerable extent until within very recent years. It is difficult to understand all of the reasons for this situation, since bearing trees have been common for twenty-five years or more in dooryard and garden plantings, and prices for the fruit have always been sufficiently high to indicate good profits as an orchard proposition.

At the time of the last census there were approximately a hundred acres of persimmons in orchard form in the entire State. Considerable plantings have been made during the last three years, however, so that at the present time the acreage is probably two or three times this amount.

A LARGE ACREAGE

The writer knows of one grower who this past season planted out fifty-two acres in a single block and is expecting this coming spring to add twenty more. In addition to this planting, the writer knows of a number of ten-acre blocks which were planted last spring. The industry, therefore, is rapidly assuming a position of commercial importance. In all probability, the next five years will witness a decided boom.

Unquestionably one of the principal drawbacks to its development since the establishment of the Federal quarantine in 1919 has been lack of nursery trees. About two years ago, however, a large quantity of seed was imported from Japan, with the result that quite a supply of nursery stock was available for the coming season.

The past two years have witnessed a notable increase in interest on the part of fruit growers in persimmon possibilities, as evidenced by the number of inquiries received by the College of Agriculture and Farm Advisers. With trees available at a reasonable price, there is little question but that the coming season will witness a marked increase in plantings.

The Japanese Apple

JUST why the persimmon has been slow in gaining a place in the estimation of Californians it is difficult to say, as a ripe, luscious persimmon is excelled by few fruits.

In Japan the persimmon bears the same relation to horticulture in general that the apple does to fruit growing in America. It is the universal and popular fruit, finding a very wide variety of uses. The juice from the unripe fruits serves as a stain for furniture, while the wood itself is quite valuable for fancy work.

An extensive industry has been built up in the drying of persimmons in Japan and after having tasted the dried article, the writer must confess to having found it a most delectable product.

The tree is easily grown, is free from serious diseases and insect pests,

Plant the Winter Garden Now

What to Do in December—Timely Tips for the Home Vegetable Grower

SOME of the best gardens in Southern California are planted in the fall and early winter months, while in the northern part of the State many fruits, flowers and vegetables thrive best when planted at this season. Mild, wet winters provide ideal conditions for hardy varieties which may not do well during the hot, dry summers characteristic of the Pacific Coast.

December is "clean-up" month for those who have not done this work earlier in the seasoon. Trash harbors garden enemies. Rubbish should be either burned or placed on the compost pile to provide humus for hungry soils. Ground should be plowed or spaded for immediate use or future planting. Weathering and frost action greatly improve most soils.

Fertilizers should either be turned under or left on the surface to decay and leach into the ground. Well-rotted stable manure is still the standard soil enricher, even when chemicals are added afterwards. The former contains most of the elements of fertility, in addition to humus, which is essential to a friable, soft-working soil.

Care should be taken to secure manure that is free from weed seeds. Droppings from the poultry yard are the most concentrated of all natrual fertilizers and seldom contain weed seeds.

There is little danger of getting garden ground too rich. It will pay to use a great deal more fertilizer than for field crops. If the soil is sour, apply lime.

Before making a new garden, provide dry storage for all mature crops which have not yet been consumed, such as squashes, pumpkins, sweet spuds, peppers and dry beans.

In planning the garden, rotate crops as much as possible. This is a good way to get ahead of insect pests, many of which establish themselves in the soil and become worse from year to year. Another advantage of rotation is that such crops as beets, potatoes and cabbage thus can be given the use of nitrogen which has been stored in the soil by peas, beans and other legumes.

Most root crops—beets, carrots, parsnips, radishes and turnips—thrive best when planted early in the winter. If any of these have been planted in October and are already up, the plants may be thinned to six or eight inches in the row.

Onion sets may be put in the ground now and the seed of early varieties sown, the main crop sorts being reserved for later planting.

December also is a month to plant lettuce, endive, onions, peas, spinach and mustard. The latter makes good greens and may be substituted for spinach. Spinach seeds should be soaked over night before planting.

Plants of cabbage, cauliflower, kale and artichokes may be set out at this season; also asparagus and rhubarb; strawberry, raspberry and other small fruits.

Early rains have thoroughly moistened the soil in most localities. But artificial watering should be resorted to if necessary, care being taken to keep the ground wet during the growing season.

Lawn, Shrubs and Flowers

THE lawn and flower garden need attention at the close of the calendar year. A general cleanup should be the first thing in order, followed by spading and fertilization where needed.

If tulips, hyacinths, narcissus, iris, freesias, dahlias and other fall bulbs have not been planted already, they should be put in the ground at once. Madonna lilies should be planted in clumps of three to five and covered with six inches of soil.

It is safest to confine pruning to the removal of dead canes, limbs and broken branches, as there will be less danger from frost injury. This, of course, does not apply to the hardier trees and shrubs. Hedges may be trimmed and the new growth of climbing roses tied in place.

Cuttings of privet, hydrangea and other shrubs and vines which are to be propagated may be made and covered with sandy soil, which should be kept moist, but not wet, until the cuttings are ready to plant. Large clumps of flower bulbs should be divided and stored in a dry place.

Wistaria, jasmine, honeysuckle, spirea Van Houttei and other flowering vines may be planted this month; also Boston ivy and other climbers, although provision for frost protection is advisable in starting any tender vines or plants.

December is a good month to plant roses. Plants with bare dormant roots are preferable to those which have been potted.

Study the seed and nersery catalogs, especially those of local dealers. Ask them for advice, either in person or by letter, and you will find them ready and anxious to give customers every assistance in choosing varieties and cultural methods. Experiment with novelties and new varieties if you can afford it, but in planting such things it is best to be conservative.

and is remarkably prolific in California. The fruit is very attractive in appearance; ships well to both local and distant markets, and is almost universally liked if eaten in the proper condition.

No doubt one reason why this fruit has not gained more rapidly in popular esteem is the general lack of knowledge on the part of the American public as to the good qualities of the persimmon. Another unfortunate reason is the fact that in the past, particularly, it frequently happened that fruits were placed on sale before properly ripened, much to the detriment of future demand. Another serious handicap under which persimmon culture has labored but now fortunately overcome, has been the extremely slow growth-habit of the tree. It took years for the tree to reach any considerable size and moreover the habit of growth was weak and very unsatisfactory, the trees frequently breaking down under the weight of the fruit.

Handicaps Overcome

DURING the last few years, fortunately there has been a marked increase in interest on the part of the American consumer, concerning new and strange fruits, with the good qualities of which he is not familiar. This general demand and desire on the part of the consumer for new fruits and food products, coupled with the fact that recently a persimmon stock has come into use in this country which makes the tree grow almost as freely and thriftily as the peach, makes the future for persimmon culture in California promising.

Although succeeding well in California and the Southern States, the persimmon is not, strictly speaking, a temperate zone plant. It "winter-kills" badly in locations where temperatures approach zero. In this respect it resembles the fig to a marked degree. But it will endure a great deal of summer heat without injury, good crops being borne in the Imperial Valley.

SOIL REQUIREMENTS

While the persimmon is remarkably resistant to adverse conditions in general, it appreciates good care and a rich soil. The best persimmon soil in California seems to be a rather heavy loam or clay, well supplied with organic matter and provided with good underdrainage.

The stock referred to above is one of Chinese origin introduced into California many years ago but more recently brought into prominence by the late plant explorer, Frank Meyer, who reported it as constituting the principal stock used in China where the persimmon has been raised for centuries.

It is sometimes referred to as the "Manchurian" stock, but more popularly is known as the "lotus." It is an exceedingly vigorous and thrifty grower and makes a most congenial union with the Japanese persimmon. Trees on this stock are very much better growers and more satisfactory in every way than those on either the Japanese or eastern root. Trees of suitable variety on this stock are now available in limited quantity from several nurseries.

(Watch for the second part of Mr. Hodgson's interesting article in the next issue of ORCHARD and FARM.—Ed.

Your Questions Answered

ORCHARD and FARM is an institution of service. Subscribers may receive free of charge answers to questions upon any agricultural subject. Through its large staff of specialists, and its close contact with authentic sources of information, this magazine is able and willing to serve any subscriber who requires aid or information. Be sure to write name plainly and to give complete address, including street, R. F. D., or box number.

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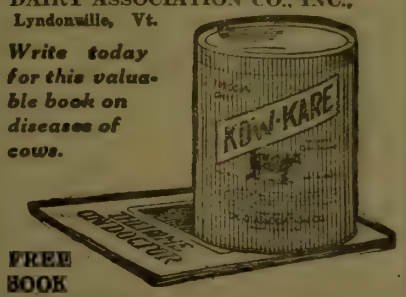

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Pushing Pigs for Profit

SOME breeders appear to have a natural knack for doing certain things in an unusually successful manner. J. W. Miser is one of those fortunate individuals, his special forte being the pushing of pigs to profitable proportions at the earliest possible moment. He has a fertile field for his operations in Chester T. John's herd of purebred Berkshire hogs at Cucamonga.

The possibilities of pig-feeding are well illustrated by a specimen which at five months was made to weigh 239 pounds, lacking only 36 pounds of the size which sells best. Since a pig doesn't eat much until it is two months old, this means that the feeding period was cut down to three months, the result being a $26 animal. Can you beat it?

ACHIEVES QUICK RESULTS

A 750-pound hog in eighteen months is another achievement to which Mr. Miser points with pardonable pride. He attributes a good share of his feeding success to having hogs of good blood of the best breed with which to operate. Others say Miser could make almost anything grow that had four legs and a good set of teeth, pointing to a former runt which he pushed to the front rank of the litter surprising even the proprietor.

HOW HE DOES IT

Just how does he do it? "It's all in the slop barrel," says Miser, who is everything but stingy when it comes to dishing out hog feed. On the other hand, he never fails to humor a hog who doesn't want to eat, considering this the best way to restore normal conditions.

Hogs should be herded together in as small numbers as possible thinks Mr. Miser, in order to give each one the individual attention it requires. When a large number are fed together, some get more provender than is good for them, when others are apt to be underfed.

THE FEEDING FORMULA

But you are waiting for a look into that swill barrel? It doesn't smell very good, but Miser believes it is a good plan to anticipate the action of stomach acids by mixing sour milk with the grain and allowing a little to remain in the barrel after feeding, which puts a "kick" into the next feed, when the latter is added.

Bran, shorts, rolled barley and gyp corn are main ingredients of the hog feed, varied to suit the occasion. Pigs, like people, get tired of eating the same thing, day after day, and should have their rations varied, Miser says. Those who have waste fruits and vegetables, as well as clover or alfalfa pasture, have a wonderful opportunity, he points out, to give a pig just what his system needs, and should be able to produce record gains at minimum cost.

Will Your Child Be Next?

Here are some startling facts:

"The New York State Health Department," says a leading national farm journal, "has found that twenty-one percent of the country school children have defective vision as compared with five percent of city children."

Four times MORE eye trouble in the country than in the city—*WHY?*

The farm journal gives its own conclusion: POOR LIGHT IN MANY COUNTRY HOMES!

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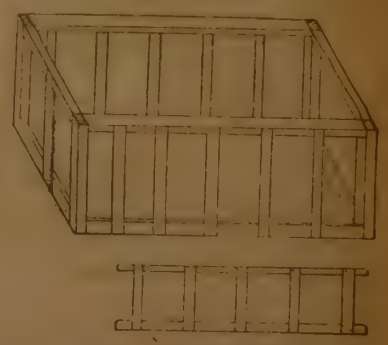
ONE of the simplest and most effective hay-saver feed rack inventions is in use in C. W. Anderson's dairy feed lots at Burbank, Cal. The feed racks are similar to those found on other farms, but the cows are prevented from throwing the hay out with their heads by laying a short ladder on top of the hay. When the feed rack is empty, the ladder lies flat



on the bottom. Before filling the rack, the ladder is turned on edge. When the feed rack is full the ladder is laid flat on top of the hay. The feed rack slats are spaced 24 inches apart to permit the cows to put their heads through. Otherwise there are no special rules or dimensions except to give the cows enough room to feed comfortably, and to make the ladder large enough and heavy enough to hold down the hay.—*Herbert A. Shearer.*

Wins With Waste Feed

HENRY KOHL, an Oregon farmer, sold a little skim milk and clover for $53 by first converting it into pork. This money was largely clear gain, because the milk and pasture would otherwise have been wasted.

Eleven pigs, weighing 56 pounds each, were fed 97 days, at the end of which time they weighed 185 pounds apiece. The initial value of the pigs was $60 and the grain was worth $10, while the final value of the pigs was $183. A pound of pork was put on the pigs for every three pounds of grain fed.

Breeding Bigger, Better Berries

By LUTHER BURBANK

Written especially for this publication. All rights reserved by the author.

THE berries have always been of extreme interest to me, and many years ago I realized that they might be greatly improved. The Eastern trailing dewberries by my old home in Central New England, even in childhood days were noticed to be exceedingly variable, though growing under the same conditions, even on a small space of ground. I soon learned which ones had the best flavor, which were the earliest, and which the most productive.

About thirty-five years ago I began raising seedlings of the best blackberries, raspberries, gooseberries, Juneberries, strawberries, currants, and various other berries, on my Guildridge experiment farm, and many variations were developed in that way which aroused my enthusiasm. Further experiments were undertaken, and this tendency to vary was found to be greatly intensified by cross-pollination. Some of the first experiments were on several of the raspberries then popular, such as the Antwerp, Cuthbert, Shaffer, Brinckle, and, later, Gregg, Souhagen, Hansel, Earhart, Davidson and scores of others.

BLACK AND RED CROSS

In these experiments I first found that the black raspberry, *Rubus occidentalis*, would cross with the red raspberry, but with difficulty. In the case of this cross, the seedlings occasionally bore perfect berries abundantly, but much oftener bore imperfect berries, or berries with only two or three seeds; or sometimes after blooming there would be nothing but the core or stem remaining.

Among some of these crosses I met with a difficulty not encountered in crossing any of the other Rubuses. The plants at first seemed sickly, having little or no vitality. They were, however, carefully transplanted from the greenhouse to the open field.

PLANTS "COMMIT SUICIDE"

Here they made little growth the first season, and the second season, when most of them undertook to bear fruit, for some unexplained reason they always seemed to commit suicide just at the blooming time or shortly afterwards. Every plant of certain hybrids would be suddenly and completely destroyed in this way.

In crossing these raspberries, I found there was an individuality about the different plants, so that some of the red raspberries—not necessarily of any particular color, or apparently for any other reason—intercrossed with the blackcaps readily, while others failed to do so; there being all gradations between a good combination and a poor one. In some cases the resultant seedlings would appear to be all of one parent, or all of the other; but generally in the first generation there would be a more or less even blending of the two. At that time no one had fully realized, what I have since learned, that *all the best variations come in the second and succeeding generations, the first being only a combination or so-called "mongrel."*

In the second and a few succeeding generations different combinations were brought out in a most wonderful variety, and from these, certain individuals could be selected which had almost any qualities of either parent combined in almost any possible proportions.

Many varieties of raspberries were experimented upon in this work, for always in all experimental work my aim is to accumulate as much available material as possible. The chances of obtaining results from a large number of experiments are proportionately greater as the number increases, and I find, except for a little more time, that it is just as simple to conduct a thousand or ten thousand experiments as a few. From all this work with these red and black raspberries, I have developed several varieties of great promise and value; varieties, in fact, that are superior in quality, size and productiveness to any raspberries before known.

A little later the field of experiments was broadened, and attempts were made to intercross the blackberry with the dewberry. This seemed at the time a bold thing to undertake, but the cross was successful, and the seedlings, especially the second and third generations, gave unmistakable evidence that both species had been combined. In these experiments the Lucretia dewberry was used chiefly as the seed-bearing parent. One or two Southern species were attempted, but in this climate they gave less promise. Among the blackberries the Early Harvest, Lawton and Wilson Jr. were generally selected.

A year or two later I began crossing the raspberry and the blackberry, taking several varieties of each. Among these experiments the Lawton was crossed with the Cuthbert, Golden Queen and others. In these experiments the raspberry was generally used as the mother plant.

By crossing a yellow raspberry—the Golden Queen—with the Lawton, I produced a well-balanced hybrid. No one who has ever seen these hybrids could tell whether they were raspberries or blackberries. Numerous plants were raised, and in the second generation I found that they kept in combination the quality representing each parent just as uniformly as they did in the first generation; no variation occurred such as I had obtained in crossing the dewberries with raspberries or the different raspberries among themselves.

These bushes had thorns which were short and stout, instead of long and slender, as in the raspberry.

The leaves also had the rough, ribbed appearance of the blackberry, and the berries would part from the receptacle as either the raspberry or the blackberry does, according to ripeness.

I had both red and yellow varieties of these hybrid plants in great profusion at one time; but the flavor of none of these berries was equal to either the raspberry or blackberry; although in other similar crosses which were made later the fruit in some cases was greatly superior to that of either of the parents.

The best of these hybrids were kept as curiosities (Continued on Page 15)

Luther Burbank testing a new spade in his gardens. Lower left—Variations in foliage in second-generation hybrid blackberries, from seed to a single plant. Right—"Robusta," a new, ever-bearing strawberry.

It Was Written "After Hours"

PICTURE Mr. Burbank, seated at his big, old-fashioned desk in the quiet study of his Santa Rosa home. Outside, the giant poppies created by his genius are nodding their heads. Rare trees, vines and shrubs rustle in the night wind; long stems, in orderly rows, bend and sway like soldiers at calisthenic drill. Darkness has driven him from his labor of love among the thousands of plants—darkness, but not age; for although he is in his seventy-fourth year, he labors daily with tremendous energy. He has transcribed notes from which he dictates. His article is prepared for one journal—and one only. Here it is; a personal message to our readers from a master mind of the horticultural world.

In Place of the Sun—Has Dehydration Come Into Its Own?

This is the Story of a Napa County Prune Grower Who Laughs at Bad Weather

THE farmer is the most reckless gambler in all the world! He sits in a game where the rain stacks the cards against him; where the frost slips him a cold deck; where any bug may have an ace up its sleeve—a game where he may not even be dealt a hand after he has put up his ante. But he plays to win and science is fighting with him to take the gamble out of food production. One of the most encouraging factors in the unequal struggle is Dehydration.

By WALTER H. GARDNER

MANY a California farmer has put forth a hard season of work, plowed, cultivated and harvested his crop, and spread it forth in the dry-yard to cure in the days of the late summer sun. Then came the rain! Money that he could almost hear jingling in his pockets was snatched away from him. The risk of uncertain and unfavorable weather in the drying season has been the bane of orchardists and vineyardists these long years.

Two years ago, however, came a whisper of better things. The mechanical dryer or "dehydrator" was considered as offering a theoretical solution and at scattered points was put to practical use.

To be sure, the mechanical dryer has been in limited use for a long time; but only as an element of insurance against early rain. A friend of the writer's one year ago counted on a trip through the central valley thirty-two different varieties of evaporators, dehydrators, or other forms of mechanical dryers.

Many of these plants were of poor design; they were costly to operate; they did not yield a uniform product. Humidity and temperature could not be controlled. There was little knowledge of the varying treatment required properly to cure different fruits.

EVAPORATOR HAS MADE GOOD

As a direct result of these shortcomings of early dryers, word went forth that while they would work after a fashion, the quality of the product was inferior to the sun-cured fruit. Perhaps this criticism was a proper one in the past—but not so today! The best talent and the most experienced mechanics have put their heads together to produce an efficient evaporator. There are today really first class mechanical dryers on the market and now that they have been refined to such a degree, they are going to accomplish wonders for the California farmer.

E. S. Dunlap is the manager of Dunlap & Sons' property at Napa. The writer passed his place the other day and was attracted by the roar of a tractor that came from behind a low, business-like looking building. A little investigation revealed both Mr. Dunlap and the machine.

TRACTOR MAKES RECORD RUN

"This tractor has been running for just six weeks, lacking six hours. During that interval we had to stop to grind the exhaust valves, but the tractor has run eight days and eight nights without missing a shot." Seeing that Mr. Dunlap was so friendly and was willing to tell us about his work, we started to ask him questions.

The tractor was operating the fan in his newly-installed evaporator. In six weeks he had treated pretty close to 700 tons of green prunes. Most of these prunes had been partly sun dried, and had only been brought to him after the early rains and protracted fogs had threatened absolutely to ruin them.

Mr. Dunlap had not only taken care of some of his neighbor's fruit but also had dried the yield from his own 115 acres.

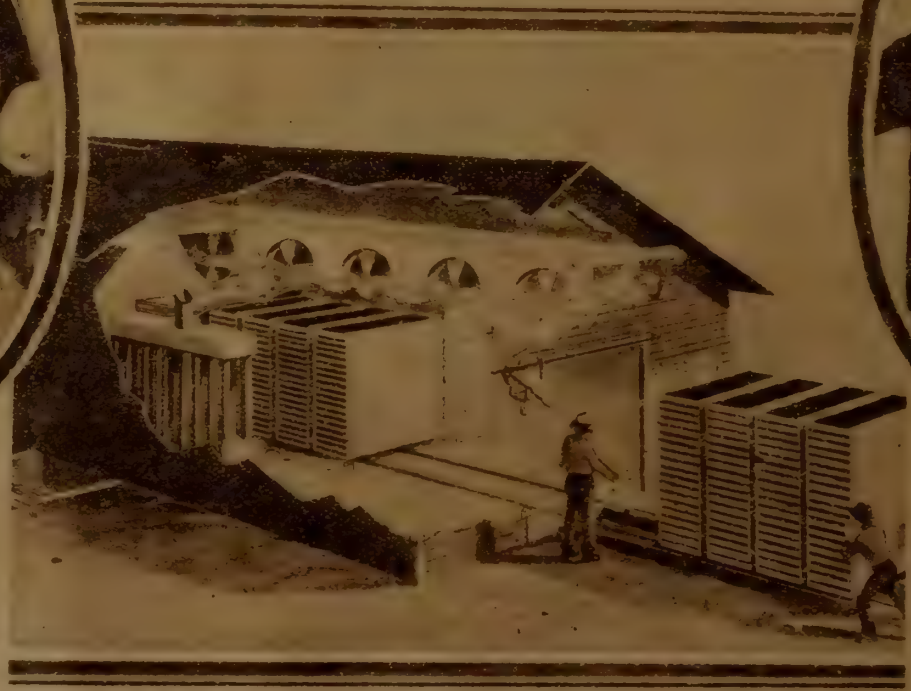
"Are you running the evaporator for your own use, or are you doing custom work?" we asked.

"Both! I have the names of 50 farmers on my books today, but even if I didn't ever do a bit of outside work I'd keep this same plant for my own acreage. The machinery cost me less than $5000 and you will be surprised when I tell you in how many ways I am getting back that capital investment.

IT PAYS FOUR WAYS!

"In the first place, I'd gladly pay real money every year as insurance against loss from rain during the critical weeks of the drying season. The plant will pay for itself in three years by protecting me against such loss.

"I am charging 50 cents a tray to dry the prunes that my neighbors bring me. (Continued on Page 13)



"Never again," say growers who have seen tons of luscious fruit go to waste. Center—Showing how model evaporator is operated. Air is heated by means of a radiator and circulated by fans. The modern housewife, schooled in the art of domestic science, prefers dehydrated fruits because of their cleanliness, as well as their superior flavor.

This "11 truck" plant, operated by Spaulding & Caulkins at Sunnyvale, has treated 32 tons of prunes in one day. Also handles apples on a large scale.

Vast acres of California's fertile ground lie idle for eleven months to serve as dry-yards in the fall. Above—Drying pears in Mendocino County.

Do you believe in signs? This property owner, who has scattered poisoned grain in a squirrel-infested field, evidently does. Not a bad idea, either, especially as a warning to neighboring farmers whose poultry might stray.

That an ordinary culvert may be a thing of beauty as well as usefulness is shown by these, of rubble construction, along a Southern California highway. An attractive driveway thus is afforded by what might have been an ugly disfigurement.

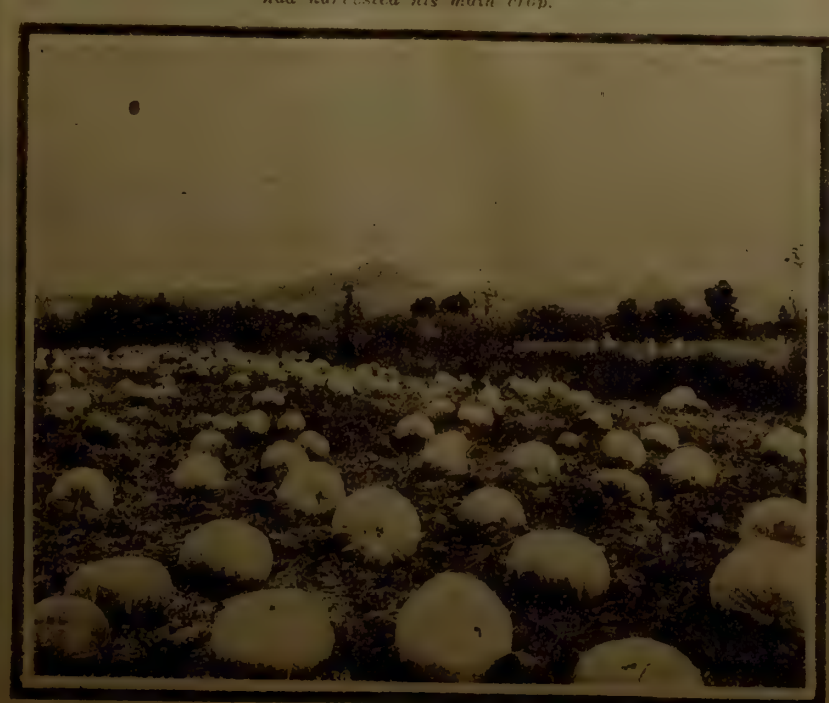
"The Story's in the Picture"

A neat blackboard may be both an advertisement and a business-getter. This one, at the entrance to the "Orchard Hill Farm" of O. H. Barnhill, Assistant Editor of ORCHARD and FARM, has made many sales and supplied many wants. Why not "tell the world"?

In Ventura County the ORCHARD and FARM photographer found these young trees protected from sharp "blow sand" with burlap hung over stakes on the windward side.
Below—A field of pumpkins that paid the owner's taxes after he had harvested his main crop.

Here is one of the best known Farm Bureau workers in America—Dr. W. H. Walker, former President of the California Farm Bureau Federation, and delegate to the National convention. He refinanced and managed the local grain growers' organization during a serious crisis.

This turkey, weighing more than 50 pounds, was selected for size from a large flock, and then "stuffed" for several weeks on corn.



So serious became the theft problem on one California farm that the owner resorted to highly charged electric wires for protection.

Power on the FARM

Cultivation of row crops no longer spells "mules" to the power farmer. (Courtesy Cleveland Tractor Company.) Below—A four-wheel-drive machine "making the grade" with a subsoiler. (Kroyer Motors photo.)

Above—Big power and sure traction are essential in doing sidehill plowing. Below—Combination disc and smoothing harrow making quick work of seed-bed preparation. (Courtesy J. I. Case T. M. Co.)

The farm power unit frequently does double duty "off season," either at home or on custom jobs. Below is striking evidence of the versatility of the track-layer. Doing logging work.

In Place of the Sun

(Continued from Page 10)

There is a margin of profit in such work that before long will of itself coyer the cost of the plant.

"Here is another mighty interesting thing: The very best and the most convenient piece of ground I own is the acreage I have been using for my dry-yard. Next season I'm going to set that out to a pear orchard. That's just the same as if the manufacturer of this evaporator threw in several acres of valuable land with the equipment that he sold me.

"At the beginning of the season, I owned 8000 trays. By using mechanical methods for drying, I can cut these down to 800—and sell the used trays for 75 cents apiece. There is another way I have saved the cost of the machinery.

"Besides, there is a lot of satisfaction in being free from the worry that every man must feel when one month of bad weather can spoil the results of eleven months of hard work."

Amazing enough, indeed! Mr. Dunlap felt that his equipment was paid for by any single one of the four major benefits that it had brought him.

From Anderson, California, comes the news of the happy results that Harry S. Bates received from his forethought in trusting to machinery rather than the sun. Last year he installed a modern "4-truck" evaporator. Early this season he put in another 7-truck plant. Late in the summer he had a "hunch" that unfavorable weather was brewing, and ordered an 11-truck plant, which was shipped and erected in 16 days.

During the drying season, three and one-half inches of rain fell and yet neither Mr. Bates nor the neighbors lost a prune—and this in spite of the fact that some of the fruit had to be actually picked out of the mud. It is reported that up in Sutter County eight mechanical evaporators have been installed since the rain on the first of October.

EVAPORATING AIDS CLEANLINESS

But there is one outstanding fact about mechanically dried fruit that of itself assures the failure of a machine method. Fruit that stays out in the open air in trays week after week is loaded with dust and exposed to insects of all kinds.

Fruit that goes from dipper to packer within twenty-four hours is ever so much cleaner, as well as more sanitary and more wholesome; in fact, the greatest enthusiasts for the evaporator predict that some day Federal regulation will lay a heavy hand on the unsanitary methods involved in curing fruit in the sun.

(Mr. Gardner's discussion of dehydration will be concluded in the next issue of ORCHARD and FARM.—Ed.)

New Dairyman at Davis

PROF. WILLIAM M. REGAN, new head of the dairy production department at Davis, has a very creditable record in educational work, stock judging and advancing the interests of breeders and dairymen. He was educated in the dairy department of the University of Missouri, where he graduated in 1912, and has taught in the Nevada and New Jersey State universities.

WILLIAM M. REGAN

During his five years at the latter institution, Prof. Regan built up a fine herd of dairy cows, developed strong breed associations, established an advanced registry system, greatly enlarged the dairy cattle exhibit at the State Fair, judged animals at several fairs, and accomplished many other excellent things for advancement of the milk and butter industry.

Big Money Boring Wells

One Man One Team

Have water on your own farm. In spare time make wells for your neighbors. It means $10.00 extra in ordinary years, double that in dry years. No risk—no experience needed.

Outfits for Getting Water Anywhere

Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*

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100% PROTECTION FOR LIFE from one vaccination with Cutter's Liquid or Solid Blackleg Aggressin. Absolutely safe. Cutter's Solid Aggressin injectors work just like Blackleg Pill Injectors. If Cutter's Aggressin is unobtainable locally, write

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Berkeley (U. S. License) California

N.B.—Old Style Powder and Pill Vaccines still made for those who prefer them.

Congress appropriated $20,000,000 during the war to import

Nitrate of Soda

into the United States to be sold to farmers at cost. It would not have done so had it not realized how necessary it was to have Nitrogen. NITRATE OF SODA is as necessary now as it was then. If you do not understand what Nitrogen does and why Nitrate Nitrogen is preferable send for my Bulletin, "Common Sense About Nitrogen."

Dr. William S. Myers, Director
25 Madison Avenue New York

Road Closed!

MOTOR out on any highway in any direction. See how far you can go before you hit the familiar sign, "ROAD CLOSED" or a stretch of corrugated, "bump-the-bumps." Are you content with these nerve-racking roads?

YOU—AS A TAXPAYER—PAID FOR and expected permanent, good roads. Why didn't you get them? Do you want to know why the roads you bought are not the roads you wanted Why they wear out before the bonds are paid? Do you want to know the reason and the remedy? Without cost or obligation to you, let us send you the interesting booklet, "THE TAXPAYERS' ROAD." Write for it today.

THE C. A. LINDSEY CO.,
1331 Detwiler Bldg., Los Angeles, Calif.

Ship Furs

Split your next shipment skin for skin grade for grade. Send one half to the house you've been shipping to and the other half to Fouke at once. See how much more you get from Fouke. Let the checks tell the story.—You will get a whole lot more for the furs you ship to Fouke, you can bet your bottom dollar on that. "Prices don't mean nuthin'"—it's the grading that counts and **Fouke grading always makes your fur checks bigger.**

SHIP NOW! Order traps and baits now. Send coupon below at once, for lowest prices on trappers supplies, get free samples NOXENT (kills human scent) and REMOV-A-SMEL (destroys skunk smells instantly). Get free Trapper's Pardner showing all kinds of traps and new paste baits, game laws, how to trap and grade furs. We keep you posted on fur market all season. ALL FREE! Send name and address on coupon today to

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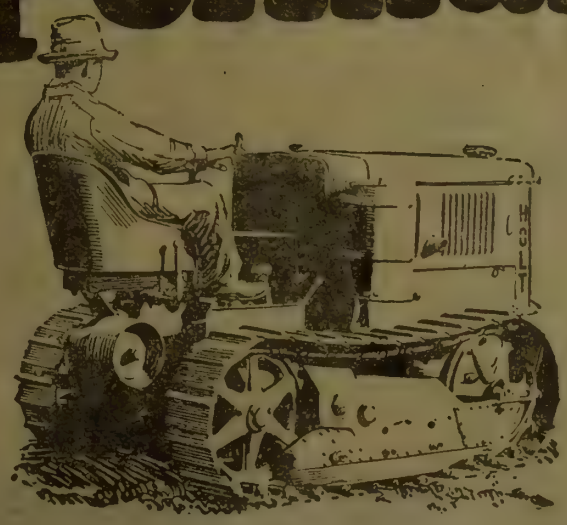
"CATERPILLAR" T-35 - THE SUPREME SMALL TRACTOR

Permanence



In little more than a year model T35 *"Caterpillar"* Tractor has established a permanent place for itself in the field of power equipment.

The many years of experience in tractor development and the long period of designing, refinement and testing that preceded the first announcement of the model T35 Tractor, a little more than a year ago, assured its success from the start.

But, though much was expected of this tractor, its actual performance in field service has surpassed the highest hopes. And the recognition, by power users, of its superior merit, has established for the T35 a permanent place in the field of power equipment and developed, in comparatively short time, a tremendous market. Increased demand has necessitated increased production, effecting economies that permitted a $375 reduction in price at the start of the second years' production.

If you have not yet heard the complete story of this "Supreme Small Tractor", let us tell you where you can see it at work, or send you literature descriptive of it, or of the larger sizes of the "Caterpillar" Tractor—the 5-ton, Western 10-ton, or 75-horsepower.

THE HOLT MANUFACTURING COMPANY
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Los Angeles San Francisco Spokane

THERE'S ONLY ONE "CATERPILLAR"—HOLT BUILDS IT

Advertisements are instructive, interesting, educational. Read the advertisements regularly.

"BOB" JONES' CORNER
Little Stories of Farming

By ROBERT E. JONES

A BACKYARD ORCHARD

It is possible to have a great variety of fruit in a backyard, for one tree, with buds of other varieties inserted, can grow many kinds. I know a California doctor who has made a fad of budding trees. His wife is much more pleased than if he were a golf enthusiast, for it makes for companionship and she has many kinds of fruit for her table.

"BOB" JONES

His backyard is 40 by 60 feet in size. It contains 55 varieties of fruit, including an orange and a grapefruit tree. Deciduous fruits include pears, two kinds (Bartlett and Winter Nelis); apples, two kinds, Alexander and crab, both on one tree; plums, thirty-two kinds on six trees; nectarine, which also bears apricots; cherries, seven kinds on one tree; apricot, also bearing almonds; grape, Muscatel; quince, also bearing pears; fig; walnut.

Berries: Raspberries and four kinds of blackberries.

The big cherry tree, with its six varieties of edible fruit, is topped with the buds of the Japanese flowering cherry and thus provides refreshing blossoms for the home.

This doctor also keeps a flock of twenty-five Rhode Island Red hens.

PLUMMER O PORTLAND

One of the truly great men of Pacific Coast agriculture is O. M. Plummer, general manager of the Pacific International Livestock Show, which is held at Portland each year.

No one ever will be able to say how much Plummer has accomplished in arousing the "livestock conscience" of the Pacific Coast. The Portland show has become one of the world's greatest livestock events. If you consider age and such sentimental factors as attach to the British Royal and the Chicago International, it may possibly be considered the greatest.

Plummer is a bundle of nerves and enthusiasm. By force of personality he is able to pull to the Pacific International not only the best herds and flocks of the Pacific Coast, but also many from across the mountains. Today the Pacific International is an enduring institution which shall go on time without end spreading the doctrine of better stock and better farming.

I remember seeing Plummer at the International in Chicago. He was so anxious to tell everyone about the Pacific International that he could hardly contain himself when some breeder insisted on telling at great detail the merits of his herd. Finally Plummer found a good listener in Editor Hollowell of the Shorthorn World, and he almost fell on his shoulder and wept.

TILLY'S MENU

This is what the great world's record cow, Tilly Alcartra, a Holstein, ate the year she made her first milk record of more than 30,000 pounds (about 15,000 quarts):

POUNDS		COST
1,829	oats at $30 a ton.....	$27.44
1,828	barley at $23 a ton.....	21.02
1,829	bran at $27.50 a ton....	25.14
1,203	linseed oil meal at $34 a ton	20.54
691¼	dried beet pulp at $22 a ton	7.61
3,226	corn silage at $2 a ton..	3.23
10,122	hay at $5 a ton.....	25.31
15,140	magles at $2.50 a ton...	18.93
Total	.....	$149.22

At 10 cents a quart, her milk was worth $1500. A bull calf from Tilly sold to breeders in Ontario, Canada, for $50,000.

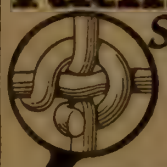
POULTRYMEN AND MARKETING

The untold possibilities for benefit to the farmer of co-operative marketing are seen in the operations of the Central California Poultry Producers' Association. It is doing a $10,000,000 business this year. A few seasons ago a small group of earnest men, convinced they could better marketing conditions, started this organization. It is now estimated that the annual poultry and egg business of California aggregates $50,000,000. Trainloads of eggs have been shipped to Eastern markets, and, because of the superior packing and grading practice that characterizes Pacific Coast marketing operations, these eggs have commanded a premium on the market there.

Build a Better Fence and Save Money

Build an all-steel fence around your ranch and save money. My prices on highest-grade steel fencing are so low that you cannot afford to consider substitutes. I buy tons and tons of fencing which is shipped direct to my warehouses by water at a tremendous saving in freight. I share this big saving on freight with you by reducing prices.

"Pacific" Fence
Stiff-Stay Type



Here is a fence that is ideally designed to give unusually satisfactory service on Pacific Coast ranches. Note the illustration of the "Pacific" knot. It securely binds the stiff, picket like stay wires to the well-crimped line wires, producing a neat looking fence that goes up easily and stands erect and trim under strain.

Furthermore, the "Pacific" knot is so constructed as to be entirely flexible for uneven ground and it is open so that moisture cannot accumulate and cause rapid deterioration.

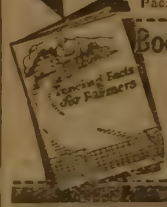
The steel in "Pacific" fence is produced by the open hearth process. Only purest materials are used for galvanizing.

Used in combination with my "Red Top" Steel Fence Posts it makes a trong, sturdy fence that will last for many years.

I also carry a complete line of "Monarch" Wrap-stay Fence, "Square Deal" Gates and Barbed and Plain Wire.

Mail the coupon for my FREE catalog. And remember my low prices will save you money when you build a fence.

HARRY GAYLIFS "The Fence Man"
Pac. Finance Bldg., Los Angeles, Cal.



Book of Fence Facts FREE

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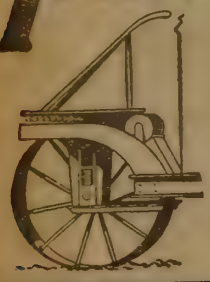

the ball tread
the front wheel
the transmission

The YUBA has the power and the sturdiness and the flexibility of all good tractors. But it has more.

The BALL TREAD provides a quiet, smooth and friction-free track. There is traction in slime or on the side-hill; in the rice-field or on the highway—for the YUBA glides over four rows of polished steel balls.

There's an independent clutch for each track. One track drives ahead at the same time the other reverses.

The front wheel saves the driver—and fuel, too! The machine answers the touch on the tiller-wheel; the clutches need not be "slipped." There is no "see-saw" or "zig-zag"! And all that means DRIVING COMFORT!

In no other track machine are these important features to be found!

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Bean outfits built 18 and 20 years ago are still on the job today. We admit they should be replaced by more modern sprayers, but their continued usefulness proves the sturdiness of Bean construction. New improvements this season add more power and capacity, while decreasing the weight, which means faster and better work at less cost. See these improved outfits at your local dealer's. Also, send the coupon for new catalog which illustrates and describes in detail the entire Bean line of orchard, potato, truck and general sprayers.

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Complete factories east and west insure good service to Bean owners everywhere.

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Please send me your New Sprayer Catalog
Name
Street State
Town
Kind of fruit grown
No. of acres
(80 83)

Luther Burbank

(Continued from Page 9)

rather than for any other reason, although they bore abundantly each season.

Among the many crosses made between the different kinds of raspberries and blackberries was one of the Crystal White blackberry and Shaffer's Colossal raspberry. Most of the plants from this cross were partly or wholly barren, though blooming freely and often obtaining treelike proportions.

In the fourth generation of selected seedlings of the hybrid, however, a berry of considerable merit appeared, which was mentioned in "New Creations of 1892" as Paradox. This plant was in every respect a perfect balance between the two parents.

The wood, bark, leaves, blossoms, prickles, roots, fruits or seeds could not by any test be proved to be either one or the other. The abundant berries produced were oval, light red, and of good size, larger than either progenitor, and of superior quality.

Other more valuable berries now appearing, the Paradox was superseded by them, and was, therefore, never introduced into cultivation.

Luther Burbank

Selling Oregon Vegetables in California

How an Enterprising Growers' Association Found a Profitable Market for Canned Stuff in a Great Fresh Vegetable State

EVER and anon—sometimes oftener—California's neighboring State on the north comes to the front with some new agricultural improvement, such as the use of sulphur as a fertilizer, the first 300-egg hen, lime-sulphur as an insecticide, etc.

It now appears that Oregon has been stealing a march on the Golden State in developing new markets for canned vegetables, having sold during the past year 43 carloads of them in San Francisco. Of course, the Oregonians claim that they were enabled to do this because of the superior quality of their vegetables, but California farmers believe they can grow just as good garden truck as anybody.

It seems likely that the achievement alluded to was the result of good judgment and up-to-date methods employed by J. O. Holt, manager of the Eugene Fruit Growers' Association, who made the sale mentioned. In addition to the varieties of vegetables usually preserved by canning, Holt is putting up diced potatoes, carrots, beets and other salad material. These make a hit with the housewife, who in the hot summer months is saved the trouble and discomfort of building a fire just to boil a few vegetables for salad making. Perhaps she could manage things more economically by buying less canned fruit, Holt admits, protesting that it is not his business to give lessons in saving, but to find a profitable market for the vegetables grown by members of his association.

"In developing a market for our canned vegetables," the Oregon wizard explains, "our salesmen visited leading hotel and restaurant men of the Bay Cities, showing them the various advantages of buying as many vegetables as they could in the canned state. Our stock is always of uniformly good quality, which cannot always be said of vegetables bought in the open market. The latter are not always to be obtained fresh and in good condition, nor of the best varieties at the proper stage of maturity and size. The result is complaints from customers, which can be avoided by always giving people a uniform product of standard quality. Our baby beets, young carrots and perfect potatoes never fail to please and satisfy the consuming public.

"We also showed hotel and restaurant men the saving in labor which results from the largest possible use of canned vegetables, demonstrating with the aid of the chef the exact number of portions which each can contains. Since the labor problem is always an acute one, this argument possesses strong pulling power.

Heretofore our efforts have been directed to capturing the hotel and restaurant trade. Now we are going after the 'cliff dwellers' of San Francisco—the people who live in apartment houses and to whom buying and cooking vegetables is a great inconvenience."—O. H. B.

Do Orchard Heaters Pay?

(A citrus grower sends the following succinct communication on orchard heating.—Editor.)

ACCORDING to the U. S. Department of Agriculture, it is estimated that a loss of $60,000,000 yearly is suffered by orchardists due to frosts and freezes.

And regardless of the fact that it was a California grower who first used an orchard heater, when they were introduced in 1908, the golden State is still suffering preventable damage.

That the weather bureau recognizes the value of orchard heaters is evidenced by the fact that, in the larger fruit growing districts, frost warnings to fruit growers is being rapidly extended. However, in order that the orchardist may profit from this service, he must invest in heating equipment.

Those who have any doubt as to whether orchard heaters do prevent losses need only to recall California's most damaging freeze, that of 1913. Following that siege the Limoneira Company is said to have marketed crops worth $734,000 from the heated acreage. Another concern sold $400,000 worth of fruit from their heated groves, while in practically all other orchards, the fruit was completely destroyed—not to mention the damage to the trees, which greatly lessened the crop during the following seasons.

Since this year however, California growers gradually have added to their heating equipment until now many of our successful orchardists virtually have 100 per cent protection. And it was due largely to efficiency heating that the freeze last season was not even more disastrous.

Thus it is not difficult to see why California orchardists are the world's largest purchasers of orchard heaters. They are an investment, they mean more profits to the grower.

—A. R. SMITH.

Larger Fruit Demanded

THE increase in size of standard grades of peaches to two and one-eighth and two and three-eighth inches by the California Canning Peach Growers calls attention to one of the commonest faults of fruit—lack of size.

Fruit marketing associations of the Pacific Northwest say that a good share of the apple crop is too small to justify packing in boxes and should be handled in bulk or made into cider and vinegar. Five-tier apples are often called "export size," which sounds well, but merely means that the fruit is too small for the home market and must be shipped to foreigners.

"California's great advantage in the markets of the world is based on the size and sightliness of our product," one of the officials of the above-named organization points out. "Growers and canners are uniting in a movement to increase the size of peaches, which can be accomplished by proper pruning, thinning and irrigating. Few people realize that a two and one-half inch peach weighs twice as much as one which is two inches in diameter."

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Ship ALL Your Furs to Stephens of Denver, Largest Exclusive Buyer of Western Raw Furs in the World (established 1870). Save $1 to $20 on shipping charges, and get your money 3 to 14 days sooner---because Denver, Colorado, is YOUR Nearest Fur Market, and is the Biggest Fur Center in the Entire West.

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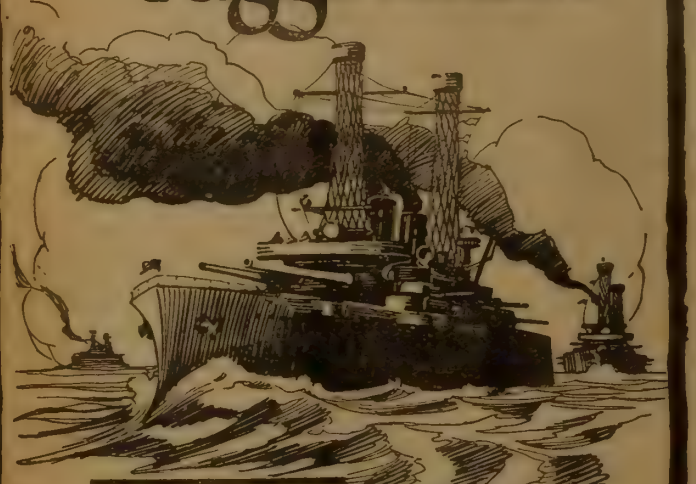

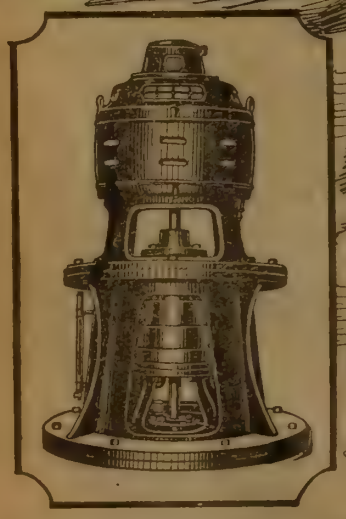

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It's high time now to begin the installation of the new pumping plant you have been planning. Request full information regarding these pumps.

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For those who desire to dwell in sunny California without living up hard-earned capital.

Charles Weeks, for 18 years proprietor of the most intensive Egg Farm in the world and founder of the famous CHARLES WEEKS POULTRY COLONY at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles.

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Los Angeles, California.

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CHOICE GLADIOLUS—Let us help make your flower garden more beautiful next season by furnishing some fine bulbs of this wonderful flower. Bulbs now ready. Catalogue free. Rosedale Flower Gardens, Pacific Grove, California.

CORY'S Thornless Blackberries. Large, early, delicious flavor, few seeds; a good seller, better eating. One year. Strong transplants from heavy producing vines. 12 for $12, postpaid. Wm. Mortenson, R. 4, Box 20, Lodi, Calif.

FOR SALE—Millions of cabbage plants of different varieties. L. C. Johnson, Pomona, California.

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LEASE expires. Selling out cheap my high grade gray and steel gray Flemish Giant breeding does and bucks, 10 to 19 lbs. All ages. Mike Ditzel, 936 Maple, Los Angeles, Calif.

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THE [illegible] or Single Comb White Leghorns have been bred since 190[illegible] and all breeding stock has been carefully hospitalized to insure heavy laying and strong, hardy chicks. Safe delivery and full count guaranteed. For more information write for free booklet. White Plumage Poultry Farm & Hatchery, Escondido, Cal.

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White Leghorn Baby Chicks and Hatching Eggs

From TRAPNESTED STOCK
Our 1923 annual illustrated mating list now ready, send for a copy. WE GUARANTEE SATISFACTION.

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STURDY BABY CHICKS—S. C. White Leghorns, White and Barred Rocks, R. I. Reds, Anconas, Black Minorcas and Buff Orpingtons. We urge our customers and those interested in our stock to favor us with their orders as far in advance as possible that delivery may be arranged in all cases according to their wishes. Spring season, January to June. PURE BREED HATCHERY, Breeders and Exporters of Poultry Breeding Stock. Route 1, San Mateo, Cal.

CERTIFIED WHITE LEGHORN baby chicks hatched in the world's largest Electric Hatchery, for spring, 1923, delivery January prices $4 per 25; $8 per 50; $15 per 100. Special prices 500 and 1000 lots. Order early chicks now and realize big broiler profits. Choice free range high egg-producing breeding flocks inspected by Sonoma County Farm Bureau. Safe arrival guaranteed. Must Hatch Incubator Co., 432 5th St., Petaluma, Cal.

WHITE Leghorn Baby Chix for May and June DELIVERY AT $12.00 PER 100; $115.00 PER 1000. FROM FLOCKS INSPECTED AND ACCREDITED BY Sonoma County Farm Bureau. SAFE ARRIVAL OF FULL COUNT LIVE STRONG CHIX GUARANTEED. The Pioneer Hatchery, 415 Sixth St., PETALUMA, CALIFORNIA.

BABY CHICKS—From selected breeders. Order now for 1923 delivery. White Leghorns, R. I. Reds, Barred Rocks. Safe arrival guaranteed. Write for circular and price list. The J. H. Stubbs Poultry Farm & Hatchery, Box 67-C, Palo Alto, Cal.

WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, R. I. Red, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

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BAY old chicks, chicks, turkeys. For years best in district. Fraser's Hatchery, 135 N. Jersey av. Box 371 Hawthorne, Cal. Write.

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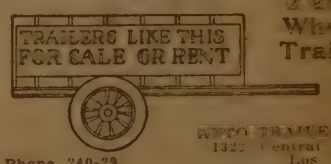

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$50 to $100 per week, the money sure; something new, not an old, worn-out proposition; field untouched, experience unnecessary; takes everybody by storm; money rolls in, show 50, sell 40; demonstrated in one minute, sells on demonstration, the new Inkless Fountain Pen, the twentieth Century Wonder, never leaks or spills, with this pen no more use for the ink bottle, sample pen 50c; this proposition is backed money back if not as represented, agent's profit 100 per cent; exclusive territory, send for agency today. Inkless Fountain Pen Co., Dept. H, 1522 Eighth St., Des Moines, Ia.

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Have your Kodak finishing done by experts.
Winstead Photo Finishing Co.
Box 116, Los Angeles, Cal.
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Write for our new price list and how to get the free camera.

Agricultural Leaders of the Pacific West

1—Dr. Elwood Mead

THE quiet, determined man who is Professor of Rural Institutions for the University of California has been fighting the battles of the irrigation farmer almost since boyhood. His growth in world affairs from an Indiana farmer boy to the world's foremost authority on the enlightened

idea of land colonization has been coincidental with the development of irrigation farming.

Today, because of the work of this great man of the people, an educator and a practical statesman, California stands as the leading commonwealth of the United States in the advanced idea of a better rural life. Two State colonies, illustrating a practical and almost ideal plan of providing the land-hungry man of little capital with a productive farm home, are monuments to his efforts. These colonies are at Durham, Butte County, and at Delhi, Merced County. They are settled and "going" projects, with fine farm homes and earnest, happy people who are doing something for their State as well as for themselves.

EARLY TRAINING

Dr. Mead was born in Indiana, raised on a farm near Patriot, and received his first degree in civil engineering from Purdue in 1882. He was given the professional degree of civil engineer by Iowa State College in 1883, and received the distinct honor of doctor of engineering granted by Prudue in 1904.

Without question, Dr. Mead is today one of the most widely known Californians, for the success of his work in land colonization has spread to the remote parts of the world. His first real battle was on an obscure job in Wyoming. He was called to Cheyenne from the Colorado Agricultural College, where he was an instructor, to become State Engineer of Wyoming in 1888. At the time the job of State Engineer of Wyoming did not amount to much, but, as with many great men, Dr. Mead made it amount to something before he left.

It was here that he came in contact with a tangled water problem—such as all States of the irrigated West have. There was endless litigation for the farmer, frequent disappointment and lack of water, loss of crops, and all the grief attendant upon such a situation. There were diverse interests and bitter quarrels, but young Mead met the situation squarely and worked out the Mead water code, which lodged settlement of dispuates in the hands of administrative officers. He thus ironed out a lot of trouble in Wyoming. Since that time the Wyoming law has been copied in many Western States.

From Wyoming, having made a big job out of a small one by seeking to be of genuine service to the farmer, Mead went to Washington as Chief of the Bureau of Irrigation Investigations for the Federal Department of Agriculture. Then he was called to the chair of Rural Institutions for the University of California, but he had hardly accepted the office before Australia called him on to Melbourne to become Chairman of the State River and Water Commission of Victoria.

AUSTRALIAN EXPERIENCE

He was in Australia from 1907 to 1915 and worked out the great Australian plan of closer settlement, based on long-time payments, ready-made farms, and practical, expert supervision of farming operations. It is too long a story to tell here, but it may be said that in 1915, when Dr. Mead left, there were twelve times as many homes in the irrigated districts as in 1910. The work done, Dr. Mead returned to the University of California.

Here he has been at the front in the new idea of land colonization. With the help of Hiram W. Johnson, who was Governor of California when the first State Land Settlement Act was placed before the Legislature, Dr. Mead has written into the laws of the State many new chapters which have opened the way for more intelligent colonization plans, beneficial alike to the State and to the farmers. This work is not yet finished. Dr. Mead is steadily at it each day and hour.

HE LIKES WORK

This man Mead is known for his persistence and steadfastness. His is not a spectacular personality, but he has the quiet simplicity and approachability of a broad man. He is not a great orator, but is an effective publicist just the same. He seeks constantly to serve for the love of the service. He tackles work with a vim wherever he finds it. Today large landholders, once skeptical, look to him and his program for the working out of the land problem in California. Once he was criticised as an impossible idealist, but today he is recognized, even by the skeptics, as a practical man with a sound solution of a real problem.—"BOB" JONES.

The New BULLETINS

AMONG the new bulletins issued by the United States Department of Agriculture, the following are deserving of special mention. They may be obtained free on application to the Division of Publications, Department of Agriculture, Washington. Order by number:

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By-Products of Citrus Fruits	232
Game Laws	1288
Laws Relating to Fur Animals	1293
Wild Rice	229
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Breeds of Beef Cattle	112

The Charles Weeks System

Of Intensive Poultry and Berry Farms

One Acre and Independence

or

The Fine Art of Earning a Comfortable Living on

ONE ACRE IN CALIFORNIA

For those who desire to dwell in sunny California without living up hard-earned capital.

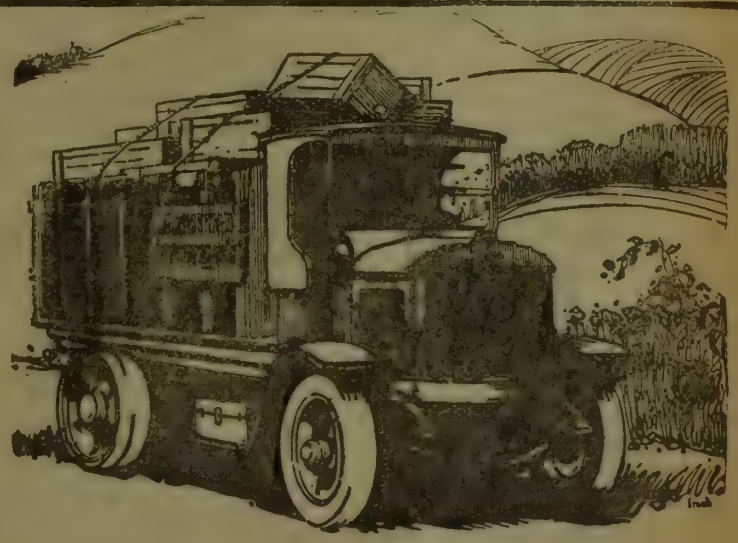
For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 25 miles from Los Angeles.

Write for Literature

CHARLES WEEKS

Owensmouth California



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The quality of "Red Crown" is always the same, whenever and wherever you buy it. It vaporizes rapidly and uniformly in the carburetor. And it is consumed *completely* in the combustion chambers, converting *all* its heat units into power at the driving wheels. That means a better average mileage, and a sweeter-running engine.

Fill at the Red Crown sign — at Service Stations, garages, and other dealers.

STANDARD OIL COMPANY
(California)

The Gasoline of Quality

Announcement

Most recognized poultry judges of America have pronounced the Emerson and the Rancho del Martino the best flocks of standard-bred White Leghorns in the West.

We purchased these flocks because we wanted the best

Other than these, we have thousands of carefully selected heavy laying hens mated to pedigreed males which are direct descendants of winners of State, National and International egg-laying contests.

The prominent blood lines of the world known for exclusive high-egg production are found in our breeding pens—namely, Hanson and Druce of Corvallis, Oregon; Tancred, Hollywood Farms, and Beal of Washington; Ferris of Michigan; Pennsylvania Poultry Farms, Pennsylvania; Hillview Farms, Illinois, and Tom Barron of England

Official records of National and International egg-laying contests prove these strains the greatest egg-laying chickens on earth.

We have brought the best high egg producing blood lines of the world to Southern California simply because we know, as large egg shippers that the commercitl poultryman, with high priced feed and low egg prices, must offset these two handicaps with hens that will lay more eggs than the majority of hens found on the average commercial poultry farm.

When you purchase hatchinig eggs, baby chicks, pullets or breeding stock from us we give you the best that money, modern equipment and careful breeding will produce.

With those hatcheries whose chief argument for business is CHEAPNESS we do not try to compete. QUALITY with us is the first consideration, and all the chicks we send out are big, strong, vigorous fellows, properly hatched. The eggs from which we hatch chicks are the same as we sell for hatching, carefully selected for large size, smooth shells, regular shape and good color.

Frankly, you cannot find elsewhere in America the strong blood lines, bred separately, that we have assembled at your door, the offspring and products of which are offered to the commercial poultryman and owner of a farm flock at live and let live prices.

We guarantee 100% fertility in all hatching eggs by replacement of all infertile eggs

Hatching Eggs

From Nov. 1 to April 1

15 for $2

In 100 lots, 12c each
In 500 lots, 11c each
In 1000 lots, 10c each

Baby Chicks

January, February, March

In lots of 100, 25c each
In lots of 500, 24c each
In lots of 1000 or over, 23c each

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All hatching eggs are stamped, identifying the strain from which they come.

If you want some of these hatching eggs or baby chicks we suggest that you order them now, as our hatching capacity is only 20,000 for 1923, and bookings are coming in rapidly.

You may order from this ad by mailing a check for 10% of your purchase and fix date for your deliveries: or, better still, come and see the stock from which your hatching eggs or baby chicks will be produced.

WE ALWAYS HAVE FOR SALE THREE, FOUR, FIVE AND SIX MONTH OLD PULLETS FROM PEDIGREED TRAP-NESTED STOCK.

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2491 E. Colorado St., Dept. O, Pasadena, Calif.

The advertising columns contain message of intense interest and great value. Be sure to read the "Ads" [illegible]

Early Layers Pay Best

(Continued from Page 3)

Out With the Slackers and Save Feed

THE purpose of this article is to show that the poultryman who has the proper knowledge of his flock of pullets, their ages and methods of rearing may with a fair degree of accuracy cull out the slackers at the beginning of the year just as well as at the end of the year, and save the feed bill to that extent.—*James Dryden.*

conditions, and these are within the control of the poultryman.

Before a flock of pullets can be culled on the basis of early maturity, they should be all of the same age. Second, they should be kept under the same conditions during the rearing period as to feeding and management.

While early laying maturity is an inherited trait of the good layer, at the same time laying maturity may be hastened or retarded by the feeding and by other conditions under which the birds are kept. The feed has a very decided effect on the rate of development of the pullet. A pullet may not lay before it has reached 300 days of age and yet may have the ability to lay at 200 days, depending on the feed and care she receives in the growing period.

UNIFORM CONDITIONS ESSENTIAL

The whole truth is that the age and conditions under which the pullets are kept must be the same before they can be accurately culled. It is not a question so much of the age at which they lay as it is of separating the earliest and the latest maturers. With the conditions right, a high degree of accuracy in culling may be attained.

The amount of culling necessary or the number of slackers in a flock depends upon the breeding back of it. In a flock of pullets from a high producing strain, there will be relatively few culls. But there will always be some, no matter how well bred they may be. Good breeding largely obviates the necessity for culling.

Culls are born. They inherit low production. They inherit slow maturity. They are slow starters by inheritance. Environment will not convert them into high producers or early starters.

While this is true, culls are made as well as born. Chickens are the creature of environment. They may be made culls by poor environment—poor feeding and care. No matter how well bred they may be, and in spite of heredity, some hens will be culls and should be culled.

HOW CULLS ARE MADE

Culls are made in various ways. The eggs that they came from may not have been from breeding stock of good vitality. The feeding and management of the breeding stock may not have been right, with the result that they lay eggs that are weak in the life-giving germ, and the chicks are weak. The eggs may be all right, but the incubation may have been wrong. If the incubator is not properly handled, or if the setting hen does not do her part, chicks weak in vitality will result. A fruitful source of culls is the brooder and the brooding, and in the feeding and rearing of the chicks millions of culls are produced.

The late starters are culls first by inheritance and second by environment, and both classes go into the culling pot when the slow-maturing pullets are picked out.

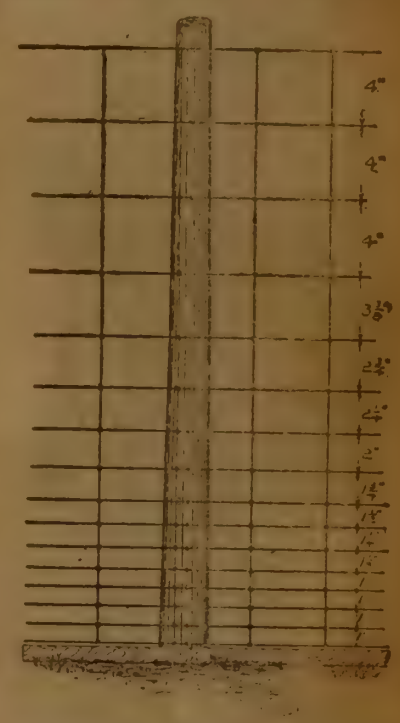
To sum up, the slowest maturing pullets are the poorest layers. The age at which they mature does not in itself tell whether they are culls; the feed and methods of rearing hasten or retard laying maturing. They may be forced to lay too early or retarded by unwise feeding. Under normal conditions of rearing, the flock that averages to start laying at 6 to 7 months are good layers, and those at 8 to 10 months are poor.

In an average flock of pullets there may be 25 per cent slow maturers. In a flock of 1000, probably 250 will start at 6 to 6½ months; they should be marked as the cream of the flock. At 7 to 8 months, probably 500 more will be laying. 250 will show no evidence of laying, and they should be culled. This is assuming, of course, that the flock has had good feeding and care, without forcing or retarding rations.

A Better Poultry Fence

"YOU don't really own your land until you have a fence around it." You don't really own poultry until the birds are held within bounds by a good poultry fence.

The illustration shows a 32-inch square mesh poultry fence that is well stapled to solid posts set ten feet apart.



The spacing suggested will confine young stock as well as laying hens.

There is a board at the bottom that raises the fence to a height of three feet. Above the netting it is a good plan to stretch five or six fine wires.

The posts should be nine or ten feet long, set three feet in the ground.—*Herbert A. Shearer.*

Buy Better Chicks

WHEN a poultryman has his choice between common chicks at 14 cents each and others from a good egg-laying strain at two bits apiece, he should not hesitate to take the latter, in the opinion of W. D. Buchanan, Washington State poultry extension specialist.

Buchanan, who has observed carefully the results obtained from the higher priced chicks, estimates that when they grow into hens they will pay a profit of $750 a year more than scrubs.

Prof. Buchanan has decided that any hen which lays less than 120 eggs a year is a cull and should be taken off the nest, fattened and made into a chicken pie. In this connection it is interesting to note the average United States hen lays less than half the number fixed by the Washington authority as the dead-line between scrubs and thoroughbreds. Pacific poultrymen evidently have high ideals of production.

Relief Work Helps Dairymen

THE American Relief Administration bought and gave to the Russian people 28,500 tons of milk, which was produced in dairies of the United States and preserved in 57,256,960 cans. The latter, laid to end, would reach from Savannah, Ga., to Seattle, Wash. Millions of them were converted into cups, toys, signal lamps, oilers, flower holders and other articles which the Russian people are using today. This gigantic act of charity afforded a market for an enormous quantity of American dairy products and created a demand which may result in a profitable trade for United States dairymen.

Auto Men wanted *Now!*

Jobs Open Big Pay Learn Quick
Train at National Automotive

L. B. Gloskey, Temperance, Mich. Young farmer now earning $65 a week in auto work.

Students making overhaul on Packard twin six.

Part of advanced Auto Electrical Department at National Automotive.

Instructor showing students details of automobile machine work.

Wm. D. Jones, 64-year-old tailor, now running profitable garage in Idaho.

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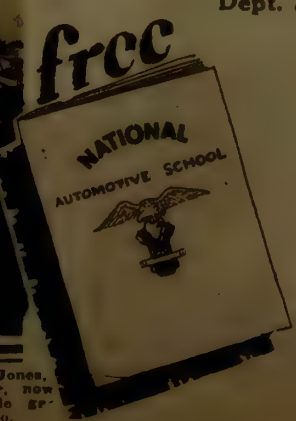

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Please send me your 72-page illustrated Auto Book—absolutely FREE, postage prepaid.

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let it mother your chicks

BABY CHICKS are frail little fellows. They must be fed and "nursed" and watched. For each fluttering bit of chick life represents a chicken. Each represents a future profit. Hence the right start means everything—to the chicks and to you.

Do you know what causes more chick deaths than anything else? Indigestion! For the digestive organs of the baby chick are just as delicate, just as sensitive, as those of the human baby.

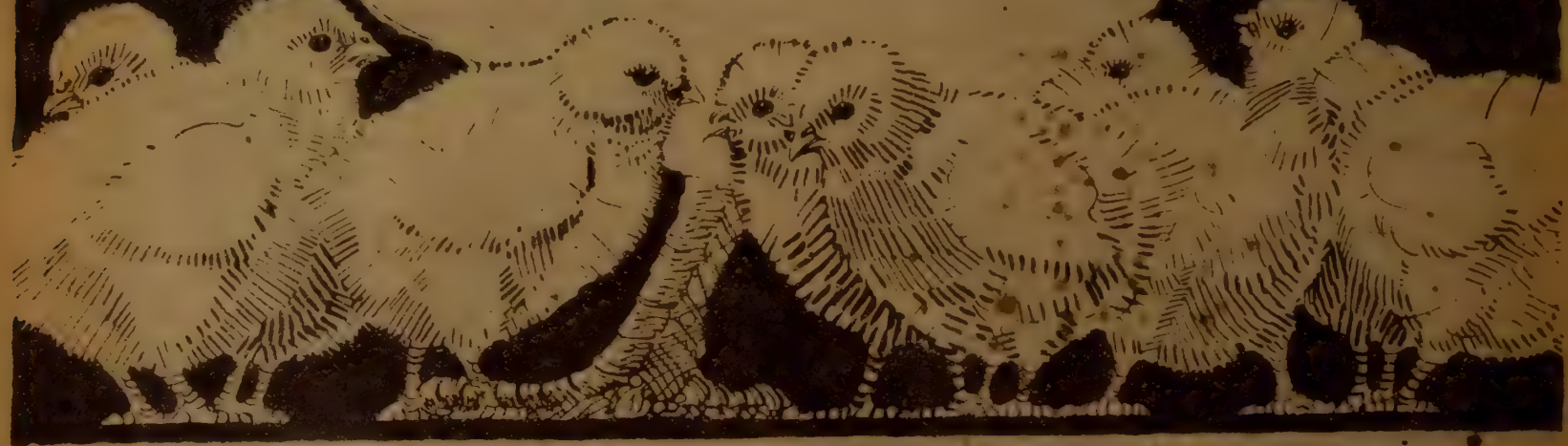
Because we feel that nothing is good enough for a baby chick that is not clean enough for a human baby, *cleanliness* is our first consideration in the manufacture of SPERRY BABY CHICK SCRATCH. Cleanliness means a healthy flock—and that means healthy profits. That's why we take care that only prime, clean grains go into this feed. During its entire process of manufacture, the same absolute cleanliness is observed as in manufacturing SPERRY Red Package Cereals for your table.

Years of experience has taught us how to mix a feed with the same food values that the mother hen would scratch for her baby chick on the open range. That's why SPERRY BABY CHICK SCRATCH is properly granulated and proportioned for fast-growing little bodies. Made of prime, re-cleaned seeds and cracked grains with a small percentage of granulated, fine-quality meat scraps and charcoal—SPERRY BABY CHICK SCRATCH is the best feed-and-health insurance any poultryman can buy for his chicks.

Remember, too, that SPERRY BABY CHICK SCRATCH is *absolutely gritless*. This means you do not have to pay a fancy price for shell and grit. You, yourself, can supply these more economically.

In the new edition of our booklet, "Makes Hens Happy," you will find quite a bit of help on feeding chicks—and grown-ups, too! Your copy is waiting for you—and it's free. Simply mail the coupon now.

Sperry Baby Chick Mash: This feed meets the demand of many poultrymen for a mash made up of ground grains and high-protein nutrients. It makes for rapid growth without overtaxing the gizzard and digestive tract of the baby chick. It should be fed in conjunction with SPERRY BABY CHICK SCRATCH after the first week. Your dealer has it—in 50- and 100-pound yellow-striped bags.



SPERRY Baby Chick Scratch

SPERRY FLOUR CO.

POULTRY AND STOCK FEED DEPARTMENT
Dept. O, San Francisco

Please send me, without obligation, your booklet "Makes Hens Happy."

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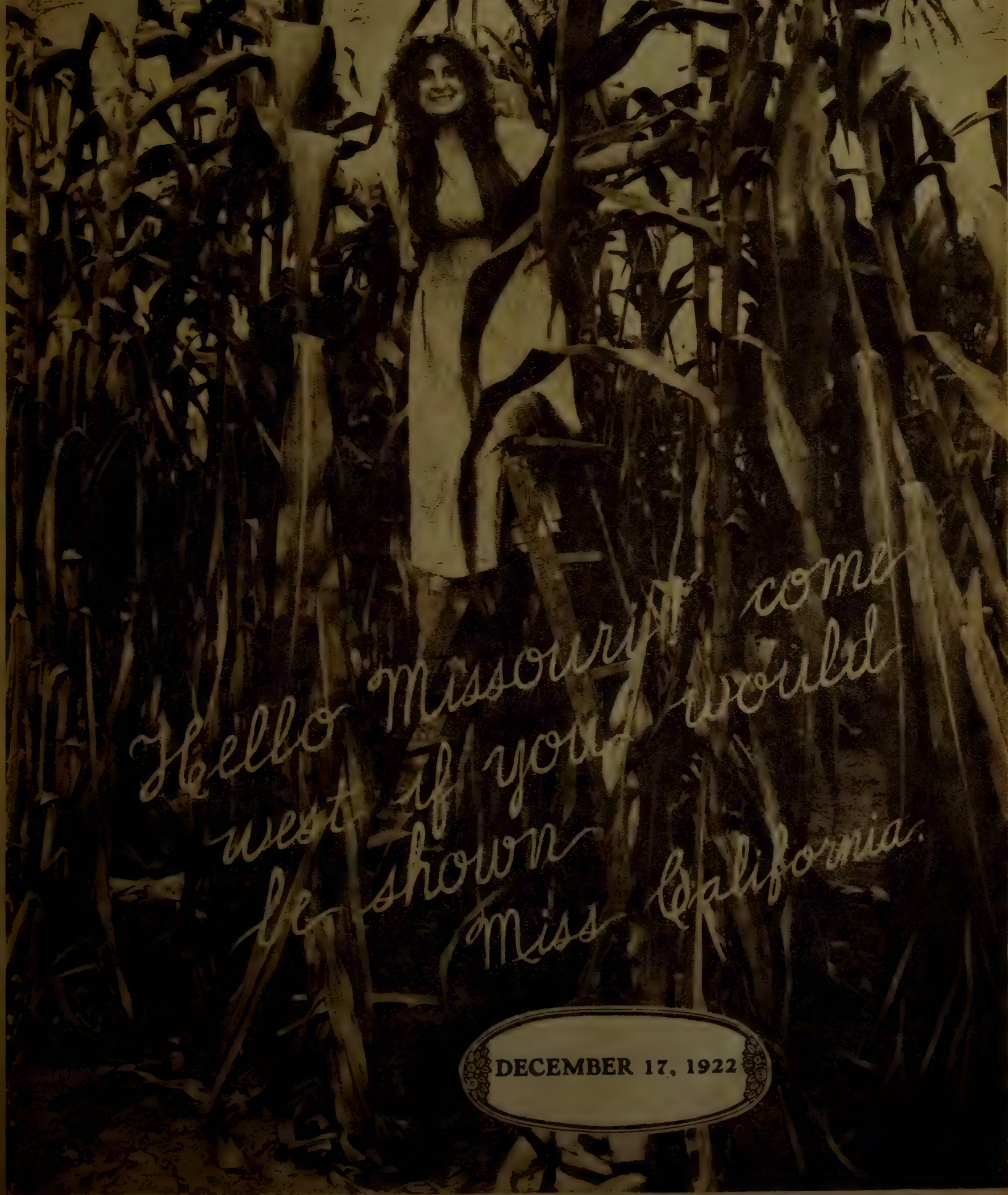
ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER



DECEMBER 17, 1922

—Photo by Stagg, L. A.

What the Better Sires Campaign Taught

Two Counties Set an Example That All of California May Follow With Profit

THE remarkable results of the recent campaign conducted jointly by Sonoma and Marin counties (described last week by Mr. Royce) suggested this brief article, by the same writer, pointing out how the principle may be applied to other districts of the Golden State. Do you feel there is a lack of interest in purebreds? Then read—and heed!

By R. P. ROYCE

MOST of the 100 bulls that changed hands as a result of the Sonoma-Marin counties better-sires campaign were sold for cash, but in case the dairyman needed credit his old scrub or grade bull was taken in at beef prices and that amount credited as a first payment, or a first payment of $25 was was accepted and the bank agreed to loan the remainder of the purchase price for one year at 6 per cent.

What was done in Sonoma and Marin counties can be duplicated in any other section. There is no patent on the plan, and the machinery used to put across the campaign is at the service of any community. There is nothing about the plan that would prevent its being used to replace scrub sires of any other kind of livestock. The beef cattle interests, the swine interests or the sheep interests will find it just as adaptable to their needs as the dairy industry. It can be used in any unit from a school district to an entire State.

Indeed, the possibilities of the plan are so great as to challenge the serious attention of every man or organization interested in improving the quality and efficiency of California's livestock. Think what it would mean if similar campaigns were initiated and carried through in each of the twenty leading dairy counties of this State or if 100 purebred beef bulls were placed in the twenty leading beef producing counties and then extended to the swine and sheep industries! How tremendous would be the accumulated results and what a great stimulus would be placed behind the production of registered livestock in California!

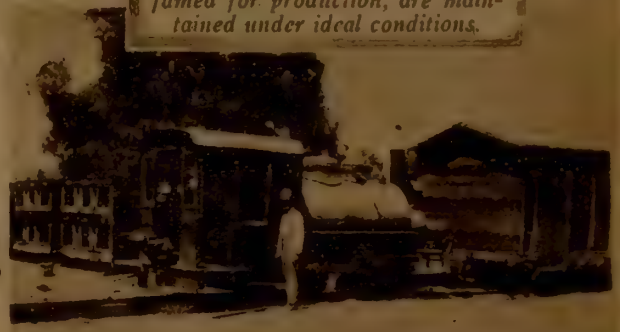
In the light of the above demonstration no set of breeders nor any organization will gain serious attention when contending that there is a lack of interest in better livestock. The interest is here; it simply needs to be developed and crystalized; and if breeders and the many other agencies fail to make wide use of the plan suggested they will be overlooking the best idea yet devised for getting their animals into the hands of the men whom they have been trying to reach since the beginning of the purebred livestock industry.

The way has been marked. What is now needed is a strong, sane and courageous leadership that recognizes the real economics of better livestock; that sees the whole matter as a problem of educating the producer and his community to such a viewpoint; that thinks in broad terms and not in terms of any one breed.

High in the mountains of the National forests, the beef herds find their summer sustenance.

In the valleys, "contented cows," famed for production, are maintained under ideal conditions.

CALIFORNIA'S MULTIFORM LIVESTOCK RESOURCES



Above—View of buildings at Berylwood Stock Farm, Ventura County, one of California's most practical and attractive livestock establishments.

Right—"General Boggs," Grand Champion Shetland pony stallion, 1922 State Fair, bred by Butte City Ranch, Glenn County, and driven by W .P. Dwyer Jr.

Below—Three-gaited saddle horse, "More Gold," winner of five $1000 purses in 1922, recently sold by Clifford B. Harris of Los Angeles to Sunshine Ranch, San Fernando.

The Holsteins at top (right) are part of the famous A. W. Morris & Sons herd. "Tilly Alcartra," wonder cow of the world, is in the foreground.

The little engine is part of the equipment of Diamond Bar Ranch, Spadra, Cal., where so many hogs are maintained that a private railway for feeding was constructed.

Below—Interior view of a modern dairy barn, where electric milking machines are used.

Lower center—A flock "nooning" in the shade on a Porterville winter-lamb ranch.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
DECEMBER 17, 1922

What Peaches Shall I Plant?

Cling Varieties Old and New—Canners Discriminate Against Freestones—Far Sighted Growers Will Consider Future Demand

By GEORGE P. WELDON

PEACHES naturally fall into two main classes—freestones and clings. The fresh-fruit shipping industry has placed a premium on the freestone varieties; this may also be said of the drying industry.

The canners, however, rapidly are placing freestone peaches in the discard, and a heavy premium is being paid for suitable clings.

GEORGE P. WELDON

This fact seems to be difficult for many people to understand. The Eastern farmer, who has always been accustomed to a freestone peach, is apt to feel that nothing can equal the good old fruit of his boyhood days. And the housewife who has had the work of canning may agree with him.

But it is generally conceded today that clings, when canned, possess quality far superior to that found in any variety of freestone, and the other desirable characteristics, such as color, firmness and weight, are so evident that there is little fear for the future of cling varieties. This being the case, it is well to consider some of the things desired in a first-class cling peach.

DESIRABLE CHARACTERISTICS

Two factors are about of equal importance; these are size and color—not color of the outside particularly, but inside color.

The size factor, while it varies with variety, may be controlled to a certain extent by careful thinning and by adequate fertilization, irrigation, cultivation and pruning.

The importance of size can be appreciated when we consider the prices paid for peaches the past season.

Growers' contracts with canners in most cases stipulated the minimum size in first grade should be 2¼ inches. For peaches as small as 2 inches in diameter the price was about one-half as much.

For example, a number of canners paid $60 a ton for first grade clings 2¼ inches and over,, and only $30 per ton for a limited quantity that ranged between 2 and 2¼ inches in diameter.

With such a great premium on size, no one could afford to grow peaches which did not measure up to the standard.

> *Pointers for Prospective Peach Producers*
>
> OF intense interest and practical value to the established or prospective orchardist is this discussion of varieties. Mr. Weldon, who writes exclusively for ORCHARD and FARM, is an authority upon deciduous fruits. For many years he was Chief Deputy of the State Horticultural Commission. He is now Pomologist, in charge of experimental work, at the Chaffey Junior College of Agriculture, and is known to thousands of growers by his articles in ORCHARD and FARM, his books and bulletins, and his work as judge of fruit exhibits at the California State Fair.—The Editor.

The inside-color factor is one the importance of which is becoming more apparent year after year. As long as people eat with their eyes as well as their mouths, and sight plays almost as important a part as taste in determining our likes and dislikes, it is probable that a clear, yellow peach which imparts the same beautiful color to the syrup will be most popular, and a two-colored slice which imparts redness to the syrup, even though the taste with the eyes shut is as good, will never command the best market value.

The desire of canners today is for a peach which is yellow from the skin to the pit.

It may be "the trade" has gone to the extreme in demanding a clear, yellow peach. Perhaps the consuming public in general would not differentiate so closely between a solid yellow and a slightly colored slice in a can, but the grower must meet the situation as it exists.

Fortunately, with proper orchard management most of the commonly grown varieties can be made to reach 2¼ inches or more, although it must be admitted that the past season, with a tremendous crop of fruit, gave us altogether too many undersize peaches.

Valuable lessons in thinning were learned from the season's experience, and another year with a like crop would find the growers better able to cope with the situation.

Probably, among the clings, the Tuscan and Ontario (Southern Tuscan) are two of the most difficult to develop into desirable sizes, while later varieties, such as Sims and Phillips, are more apt to be satisfactory.

QUALITY IS PRIMARY

Next in importance is quality. Quality in fruits for the fresh market is one thing; in a fruit for canning, another. Some of our clings might be considered of very poor quality when eaten fresh, but when canned are of the best.

Despite this fact, those elements of quality, such as texture and flavor, are preserved to a certain extent in canning, and a coarse-grained, poor quality peach cannot be expected to come out of the can as good as one that possesses the essential elements of quality.

The future will see more work being done to develop clings of higher quality than we have at present. There seems to be no logical reason why a very high quality peach with a little redness at the pit should not be as good as a low quality peach that is solid yellow. *(Continued on Page 17)*

These Irrigated Trees Were Thirsty

But the Dawson Brothers Bought Deep-Tillage Equipment and Gave Their Orchard a Real Drink

By WALTER H. GARDNER

THERE are 20 acres of cherries and 25 acres of prunes on the San Francisco-San Jose highway that have caught and held many an admiring eye during blossom time and harvest season. These trees are owned by Messrs. T. R. Dawson and R. F. Dawson the property being commonly called "Dawson's corner."

WALTER H. GARDNER

Up to this year the Dawson brothers had never become very enthusiastic about the science of subsoiling. They had a good well and a large pump that delivered 950 gallons per minute, and they felt that in four days of irrigating under the old system they were getting into the ground all the water that it would stand. It used to take them four days to irrigate their 20 acres of cherries by the check-and-border and flood method.

This year Mr. Dawson finally decided to purchase new and modern equipment—a powerful tractor and a light draft subsoil plow with ditcher attachment.

HOW IMPLEMENTS WERE USED

The Dawson main ditch is at the north. Using the subsoil plow without the ditcher attachment, he subsoiled once east and west in the center of his rows, which are 24 feet apart, breaking the ground to a depth of 24 to 27 inches, and, at the same time, the subsoil furrow threw up a 6 or 8 inch check.

He then put the moldboard on the plow and made two cuts north and south between the rows, 9 feet from his trees, approximately the same depth as the east-and-west cut. This threw up two beautiful ditches for irrigating, at the same time subsoiling to a depth of 24 to 27 inches. This also threw up an embankment which, with the east-and-west subsoil cut, made a complete check around the trees.

The water then was turned into these ditches at the north at the rate of 950 gallons per minute. When the ditches were full, the check was broken down and the water allowed to flood around the trees. The surface thus was completely wetted, this being necessary, of course, when a cover crop is desired.

—Illustration courtesy Killefer Mfg. Co.

That great size and ample power are not always synonymous is demonstrated by this "baby" caterpillar, pulling an orchard subsoiler

WATER DELIVERY TREBLED

This last year it took twelve full days to complete the irrigation, 950 gallons per minute being delivered continuously for eleven hours a day. In other words, 376,200 gallons of water were delivered on each acre of cherries, against a former average of 112,000 gallons.

Thus by modern methods were the thirsty trees given three times as much water as in former years—water that not only was delivered down to the deep roots, but also used to saturate the surface.

From Tracy comes another story of how the subsoil plow increases the water reservoir and the root system by breaking up the hard-packed plow-pan. Fred Gerlach subsoiled old alfalfa ground that had been packed by irrigation and by the passage of mowers, rakes and hay-wagons—subsoiled until it was loosened thoroughly. This last year untreated land produced three or four tons alfalfa per acre; the subsoiled area gave ten to twelve tons!

THE BETTER WAY

The modern farmer can increase his yield in two ways: If he is satisfied to work his present acreage to a depth of six inches he must buy additional property to get a greater crop. This means additional investment and a greater expense. Is it not the better alternative to double his productive soil by tilling his ground to a greater depth at little additional expense? He can put more soil to work, increase the depth of his water reservoir, and get a bigger yield and a better product.

The invention of the subsoil plow bids fair to rival in importance the vaunted invention of the moldboard plow!

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of the
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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

Pithy Paragraphs

ARE TRACTORS PROFITABLE?

Eighty-six per cent of the tractor owners interviewed in a recent United States Department of Agriculture survey declared their machines had proved very profitable, and 96 per cent stated they intended to make more extensive use of their tractors the following season. The saving of time and labor made possible by use of the tractor was given by nearly one-half of the owners as the principal advantage of power farming.

OUR BROADENING OUTLOOK

The world is not nearly as large as it used to be—not to California producers, at least. Farm Bureau marketing agencies have developed new foreign markets for grain; a number of local agricultural leaders recently have made European tours to study methods in other lands. George C. Roeding, the veteran nurseryman, has brought many valuable plants and ideas from abroad. Carlyle Thorpe, general manager of the Walnut Growers' Association, recently returned from a four months' tour of European walnut-producing sections. Many other Californians have contributed in this way to our agricultural development.

CREDIT WHERE CREDIT IS DUE

Although a large part of the world's business is conducted on credit basis, a smaller amount of credit is used by farmers in proportion to the magnitude of their industry than by any other important class. Many economists believe the one thing necessary to stabilize National conditions and assure permanent prosperity is a better system of rural credit. President Harding emphasized this point in his recent message to Congress. It is generally believed that the relief afforded farmers by the re-created War Finance Corporation was what saved the Nation from a financial breakdown during 1921. The farmers now are after better permanent credit facilities—and will get them!

FRUIT GROWERS AND FARMERS' CONVENTION—Director George Hecke of the State Department of Agriculture issued the call for the 55th California Fruit Growers and Farmers' Convention, held at Sacramento, December 12, 13 and 14. Among important problems discussed was "Transportation." Growers are determined to work out some plan whereby the scrambling for cars which characterized the 1922 shipping season may be avoided in future. The methods resorted to by some shippers to obtain "empties" for loading their fruit were said to be without precedent in the annals of California fruit growing. Every one interested in agriculture who possibly can be present should attend these helpful, interesting conventions.

ONLY ONE CALIFORNIA

Agriculturally, Northern, Central and Southern California are "pulling together" as never before. This is as it should be. There is only one California. ORCHARD and FARM purposes to serve the whole of this great and wonderful State. Petty jealousy and friction help nobody and injure those responsible for the discord. To tell the farmers and "little landers" of one community about the plans, accomplishments and new discoveries of their fellow-producers in other communities is our idea of service. "One for all; all for one."

"What's New?"—Keeping Abreast of Agricultural Progress

Wire Is Replacing Props

BUTTE COUNTY orchardists are discarding props and tying tree limbs together with wire. One grower who lost a number of large propped branches by breakage in 1921 saved every wire-tied limb in 15 acres the past season.

Why Peach Pits Burst

PROF. P. A. BONCQUET, Tulare County horticulturist, is of the opinion that the bursting of peach pits is caused by low vitality in old trees affected with heart rot, having never observed this trouble with fruit grown on young, vigorous trees.

Sunflowers Fill 100 Silos

ONE HUNDRED Wallowa County, Ore., silos have been filled with Mammoth Russian sunflowers the past two years. Sunflower silage has been found to compare favorably in feeding value with corn, and the crop stands frost and dry weather better. For these reasons it is being grown in increasing quantities in eastern Oregon.

Whiting Chisels Alfalfa

THAT D. J. Whiting of Exeter greatly improved his alfalfa field by chiseling the soil to a depth of six to fifteen inches, effectively breaking up the plow sole, is the testimony of this progressive producer. The work was done when the ground was moist, but not wet. If too wet the ground will settle together and the good effects of the operation will be lost, while of it is dry a needless amount of power will be required to pull the chisels, Whiting points out.

Kill Snails With Alum

COMMON garden snails have been doing considerable damage to both foliage and fruit of citrus trees in the Downey-Rivera district, where the pest is found over approximately 250 acres. The county horticultural commissioner has conducted a number of experiments to determine the best methods of killings snails. The most satisfactory results have been obtained with finely powdered alum sprinkled over the foliage. This treatment costs 15 cents a tree, the investigators report.

Supplies Cheap Grape Vines

FROM its collection of 380 varieties of grapes, the U. of C. experimental vineyard at Davis sells cuttings for a nickel apiece; rooted cuttings, 15 cents; rooted grafts on phylloxera-resistant stock, 25 cents. Of most kinds only a very small number of vines are available, these being sent to the first applicants. Lower prices are made on large lots of those varieties of which there is a liberal supply. In this manner the University is securing wide distribution of improved varieties, and enlisting the co-operation of growers in experimental work.

Plant Vetch With Oats

A LARGE acreage of mixed vetch and oats was planted for dairy feed in Sonoma County last year, producing a crop of hay which was highly satisfactory. The admixture of vetch greatly improved the quality of the oat forage, with the result that dairymen planned to plant a larger acreage of this excellent legume. Owing to a short crop of vetch in Oregon, the chief source of seed, the supply of the latter was very limited. For this reason some farmers substituted Canadian field peas, sowing 40 pounds per acre with half the usual amount of oats. The best time to sow this crop is early in the fall, which gives the oats plenty of time to stool.—Mrs. G. B. Rodd.

Fresno Feeds Boys Milk

FRESNO has been trying a unique experiment in the use of milk to improve under-nourished children. Several luncheon clubs, including the Rotary, Kiwanis, Science and Lion's, each sponsored a group of boys who had been examined by Dr. Nell Clark, city physician, and found to be below par physically. A dietetic regime was prescribed by the physician and the clubbers made it their business to see that the directions were followed. Prominent among the foods ordered was a quart of milk each day for every boy.

The boys were weighed each week and at the end of six weeks the club whose boys made the greatest gain was tendered a banquet by the losing clubs and each of the winning boys given a prize. One boy gained eight pounds in four weeks. The contest closed the week of the dairy show, one of the notable events of which was the banquet and prize awards. This is one example of the interest in milk products created by intelligent publicity work on the part of organized dairymen.

Why Pomegranates Split

AUGUST MILLINGHAUSEN, whose ranch is located near Springville, believes that the splitting of pomegranates is due to drouth, not irrigation, as is commonly supposed. If the "pomes" are kept well watered all season they will not split he has found, but if they are allowed to dry out and then are irrigated, the fruit is likely to be badly damaged in this manner. Pomegranates weighing a pound apiece and measuring five inches in diameter were raised by Mr. Millinghausen the past season. Six acres yielded 625 packed boxes of fruit, which was sold by the Lindsay-Strathmore Pomegranate Association. The first returns were $2.85 per 35-pound box. This was the finest lot of pomes handled by the association, containing very few spits.

Prune Frosted Trees With Care

"THE old theory that frosted fruit trees should be severely pruned must be discarded," declares W. R. Schoonover, extension specialist of the U. of C., who recently inspected test plots of frosted citrus groves at Upland and Alta Loma.

Prof. Schoonover believes trees which have been injured by freezing need all their live, leaf bearing branches for recuperation purposes. Serious damage has been done to many frosted groves by too early and too severe pruning, according to this authority, who advises postponing future pruning until next spring.

Building up the soil by growing and plowing under cover crops and by the addition of fertilizer, especially humus, is the crying need of the average California citrus orchard, says the extension specialist.

Would Restrict Hunting

THE Tulare County Cattlemen's Association, said to be the largest and most active organization of the kind on the Pacific Coast, is seeking State legislation prohibiting the use of dogs by deer hunters. The stockmen ask also that the opening of the deer hunting season be postponed two weeks and that each hunter be limited to one buck per season.

It is claimed that dogs run cattle in the hills during the grazing season and that the fire of hunters is thereby drawn, sometimes resulting in the killing of cattle. Fires often result from early hunting, stockmen say, destroying both grass and timber. If the hunting season were postponed two weeks it would include more of the rainy season and thus lessen the fire hazard from this source.

Tulare cattlemen intend to ask also for the construction of special driveways from grazing lands to shipping stations, believing this improvement is needed on account of the great number of cars using the regular highways, which renders extremely difficult and dangerous the moving of large herds to market.—Floyd Lynes.

Second—and Final—Notice

Win a Cash Prize

FIRST PRIZE	$25
Second Prize	15
Third Prize	10
Fourth Prize	5
Five Prizes of $1 each	5

"WHAT I THINK SHOULD BE PUBLISHED IN THE NEW WEEKLY ORCHARD AND FARM SECTION"

The Editor wishes to hear from the great new family of readers who receive this publication.

What kinds of articles and pictures do you think should be included in order to make the ORCHARD and FARM section most helpful and interesting?

Cash prizes will be awarded for the best letters of not more than 1000 words on the above subject.

All letters must be postmarked not later than December 25. Contestants are urged to make as many specific suggestions as possible. Only one letter may be submitted by each contestant. Write on one side of paper and give full name and address.

A committee of disinterested judges, whose names will be announced later, will select the winning letters. You may win $25 with practically no effort. Write your letter today.

Address: ORCHARD and FARM Editor, Broadway at Eleventh, Los Angeles.

Suggestions for the Farm Handy Man

Wooden Cow Manger

THE bottom of a cow manger should be on a level with the cow's fore feet. For hundreds of years cows have fed with their noses to the ground. The flow of saliva then is toward the mouth in the natural way.

The posts, as shown, are 6 inches square, set 4 feet apart, set into the concrete floor. These posts may support the overhead hay floor.

The chain cow-tie is clean and sanitary. It is snapped into rings which play up and down along the iron rods on the posts as the cow raises or lowers her head when feeding and when she lies down and gets up.

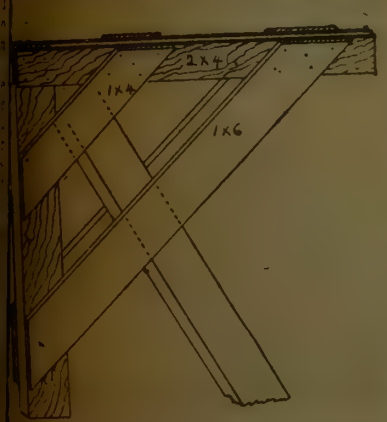
The neck chain is snapped into the cross-chain to fit the cow's neck. The post irons must be offset and carefully rounded at the upper and lower ends to permit chains to play easily up and down without catching at the corners.

This cow-tie permits a good deal of freedom, while preventing the cow from moving sidewise or backing into the gutter.—HERBERT A. SHEARER.

Scaffold Bracket

IT pays to make building brackets before setting up the studding.

The scaffold-supporting bracket shown by the drawing is the most



practical for the smaller wooden buildings because it is not fastened to the building, and may be raised or lowered by moving the foot of the supporting leg in or out as becomes necessary.

The bracket is made by mortising or halving two pieces of 2 by 4 scantling together as shown; the upright and horizontal pieces are about four feet long for a small building. For the larger structures it is better to make them five or six feet. The short corner braces are made of 1 by 4. The longer braces should be 1 by 6.

The long leg is 2 by 4 or 2 to 6, according to the height of the building and the weight the scaffold will be required to support.—HERBERT A. SHEARER.

Why a Farm Blacksmith Shop?

FARM implements require repairs frequently, and storage when not in use. The life of a farm implement, when given good care, is about ten years. This means the yearly depreciation is 10 per cent of its cost. But if machinery is left out in the weather from one season to the next, the loss is double.

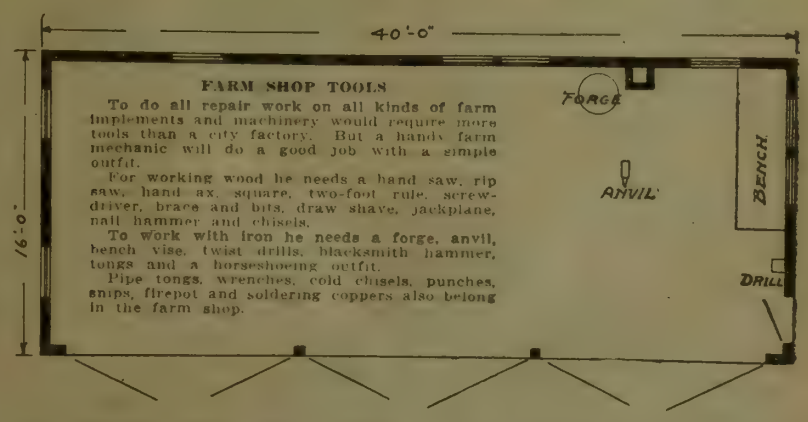
Figuring upon this basis, a machine costing $100 must earn $10 per year in order to pay the actual cost of ownership. To this we must add annual interest on the purchase price. Then comes the cost of upkeep, which varies according to the care and the intelligence of the operator when the implement or machine is in use.

The greatest cost or loss comes when tools are out of order when the time comes to plant or harvest the crop, and no system of cost accounting is broad enough to square the extra value of quick action against loss of yield.

The remedy is prevention, and the first aid is a simple repair kit, consisting of forge, anvil and vise, together with the necessary small tools to make repairs and to replace badly worn parts.

The blacksmith shop, to commence with, may be the gable end of the building here shown. Build the first section 16 feet square, but lay out the ground so as to extend the building later. It will add much more than its cost to the value of the farm.

When an implement has finished its work in the field, haul it to the shop before unhitching from it. At the first opportunity have it cleaned, oiled, painted and put in perfect repair to be ready for use when needed. All the labor and cost is not expense; it is in the nature of investment that will return dividends.



The building should have a good concrete wall, six inches wide, made level on top, with suitable footings at the back and the ends of the building. In front, a wide bridge, made like a sidewalk, is better. The blocks should be four inches thick. The bottom may be made rather poor; say, one part cement to five parts good, clean gravel. The top inch should be one to two or one to three of cement and sand, put on before the first layer becomes dry on top, in order to secure a good band.

Use dressed lumber for the superstructure and give it three coats of good paint, using a light tint, preferably light gray. Avoid yellow and pink. Red brick is not objectionable if it matches other buildings.

LARGE WINDOWS DESIRABLE

Put in plenty of good windows, three feet wide by four feet high, double hung. There is nothing better than this type for either shop or house. If possible, have the building face the south. The vise bench windows then will look to the east, which is the best light for bench work. And the big doors will let in the sunlight, to brighten the whole floor space.

The roof is shaped for strength to brace the building. The front is all doors, and the doorways must be free from braces or other obstructions, to admit the entrance of a threshing machine or binder under full sail, or a load of hay. Therefore, the bracing must be done by forming triangles with the rafters, collar beams and joists. Diagonal braces placed between the studding and on the under side of the rafters also are necessary in order to make a strong building

The shape of the roof adds to the appearance of the building; it marks the difference between a shed and a real structure.—HERBERT A. SHEARER.

A Farm Granary

THE pressure on the sides of a grain bin is practically the same as the weight on the floor at the same depth, of grain that is stored in the bin.

Wheat weighs about 50 pounds per cubic foot; therefore, we must estimate the side pressure at 50 pounds per square foot multiplied by the height of the sides of the bin.

Therefore, a wheat bin 20 feet deep would have a side pressure of about 1000 pounds per square foot at the floor level.

The drawing, Fig. 1, shows the corner of a grain bin built up by spiking 2 by 4 scantlings flat together with locked corners.

The upper part of the bin may be made of 3 by 4s or 2 by 4s placed on edge.

Fig. 2 shows the foundation, wall and floor of concrete, and the way to bolt the framework to the wall.—HERBERT A. SHEARER

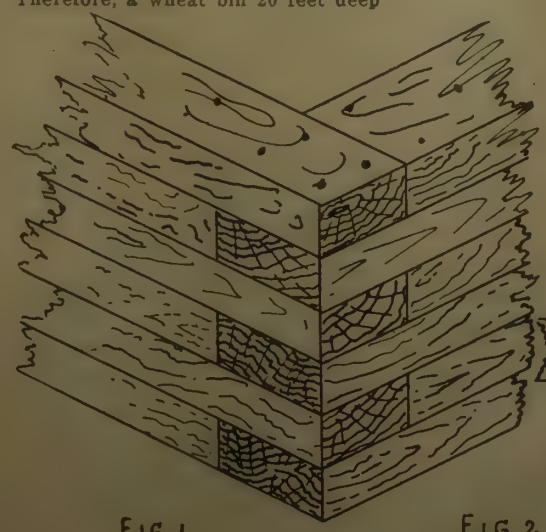


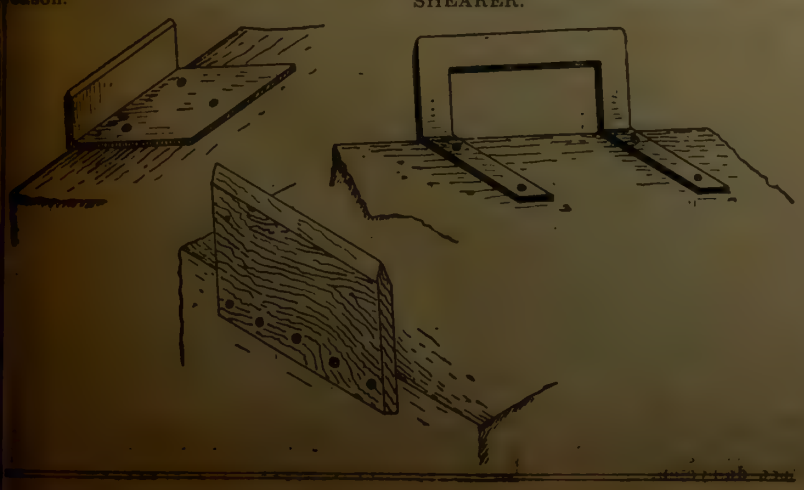
FIG. 1 CORNER

FIG. 2 SECTION OF WALL

How to Make Handy Mud Scrapers

ANY one of these boot scrapers, fastened to the door step, would save the good housewife a great deal of floor-cleaning during the rainy season.

The irons may be picked up in any old scrap-iron yard, or they may be found in the blacksmith's shop or village garage.—HERBERT A. SHEARER.



Quality Plants Bring Him Success

A California Grower Who Has Beaten the Japs at Their Own Game—Buyers Pay a Premium for His Particular Products

LAST summer ORCHARD and FARM printed a story of an Oregon gardener who has built up a yearly business of $30,000, yet remains in the work because he likes to see things grow. L. C. Johnson, the Pomona plant propagator, also is that kind of a man. To him it is a perennial source of joy to grow plants, which thrive for him exceedingly well—probably because he loves them and gives them the same tender, watchful care which other people bestow upon children and animals. For him it is positively painful to see a plant suffer for lack of food, moisture or sunlight.

HOW TO BEAT THE JAP

"The Jap succeeds by hard work, and lots of it," declares Mr. Johnson. "He and his family work all day and half the night. Americans can beat him at his own game of growing vegetables by the exercise of superior intelligence and initiative, coupled with hard work. Plenty of elbow grease is absolutely essential to make the gardening car go."

When Mr. Johnson came here from Colorado twelve years ago he had much to learn about California gardening. He first located on a tract of low, flat land near the coast, where root crops rotted in the ground and tender plants froze until the middle of April. After a few years he moved back from the ocean about thirty miles, locating at Pomona, where he found excellent soil and climatic conditions for his purpose.

"Vegetable plants for transplanting need a dry climate, and when they are grown in the early spring no artificial watering is necessary," says Johnson. "Good tomato plants are so 'limber' they can be tied in a knot without breaking. A number of them which were obtained of a coast grower were so full of sap that they did not stand transplanting well, causing much complaint. I have decided hereafter I shall sell none but plants of my own growing."

HOW TOMATOES ARE HANDLED

Tomato plants are pulled when the ground is dry, and the tap root is broken off. They are tied in bunches of fifty and packed with "spagnum" moss in shallow boxes, with newspapers folded between each row of bunches to allow circulation of air. It requires two nights and one day for plants to reach Salt Lake Valley, Utah. Last February, when tomato seed was sown, orders for only three-quarters of a million plants had been received, yet four million plants were raised and sold, and orders received for two million more. Other growers had plants which they could not sell,

L. C. Johnson and some of his prize winners

which proves that it pays to be particular. Johnson says he never sells a plant which he would not himself set out.

The "Earliana" variety is recommended for the first crop and "Stone" for all other plantings. In setting plants in dry soil the roots first should be puddled by dipping in water and then sprinkling with dry soil. Set the plants deep, up to the first leaves, in a hole made with a sharp stick. A 15-inch piece of an old broom handle makes a good setting instrument. Johnson advises shooting the man who advocates setting tomato plants with a trowel or dibble.

Following are some practical pointers on vegetable growing gleaned from the veteran propagator:

Tomatoes thrive best in rich, moist soil, but do not need irrigating as much as cultivating. The leaves, as well as the roots, absorb moisture, and for that reason sprinkling is sometimes beneficial. Blight and wilt have destroyed millions of dollars' worth of tomato plants in the Atlantic States. A Government agent at Riverside is experimenting in the control of these diseases.

The most valuable gardens in Southern California are planted in the fall, consisting of such hardy vegetables as cabbage, cauliflower, radishes, turnips, beets, carrots, parsnips, spinach, peas, lettuce, endive and kohl rabi. Mustard makes a good substitute for spinach. Seeds of the latter should be soaked over night. Don't plant melons, pumpkins, squashes, tomatoes, cucumbers, peppers, beans, eggplant and roselle at this time of the year, Mr. Johnson warns.

He is a great believer in the most intensive gardening methods. Deep plowing, thorough cultivation, heavy fertilization and ample irrigation are strongly advocated. Close planting also is practiced. Instead of setting watermelons, pumpkins and squashes eight or ten feet apart each way, Johnson puts them four feet apart in rows seven feet apart. Muskmelons and cantaloupes are planted three by six feet, some varieties even closer. Instead of growing cucumbers in hills, they are drilled in rows four feet apart and the plants thinned down to twelve inches.

A large seed farm sets eggplants and peppers three feet apart in rows four feet apart, which is at the rate of 3630 to the acre, but Johnson grows them one and one-half feet apart in rows two and one-half feet apart, which gives 11,600 to the acre, or three times as many. Of course, it takes more fertilizer and more work, but the irrigation is easier, as water will spread to all the plants from a single furrow between the narrow rows, which it will not do when the rows are four feet apart.

As to the comparative value of fertilizers, Johnson believes that one ton of good commercial fertilizer is worth two tons of chicken manure, four of dairy droppings and eight from the horse barn. Nevertheless, he is convinced that there is nothing that will take the place of good, well-rotted barnyard manure, for the latter loosens up the soil and restores the humus content, which is very essential.

Johnson has found a good vegetable fertilizer valuable, this having an effect similar to that of wood ashes.

He Turned Down Orders for Two Million Plants!

WHEN L. C. Johnson came to California a dozen years ago he was much concerned over the prospect of Japanese and Chinese competition. But after looking over the field he decided he could beat the Asiatics at their own game. He grew such good vegetables that he was soon swamped with orders for plants, the growing of which is now his principal business. Last spring he sold more than $7000 worth of tomato plants to Salt Lake Valley (Utah) growers and had orders for two million more. **In the accompanying interview he tells some of the things he has learned about growing vegetables.**

Irrigation, he points out, tends to bring the alkali to the surface in too large quantities. Cultivation should be substituted, as far as possible, for irrigation.

A half-dozen years ago Johnson rented an old, run-down peach orchard. Some of the trees had died and new ones had been set in their place. The land was closely planted to vegetables and given the best of cultivation, irrigation and enrichment. "I finally got the soil in such shape that those old, snaggle-toothed trees could digest it without much chewing, and it did me good to see them smile as they dined. All but one, which died, gave good returns."

Mrs. Johnson accuses her husband of talking to his plants. He admits that he is very much attached to them. "Plants have life," he says, "and some of them have eyes and ears. They respond very readily to kind treatment and seldom fail to reward me richly for all the care bestowed upon them."—O. H. BARNHILL.

Persimmons Growing in Popularity

Part II—Pollination—Varieties—Problems Remaining to Be Solved

By ROBERT W. HODGSON

THE trees should be set from 18 to 20 feet apart, depending somewhat upon the variety, some being more spreading in habit than others. The care of a persimmon orchard does not differ to any extent from the care of other deciduous orchards. Irrigation, as well as cultivation, should be governed by the needs of the trees and existing soil conditions.

Pollination Discoveries

IN the United States, as well as in Japan, it has frequently been reported that persimmon trees often fail to set fruit, although a large amount of bloom is produced. On painstaking investigation it has been found that the persimmon bears two distinct kinds of flowers, the male and the female, and certain varieties must carry both, either on the same tree or at no great distance from each other, if fruit is to be set.

Others will set fruit if no male blossoms whatever are borne, the fruits being seedless, but if male flowers are produced the fruits contain seed. In certain varieties, whether seedless or not, the flesh is always light colored and these varieties are called Pollination Constants.

In others, known as Pollination Variants, if the fruit contains seed, the flesh is dark; but if seedless, it is light colored. Until cleared up by investigation these confusing facts made it almost hopeless to distinguish between different varieties, or to identify the same variety under different conditions.

Typical fruit of Tsuru persimmon. Usually seedless and always light fleshed. (Photo by Dr. J. E. Coit)

POLLINATION PROBLEM

The pollination problem, however, does not appear to be as important in California as in either Florida or certain parts of Japan. The Hachiya variety, which is generally regarded as the best of all, has been found to be normally fruitful under California conditions without cross pollination. No special difficulties along pollination lines have been reported from any of the other varieties grown in this State.

Most varieties must be allowed to ripen until all astringency is lost before they are edible. When they reach this condition, they are so soft as to be impossible to ship any distance. At present this difficulty is met by picking the fruit while still firm and hard, but sufficiently developed and matured so that it continues to ripen in transit and storage. If picked too soon, however, instead of ripening, the fruit shrivels and wilts and is worthless.

The Japanese for years have been practicing a method of treating hard, firm astringent persimmons so that the astringency is removed, and the fruit is of excellent eating quality, while still firm. This method is to enclose the persimmons in an airtight sake cask which has but recently been emptied. The alcoholic fumes act upon

the tannin and render the fruit non-astringent without destroying its consistency. In 1905, George C. Roeding, prominent Fresno nurseryman, first artificially ripened the persimmon in California by this method and with very satisfactory results. Since that time a number of methods for artificially ripening the persimmon have been perfected. It was found that merely subjecting them to an atmosphere of carbon dioxide for several days will result in the loss of astringency, and several other methods are now known.

Non-Astringent Varieties

MORE recently it has been found that there are a number of persimmon varieties, the fruit of which is normally non-astringent. Some of these varieties when seedless are found to be astringent, while others are always non-astringent. The non-astringent fruits may be eaten out of hand when as solid as an apple and are very good indeed. Among the best known of such varieties is the Hyakume, a variety now planted somewhat in California and deserving of greater popularity on account of its regular habit of heavy yielding.

Another variety now receiving considerable attention and appearing to be decidedly promising is the Fuyu, which is always non-astringent, and in addition has light colored flesh. The Tamopan, a peculiar shaped, large variety, originating in China, is reported to be non-astringent in some districts but decidedly astringent in others. This variety has a characteristic form resembling two fruits of different size which have joined together.

Varities of decided prominence which should be tested under California conditions include the Fuyu above mentioned, the Gosho, and a very large variety of unusual attractiveness, the Miyotan and Godbeys Seedless. Trees of these varieties have been fruiting at the Plant Introduction Gardens at Chico for a period of years, and warrant further plantings over the State at large.

The persimmon is a fruit great in nutritive value, running much higher in sugar content than such fruits as the apple, peach, apricot and nectarine. It is rather to be classed with the fig and prune in this respect, containing nearly 20 per cent of sugar.

Lucrative Returns

UNDER California conditions the Japanese persimmon has proved to be an unusually heavy bearer. Thinning undoubtedly will be necessary in many districts if fruit of large size is to be secured. Among the most important practices which thus far has been largely neglected is that of propping in order to support the heavy load of fruit which the trees normally carry.

A good persimmon tree may be expected to yield 400 pounds of salable fruit. Planted at the rate of 100 trees to the acre, with an average yield of 400 pounds per tree, the acreage production would be 20 tons, or considerably heavier than the average of canning peaches produced in the best districts. That such yields are not out of the question is well evidenced by many cases on record. The writer knows an orchard of four-year-old trees that last season produced a ton of fruit to the acre.

One of the original trees of the Maru variety in Placer county one season bore 800 pounds of fruit. Yields of 250 to 300 pounds of fruit on seven- and eight-year-old trees have been reported from several sections.

During the past five years prices received for the fruit have been very satisfactory, averaging in excess of five cents a pound. One grower during the present season for unusually high quality fruit of the Hachiya variety received 12½ cents per pound on the trees. Growers in the Placer County District for the past five years have averaged better than $1.50 per twenty pound box, f. o. b. cars at the closest shipping station.

ALMOST FABULOUS YIELDS

At these prices it can be seen readily that the returns from bearing orchards at the present time compare favorably with any other fresh fruit crop produced in the State. One grower reports a net return of $1380 from one and one-half acres of thirteen-year old trees. When plantings become more extensive, unquestionably average prices will drop somewhat, but even at three or four cents a pound the returns will be sufficient to warrant a considerable acreage being devoted to this crop. With a possible average yield of fifteen tons to the acre, at a price of four cents a pound, the gross returns would be $1200 per acre, a figure which seems almost fabulous but still checks up closely with returns reported during recent years.

Problems Still to Solve

AS is to be expected in any young industry, many problems remain for the investigators to solve. Among the most important of these is the question of causes of alternate bearing. Practically all of the principal varieties show a pronounced tendency to a heavy crop one season and a light crop the next. In all probability intimately associated with the solution of this problem is the question of pruning.

Since the fruit is produced on one-year-old wood, the pruning must be done carefully or the chances of a crop are materially reduced. It appears probable that a combination of thinning and pruning may solve the problem of alternate bearing.

Further studies in pollination also are necessary, since the ideal is a seedless persimmon. It is not definitely known as to whether all varieties will set fruit under California conditions without pollination, although it is fairly well established in Southern California districts that the Hachiya variety will do so.

The marketing problem doubtless will require attention in the not distant future. Indeed, a movement is already under way looking toward the organization of a persimmon growers' marketing association, under the cooperative plan. A preliminary meeting for this purpose recently was held.

Considering the prospects, the writer decidedly feels that a few years hence California will have a well-established persimmon industry, involving a considerable acreage and returning to the State many hundreds of thousands of dollars.

Peach Growers Prune Profits

IN 1915 it cost five cents a pound to produce dried peaches in California, yet growers received but three cents. Growers then organized, with the result that the price received has been increased to six cents, while the cost to the New York consumer has been reduced from 17 cents to 15 cents in the same period. This shows that better prices for the producer do not necessarily mean higher cost to the consumer, but more just and equitable prices for both. With a diminishing crop of about 23,000 tons and a maximum annual consumption of about 37,000 tons, California peaches offer attractive inducements to the Golden State horticulturist.

WHO LIKES CANNED FIGS?

Montana, Pennsylvania and New York are the States most cordially welcoming canned fresh figs.

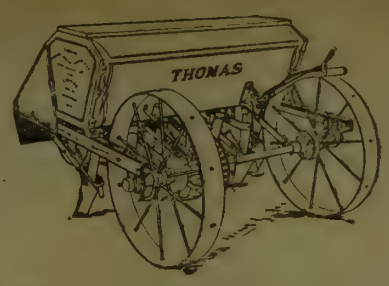
Feeders Take Fertilizer

THE high price of alfalfa and other hay is causing cattle feeders to substitute bean and grain straw, to a certain extent. The result is higher prices for the latter materials, making it difficult for citrus growers to obtain them for fertilizer purposes. But on the other hand, much low-grade or damaged alfalfa has been used for fertilizing orchards.

BORERS INJURE SYCAMORES

Flatheaded borers sometimes attack sycamore trees where the trunk has been sunburned. They should be dug out, the injured wood and bark removed and the wound covered with asphalt paint. Whitewashing the trunk is recommended as a preventive of sunburn. Adding salt to the whitewash makes the latter stick better.

Thomas Orchard and Vineyard Fertilizer Drill



Made in three sizes—7, 9 and 11-hoe. Each hoe 7 inches apart. Will handle all kinds of commercial fertilizer. Will drill vetch, peas, oats or barley for cover crop without any change in the feed.

Drill is covered with sheet steel shield which protects small fruit and blossoms. Only 38 inches high. Made for California conditions. What you need to get full benefit of fertilizer. For prices and name of your dealer write or telephone.

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We Guarantee 100% Fertility in All Hatching Eggs

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We are now booking orders for hatching eggs and baby chicks from Emerson & Martin exhibition White Leghorns; also the heaviest egg-laying strains in America and England. It will pay you to arrange for yours now. Make a 10% payment and know that you will have them when you want them.

Our heavy commercial egg-laying hens are mated up to males from Emerson, Martin, Tancred, Hanson of Oregon, Hollywood Farms of Washington, Barron, Ferriss and Hillview Farms of Illinois. Why don't you arrange for some of each? Let us toe-punch the chicks and see which produces the type of hen you like best.

HATCHING EGGS—From Nov. 1st to April 1st. 15 for $2; in 100 lots, 12c each; in 500 lots, 11c each; in 1000 lots, 10c each.

BABY CHICKS—January, February, March. In lots of 100, 25c each; in lots of 500, 24c each; in lots of 1000 or over, 23c each.

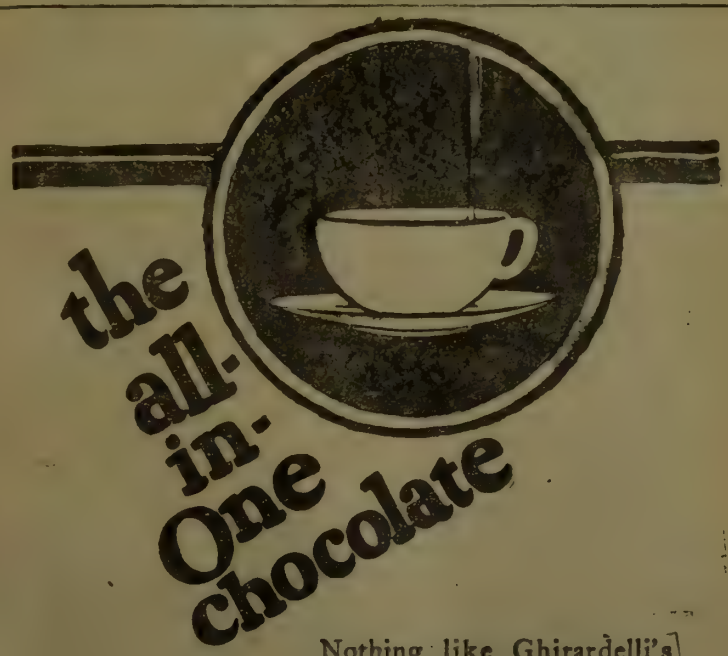
We Always Have Three, Four, Five and Six Months Old Pullets from Pedigreed, Trapnested Stock.

The California White Leghorn Breeding Farms

LANKERSHIM, CALIF. R. R. 1, Box 277.

Located three miles north of Lankershim, on Lankershim Blvd., then two blocks west on Tulare St. (Tulare St. is the first street north of S. P. tracks.)

You are welcome on our farms any time. Go north through Lankershim on Lankershim Blvd. to Tulare St., turn west. You can't miss it.



Nothing like Ghirardelli's Ground Chocolate to give you a smooth, rich, satisfying beverage. But it doesn't stop there. The same uniform richness that makes Ghirardelli's "work out" so smoothly in the cup makes it work out in the oven. Use it for *all* your baking and cooking! It is the all-in-one chocolate.

Say "*Gear-ar-delly*" and send for recipe booklet—free!

D. GHIRARDELLI CO.
Since 1852 San Francisco

Ghirardelli's Ground Chocolate

Road Closed!

MOTOR out on any highway in any direction. See how far you can go before you hit the familiar sign, "ROAD CLOSED," or a stretch of corrugated "bump-the-bumps." Are you content with these car-deteriorating, nerve-racking roads?

YOU—AS A TAXPAYER—PAID FOR and expected permanent, good roads. Why didn't you get them? Do you want to know why the roads you bought are not the roads you wanted? Why they wear out before the bonds are paid? Do you want to know the reason and the remedy? Without cost or obligation to you, let us send you the interesting booklet, "THE TAXPAYERS' ROAD." Write for it today.

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Just one of my fence products. "Monarch" is my cut stay or hinge joint type of hog and field fence, scientifically constructed from best grade of open hearth steel. Stays and strands made from full gauge, perfectly galvanized wire. Known by farmers as "the fence with a perfect hinge"—the knot is neat, compact and flexible, and will not slip with the fence under proper tension.

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An interesting book full of valuable information that every farmer should know. Get my prices, compare the quality of my products, become acquainted with my personal service. I can save you both time and money.

Harry Baylies, "The Fence Man"

447 Pacific Finance Bldg., Los Angeles, Cal.

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"OILINESS"~what it means to trucks & tractors

"'Oiliness' is the ability of a lubricating oil to cling evenly to bearing surfaces, at the same time offering in itself a minimum of frictional resistance."

— *Board of Lubrication Engineers.*

"Oiliness" in engine oil can't be seen — but is *felt* when your tractor steps into full-rated draw-bar pull — is *heard* when your truck engine hums along with heavy loads.

Zerolene has "oiliness." It clings to bearing surfaces evenly, and at the same time splashes freely — you get *all* the power the engine is rated to deliver.

Stability — Purity

The ideal truck or tractor oil must penetrate easily the smallest bearing clearances at all operating temperatures — and it must have stability. Zerolene penetrates, and has the stability to resist engine heat.

The unexcelled purity of Zerolene results in a harmless deposit of carbon of a soft, flaky nature, most of which is blown out with the exhaust. Zerolene minimizes engine troubles and assures longer useful service for your equipment.

Consult the Zerolene Correct Lubrication Chart for the correct grade for your truck, tractor or automobile.

STANDARD OIL COMPANY
(California)

The Standard Oil — ZEROLENE — For Motor Cars

more power & speed ~ less friction and wear ~ thru *Correct Lubrication*

Blue Ribbons or More Eggs?

A Poultry Ranch "de Luxe," Where Utility and Show Standards Mingle

By O. H. BARNHILL

(See Illustrations on Opposite Rotogravure Page)

THERE are two schools of poultry breeders; those who mate principally with an eye to the show pen and those who ever keep in view the egg basket. Neither obtains results which are entirely satisfactory. Prize money is all right as long as it lasts and makes possible the selling of some stock at fancy prices; the final proof of the poultry pudding, however, is found in the nest. Birds pronounced perfect by poultry judges often fail to deliver a profitable quantity of goods which can be sold at so much per dozen.

On the other hand, matings made entirely by trap-nest records do not always produce progeny that does honor to ancestors, as was clearly pointed out by Prof. Jas. E. Rice, the premier poultry advocate of Cornell University, during his recent visit to the Pacific Coast.

D. C. Summers, manager of the California White Leghorn breeding farms, believes the best way to obtain poultry perfection is to make matings on the dual basis of trap-nest records and individual characteristics.

METHODS OF BREEDING

"It's this way," explained Mr. Summers, taking a magnificent rooster upon his knee. "There are various types of heavy laying hens, some of which differ materially from others. If matings are made in the office on the sole basis of egg production, individuals of the same type may be brought together. This tends to produce extreme, unbalanced birds of lessened vitality and poor egg production. Nature abhors extremes, and ever strives to restore the balance. That's why a large man generally loves a small woman and the tall and short so often marry.

"Take this fine bird from the Emerson flock. Note his great length of body and oblong shape, and see how the tail slopes gradually from the back. That Tancred rooster yonder is built upon different lines, being short and stocky, with a tail sticking straight up, like a squirrel. Tancred says he doesn't care how chickens hold their tails as long as they lay plenty of eggs. Neither do I, but when types get too extreme the stock tends to 'run out.'

"We breed the various types in order to suit all kinds of customers, but in all our breeding we strive for the American standard of perfection and the heaviest possible egg production.

Heavy laying, long-bodied Emerson hens, mated to stocky Tancred roosters from hens with high egg records will produce better birds than when individuals of the same type are crossed. This, of course, is an illustration of a general breeding principle and is not to be taken literally or followed blindly.

"When I bought the McConnell and Emerson flocks," Mr. Summers continued, interfering in a free-for-all fight among a bunch of pugnacious young cockerels, "I made the owners agree to give me the benefit of their acquaintance with the various individuals and blood lines of which their flocks were composed. Scientific breeding means a great deal more than crossing heavy laying strains of long hens with short roosters. It is essential to know the history of each feathered family and to become intimately acquainted with the 'personal' traits of each bird.

MUST LOVE WORK

"Poultry breeding is really a fine art," he concluded, gazing reflectively over his feathered flocks to the distant mountains. "In order to attain the great success a man must have a natural love for chickens and a genuine heart interest in his work. It is surprising how many human traits a hen possesses. I find it intensely interesting to mould living creatures into ideal forms, eliminating poor points and developing desirable characteristics."

Mr. Summers came to California last February from Missouri, where he had twenty years of successful poultry experience, and is developing one of the largest and best chicken breeding farms on the Pacific Coast. It is located 16 miles north of Los Angeles on the Lankershim boulevard and consists of 40 acres of San Fernando Valley soil, which is a light sandy loam, ideal for poultry.

Three thousand happy hens, multitudes of males and many promising pullets make their home here among the shady apricot orchards and green alfalfa fields. A battery of big incubators will turn out 20,000 baby chicks every three weeks during the hatching season. Last spring, when the farm was just being developed, 2500 chicks were advertised and 5800 sold, which indicates the strong demand for the progeny of prize winning, heavy laying hens. Arrangements are being made to increase the enormous incubator capacity 50 per cent.

CAREFUL BUYING CUTS OVERHEAD

The business end of the farm is very capably managed by A. O. Eckman, who has saved as high as $6 to $8 a ton on cash grain purchases and in many other ways contrived to keep the overhead expenses down to reasonable proportions. One of his main ideas is to give customers a square deal, regardless of trouble or expense. In line with this policy all hatching eggs sold are guaranteed 100 per cent fertile.

Many poultrymen are handicapped in their operations by lack of capital. Messrs. Eckman and Summers are fortunate in having sufficient funds to buy all the thousand dollar hens they need, an ample supply of the very best birds for breeding (paying as high as $150 for a single extra fine specimen), and the very best equipment for hatching, brooding, breeding and feeding all their stock. The entire plant represents an investment of $100,000, and those who are familiar with poultry establishments consider it well worth the money.

VISITORS PAY COMPLIMENTS

W. C. De Lapp, the Pasadena poultry expert and writer—who has spent ten years judging and culling California chickens—pronounces this the best flock of White Leghorns he has ever "met up with," both from utility and show standpoints. He considers the equipment the best and the management par excellence, a compliment which caused Mr. Summers to turn as red as his roosters' combs.

The visitors' book contains many other nice things about the Eckman and Summers farm. B. R. Holloway of Van Nuys, who is well known in the poultry world, pronounces his neighbors' housing, breeding and stock "A-1." From the other side of the world came A. Watson of Auckland, New Zealand, saying, "It is a pleasure to look at the wonderful method of caring for this, the best flock of White Leghorns I have ever seen."

The entire Rancho Del Martino and Emerson flocks—which have won most of the premiums at California chicken shows—were taken over, together with large drafts from several other prize flocks, including the Tancred and Hollywood farms of Washington, Hanson of Oregon, Ferris of Montana, Hillview Farms of Illinois, Pennsylvania Farms and Tom Barron of England, have contributed. "The best blood lines in the feather kingdom" is the motto adopted.

IDEALS BECOME REALITIES

Neatness, cleanliness, system and regularity are the outstanding characteristics of this big breeding plant. Other poultrymen's ideals become realities here. As many as 1500 baby chicks are successfully brooded in single rooms, which are provided with "International" hovers and "Krosky" stoves. The latter burns distillate which is supplied from 15 gallon tanks placed outside the brooder rooms, so that they can be quickly filled without disturbing the chicks. An automatic thermo- (Continued on Page 14)

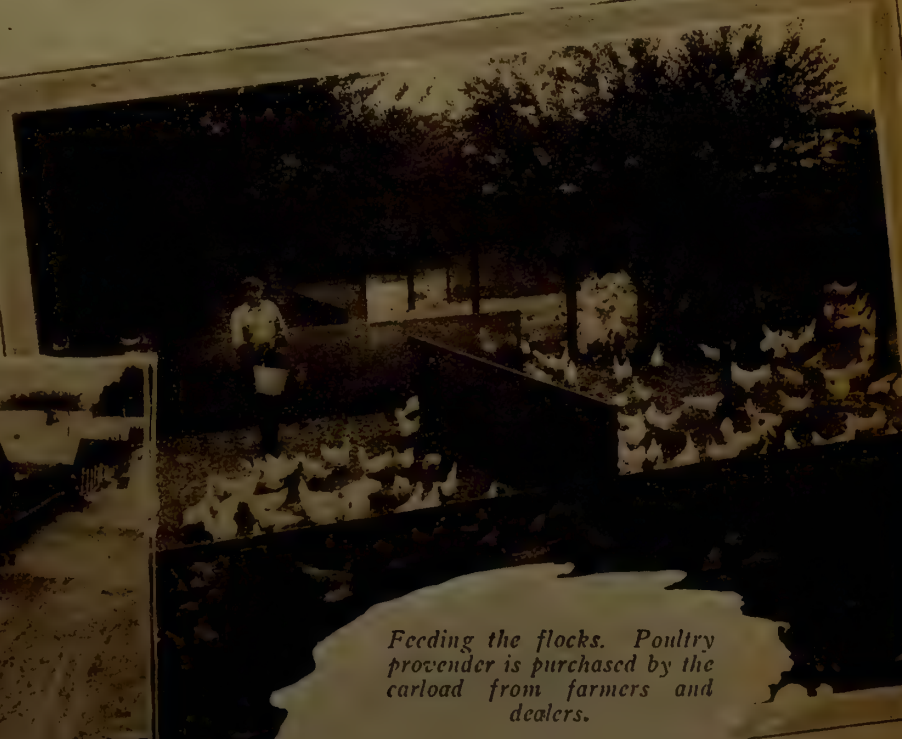
A Mammoth Poultry Ranch de Luxe

See Article on Opposite Page.

Above—Section of feeding yards, showing fruit trees for shade, and burlap breeding barriers. The latter are new in California, introduced by Mr. Summers. Left—Special breeding coops.

Conditioning cages, where stock is fitted for the show ring. All-metal construction.

D. C. Summers (left) and O. A. Eckman (right) comparing notes on prize birds.



Feeding the flocks. Poultry provender is purchased by the carload from farmers and dealers.

General view of grounds, showing sheds and special mating pens.

New Stock Yards Create Great Central

By NED CHAPIN

THE new Union Stockyards, representing an initial investment of $350,000 by the executives of the Chicago Union Stockyards and Transit Company, and associates, opened auspiciously November 1 at Los Angeles with receipts of 77 cars of livestock and with top prices on the opening day of 9 cents for cattle, $13.25 for sheep and $11.50 for hogs.

The Pacific Southwest is the last livestock producing section to substitute central marketing for the old system of ranch buying, and to secure advantages of the newer system, successfully in operation at other centers of production throughout the country. A five-year campaign for the installation of a central livestock market ended with the formal opening of the yards.

Fat cattle were in strong demand during the first week of operation of the market, averaging around 8¼ cents. Feeders sold up to 7 cents, this amount being paid for a lot of yearling grade Herefords from Wyoming which are being fed out for Christmas beef by the Globe Grain & Milling Co.

The top cattle of the opening day weighed 1056 pounds and in shipment from Victor, Idaho, suffered a shrink of only 35 pounds. E. H. Galloway bought them through the Charles H. Hill Livestock Commission Co., for Wilson & Co. The demand for lambs and hogs could not be supplied. The top lambs on the opening day were shipped by the Crane Creek Sheep Company of Ogden and the top hogs came from Millard County, Utah, having been finished on corn and averaging 190 pounds. Two cars of Hanford, Calif., hogs, sold for $11.25 at an average weight of 170 pounds. The significance of the yards to the entire West is indicated by the widely distributed shipments already received.

On the eve of the opening of the market, the Los Angeles Union Stockyards Company was formed to take over the completed project from the Los Angeles Syndicate which did the construction work. The officers are J. A. Spoor, chairman of the board of directors; Arthur G. Leonard, president, and H. E. Poronto, vice president, these three being connected with the Chicago Union Stockyards and Transit Co. of Chicago; J. A. McNaughton, vice president and general

Above—Mary Tinker, with Hampshire lamb that sold to Ambassador Hotel, Los Angeles, for 30 cents a pound. Raised by Straloch Farms. Left—Boys' pig club exhibits, which brought from 15 cents to 20 cents a pound.

J. A. McN... General ... of the ...

Western Market Now ... Prospects Brigh...

CONSTRUCTED and opened for bu... the first ground, the new stocky... Market," is a monument jointly ... executive ability of J. A. McNaughton, ge... carried on for the past several years by ...

"It was possible to establish this in ... McNaughton recently, because of the ... otherwise, received from Messrs. J. A. ... These gentlemen, I may say, have built u... largest market of any kind in the United ... and Transit Company, at Chicago."

The policy of the local management ... production and better finishing. The yard ... competitive bidding by the greatest num... benefits, this will help the credit of the ... power to absorb the products of all loc...

In making a survey of possible recei... number of spring lambs from the Imperial ... slaughtering points amounted to 235,000 ... consuming sections along the Atlantic s... stockyards officials point out, that the ... there animals in California and to ship ... seaboard by way of the Panama Canal.

A large percentage of the stock sch... California points.

Market for the Entire Southwest

manager, and F. L. S. Harman, secretary.

The commission men operating at the yards have formed an organization known as the Los Angeles Livestock Lxchange of which Charles H. Hill is president and J. G. Harman, secretary. The organization has formulated rules to govern trading at the yards in the interests of impartial dealing and has made arrangements for blanket insurance of livestock at a premium of 15 cents a car. The stock will be insured for its full market value for the time it is in the yards.

A livestock bank, telegraph offices and government market reporting service have been established at the yards and a wireless sending station is under construction to broadcast the market reports.

The stockyards themselves have been pronounced the best arranged in the country. The capacity is 5000 cattle, 5000 sheep and 5000 hogs.

The 14-foot alleys are all paved with five inches of concrete, roughened to prevent slipping, and the floors of the pens have four inches of concrete. A complete drainage and sewerage system has been installed, and Dr. Bennett, in charge of the sanitation of the Chicago Union Stockyards, says the Los Angeles yards are a model.

Details of construction were finally approved by W. S. Witten, general superintendent, also connected with the Chicago Union Stockyards. Mr. Witten is patentee of the gate lock in use, by means of which any of the big gates may be slammed and will lock themselves automatically. The ease of shifting animals about has caused much favorable comment.

Encouragement to livestock producers in every way possible will be the policy of the new Central Market. On the opening day this was exemplified in the presentation of silver cups to the winners of the Los Angeles County Boys' Pig Feeding Contest, these being Zelbert Dockstader of Downey, whose Berkshire-Poland China cross pig weighed 200 pounds; George Hearne of Sierra Madre, with a Hampshire weighing 170 pounds, and William Sawyer of Lancaster, with a Duroc weighing 150 pounds.

The pigs were auctioned off by Assistant Farm Adviser G. E. Gordon and brought 20 cents, 18 cents and 15 cents a pound, respectively, from Julius Hauser, of the Hauser Packing Company, dean of the California packing industry; Tom Breslin, of the Standard Packing Company, and Woodward & Bennett.

Panorama at top is view of stockyards on opening day, with new exchange building in course of construction at left Lower right—Cattle pens, equipped with cement floors and latest devices for comfort of animals.

Doing Business, and for Expansion

a ninety days after the breaking of designated as "The Great Western the vision of Chicago capitalists, the al manager, and the tireless campaign Los Angeles Chamber of Commerce. ry in your community," asserted Mr. eration and support, financially and r, A. G. Leonard and H. E. Poronto largest livestock market, in fact, the ates; known as the Union Stockyards

is announced, will be to encourage will provide a daily cash market under It is believed, among other apparent mer and give him greater purchasing dustries.

the new company discovered that the lley alone shipped annually to Eastern i, the products going on to the great and. It seems reasonable to suppose, a splendid opportunity to slaughter refrigerated products to the Atlantic

date has been shipped from Northern

Hens Bring Health and Wealth

Postponed His Funeral Indefinitely

THIS is the story of a Chicago bank clerk who was sent West to expire of tuberculosis. He declined to finish the dying program, escaping in a month from a California sanitarium. He then engaged in poultry promotion in the San Fernando Valley, where he found health in a tent and wealth in an egg basket.

By O. H. BARNHILL

WHEN an inexperienced man engages in a new industry he investigates the methods used by those who are succeeding in that particular line of work and then uses his own judgment as to what course he shall follow. ORCHARD and FARM saves its readers a good deal of time and trouble by visiting successful farmers, orchardists and stockmen and telling about their methods.

A. M. Harrison, San Fernando Valley poultryman, has made a conspicuous success with a small investment of capital, a feature which appeals strongly to a large army of people who would like to engage in the egg business, but who fear they haven't sufficient funds. They hear about expensive poultry plants and are told how such equipment is absolutely necessary to secure satisfactory results. Then they count their cash and decide not to count their chickens.

To be sure, fine buildings and the latest improved appliances can be used to advantage in an egg factory and Mr. Harrison thinks it a good thing for the poultry industry that modern equipment has been brought to such a high state of perfection.

COSTLY EQUIPMENT UNNECESSARY

His experience, however, demonstrates that it is possible to succeed with cheap buildings, cheap stock and cheap feed. He does not claim this is the better way, but only one way. Circumstances usually dictate which shall be followed. It should be borne in mind, though, that the more money there is tied up in a business the more expertly it must be managed to produce profits.

As one of a family of fourteen children on a Canadian farm, where potatoes were sold for a dollar a barrel and good timothy hay for seven dollars a ton—after being hauled six miles to market in zero weather—young Harrison went to Chicago and worked up to a clerical position with a big banking concern. He was unable to save much of his salary and the weather was so severe that tuberculosis began eating away his lungs and life.

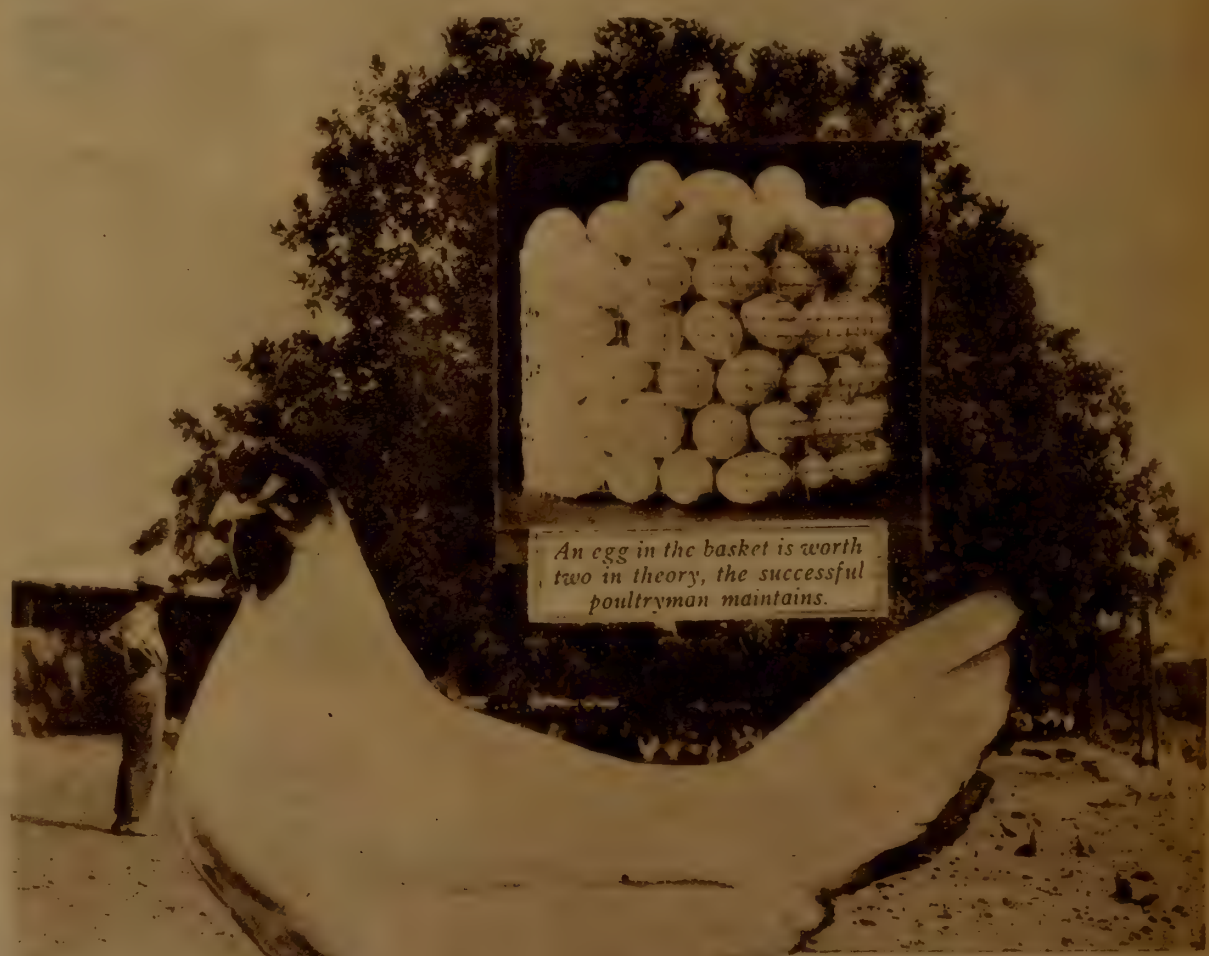
A change was imperative. He came to Southern California and entered a sanitarium, where he remained only a month, although advised by physicians that in his case a half year in the institution was absolutely necessary. Forty dollars a week, however, made sad inroads on the bank clerk's slender savings. He decided he could get the three things necessary to cure tuberculosis—fresh air, nourishing food and rest—a good deal cheaper.

ACQUIRES A SMALL FARM

A deal accordingly was made for a five-acre poultry farm a mile west of Van Nuys. A tent was pitched under a giant black walnut tree, a screen door placed in front and wire screening substituted for a breadth of canvas in the rear. Seven hundred fifty White Leghorn pullets were procured and the care of these interesting birds furnished the diversion and light exercise necessary to keep the convalescent's mind off his condition. Eggs supplied easily digested, nourishing food and their increasing numbers promised financial rehabilitation.

Hen holdings were increased gradually, the newcomer feeling his way into the chicken business as his strength increased. The biggest initial mistake was in permitting unscrupulous poultrymen to supply him with inferior, diseased stock. At that time, ten years ago, many questions connected with market egg production had not yet been solved. Heavy-laying types of hens were just beginning to be developed, while college specialists and others were working out problems of scientific feeding and housing. Harrison, however, plodded along the painful path of experience, learning to do by doing, encouraged by the prospect of making a dollar-per-hen profit on a flock numbering thousands.

He was just getting nicely started when the war came, with sky-rocketing grain prices and an egg market that refused to respond, despite piteous protests from impecunious poultrymen.



An egg in the basket is worth two in theory, the successful poultryman maintains.

Harrison decided to sell off a good share of his laying stock, which afterwards proved to be a bad move, as eggs finally followed grain to record prices. The flock was increased as rapidly as possible and that little old dollar profit began to look like a lead nickel as Harrison's hens returned $2.50 to $3 each above the cost of feed and labor. The number of layers is now around 4000, and despite a depressed egg market and an epidemic of chicken pox—which seriously interfered with production the past year—the per capita profit is $1.25, or a total of $5000.

CHEAP LAYING HOUSE

A laying house built last fall is similar to others which are in use, being 180 by 15 feet and accommodating 1300 hens. The cost was about $500, which is much less than the amount usually spent for a hen house of similar capacity. The floor is nature's own and the roof of tarred paper laid over poultry netting resting on the rafters. The south side is partly boarded up to keep out the dust and wind, with poultry netting above. The house is divided into 20-foot rooms, the one at the west end being used for storing feed.

Water is piped to each room and flows into stone jars, being regulated by automatic valves. The nests are under the front edge of the dropping board, which is scraped clean with a hoe every alternate day. The roost rails are sprayed once a month with a disinfectant.

A dry mash hopper in each room is kept filled [*Continued on Page 14.*]

Above—The original tree under which Harrison, then an invalid, pitched his tent. Below—His health restored, this egg farmer still believes in giving personal attention to care and feeding.

Better HOME GARDENS with Pyrox

Why pour into your garden good seeds, tools, labor, your enthusiasm—and then forget the INSURANCE that Pyrox gives? This high-power blend of poison and fungicide kills the bugs, or repels them; controls the blights, rots and mildew; gives the crops a chance to ripen fully.

You buy Pyrox as a smooth, firm paste. It is very easy to mix, and sprays without clogging the nozzle; sticks like paint when dry, even in a heavy, driving rain. It is fine, also, for small fruits, flowers, shrubbery.

Send for PYROX BOOK—tells about insect pests and fungus diseases, and how to control them.

Western Wholesale Drug Co.
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the powerful triple-duty spray

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Mammoth Bronze "Gold Nugget" prize stock, 20-lb. mature hens, 35-lb. and 40-lb. toms. Young breeding gobblers, $10 to $25; hens, $10 to $15.

Fertile eggs, 50c each; 50 for $20.

Baby turkeys, $75 per 100.

Mammoth Bronze Turkey Ranch Co.
R. 5, BOX 155
WATSONVILLE, CALIF.

5 Magazines — Good — $1

Woman's World,	(Monthly)	Our Price $1.00 ALL FIVE FOR 1 YEAR
Good Stories,	(Monthly)	
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The Household,	(Monthly)	
The Farm Journal,	(Monthly)	

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ELEC-CHIC HATCHED Baby Chicks are the finest and best and pay BIGGEST PROFITS. Buy them through us from Elec-Chic Co-operative Hatcheries or hatch for yourself. Send for prices and delivery dates on all popular breeds. Ask for free literature about Elec-Chic Incubators, Brooders and Co-operative Hatchery Plan.

POULTRY EQUIPMENT CO.,
Burbank, Cal. Dept. N.

Advertisements are instructive, interesting, educational. Read the advertisements regularly.

The New BULLETINS

THE following bulletins, obtainable without cost, are of timely interest. Address Division of Publications, United States Department of Agriculture, Washington, D. C. Order by number.

	NUMBER
Breeding of Morgan Horses	193
Wheat Scab and Its Control	1224
Accounting Records for Sampling Apples by Weight	1006
Farm Dairy Houses	1214
The Whipping Quality of Cream	1075
The Insulating Value of Double-Walled Beehives	222
The Paper Dress Form	201

CALIFORNIA CIRCULARS

The following new and helpful circulars have been issued by the University of California and will be sent free upon request. Address, Director Agricultural Experiment Station, Berkeley, Calif.:

	NUMBER
Supports for Vines	252
Some Common Errors in Vine Pruning and Their Remedies	248
Vine Pruning Systems	245
Studies on the Irrigation of Citrus Groves	341
Cold Storage as an Aid to the Marketing of Plums	344
Preparation of Nicotine Dust as an Insecticide	336
Vinegar from Waste Fruits	287

Other bulletins of special value are:

Important Provisions of the California Dairy Laws, No. 26. California State Department of Agriculture, Sacramento.

Studies of Occupations in Agriculture, Forestry and Animal Industry. Harvard University, Cambridge, Mass.

An Investigation of Sulfur as a Plant Food. No. 165. Washington Agricultural Experiment Station, Pullman, Wash.

History of Agricultural Gypsum. Gypsum Industries Association, Chicago, Ill.

Concrete Pipe for Irrigation. Portland Cement Association, Los Angeles.

BOOK REVIEWS

"Cyclopedia of Hardy Fruits," published by the Macmillan Company, New York. By U. Hedrick, Vice Director and Horticulturist of the New York Agricultural Experiment Station.

The purpose of this sumptuous volume of 370 large pages is six-fold: To in the identification of varieties; to guide in the choice of varieties; to sort the names now in use for varieties of hardy fruits and assign them to the classifications to which they belong; to state in what regions the varieties described grow best; to tell when and where the varieties originated; by depicting choice products of the orchard, to stimulate the desire to grow better fruits. This cyclopedia is a worthy successor of Downing's Fruits and Fruit Trees and Thomas' American Fruit Culturist, which have well served two generations of fruit growers, but are now out of date.

* * *

"Bank Credit and Agriculture," published by the McGraw-Hill Book Company, New York. Price, $3. By Ivan Wright, assistant professor of economics, University of Illinois.

The object of this 340-page volume is to outline the conditions of the bank credit situation in relation to American agriculture under the National and Federal Reserve banking systems. The fundamentals and practices in financing agriculture in the United States are comprehensively covered by Prof. Wright, who thoroughly analyzes the needs for and conditions of short-term agricultural credit under existing banking systems.

* * *

"The Cow," published by the Macmillan Company, New York. By Jared Van Wagenen Jr.

This delightful little volume does not pretend to be a text-book nor a treatise on dairy husbandry, for there are plenty of these already. It is simply an effort to set down the ideas of a dairyman concerning his own business and to view the cow as a very interesting animal, which, after thousands of years of close companionship with man, still retains many primal instincts and hereditary tendencies. It does not attempt to reduce cow keeping to cold demonstrations of chemistry and cash, but to strike a personal note and to put into language a little of the glow and glamour of real farm life. It is worthy of wide reading by those who are interested in agriculture.

Get Ninety Cents For Winter Eggs!

New York is paying ninety cents a dozen for fresh eggs. Prices everywhere advancing. Poultry raisers, now is your harvest season for big profits.

FREE Simply send name today for valuable free chart prepared by experiment station showing at a glance how to double your egg production and full details of simple home method that will give immediate results.

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One Man Alone Pulls Big Stumps 1923 KIRSTIN Drum Type Stump Puller multiplies your strength 992 times. Pull big, green or tap rooted stumps. No extra help needed. Made entirely of steel—fastest, most powerful, durable One-Man Stump Puller made.

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New Kirstin ONE-MAN Stump Puller

Mounted on Wheels—Easy to Move

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Demonstrators Wanted
No selling—no canvassing. Demonstrators merely allow others to see how the KIRSTIN clears land quick, easy and cheap. Liberal commissions. Write today. Only one man in each locality.

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KIRSTIN prices now lower than ever before. Complete line of One-Man and Horse Power models for all kinds of stump work. Single, double and triple power. Prices as low as $31.50. Small monthly payments, if desired, starting after 30 Days' Trial. Write for 80-Page Land Clearing Book—FREE.

Quick Shipment from Escanaba, Mich.; Portland, Ore.; Atlanta, Ga.; San Francisco.

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View objects miles away just like they were close. Watch persons at a distance on land and sea. See the Sun, Moon and Stars as you never saw them before. The Wonder Telescope opens out over 3 ft. long; closed measures 12 in. Brass bound, fitted with powerful lenses. Can be used as a microscope.

Special Offer

on Wonder Telescope Telescopes of this size have sold for $8.00 to $10.00—because of a fortunate purchase of a large European manufacturer we can give you a big bargain. Supply limited—order today. Send only 25c with order, and we will ship telescope complete by parcel post, on arrival deposit $1.75 with the postman. Satisfaction guaranteed or your money returned in full. If you prefer send $1.85 with order in full payment.

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"I trained Wonder Telescope on buttes 28 miles away, they looked to be 2 to 3 miles instead"—C. A. Storey, Ft Robinson, Neb. "I count windows in houses 10 miles away" — Henry Conner, Manor, Tex. "Can see children playing in school yard 6 miles away"—P. H. Hennington, Mc Dade, Tex. "Can tell exact minute on Court House clock 2 miles away"—Jennie Beers, Columbus, Ind. "Don't know anything we ever enjoyed so much"—Chas. Hunter, Neenah, Wis. "Wouldn't take $10 for it" W. A. Eskridge, Ammond, Ky. "Can read numbers on freight cars a mile away"—A. C Palmer, Indianapolis, Ind.

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Marine shoes, genuine cordovan leather, good for work or dress, new guaranteed, all leather, worth $8.00. Buy 2 or 3 pairs at this price. Govt. Issue. Our price, pair **$3.45**
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U. S. Army new O. D. pure wool shirts world's best; government issue, 2 pockets, sizes 15 to 20 ..... **$3.45**
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Natural color casmerette sox, linen toes, heels; pair, 16c; dozen ..... $ 1.75
U. S. Army khaki overcoats, good as new; all sizes, wool ..... $ 5.95
Blue chambray work shirts, 2 pockets, all sizes, best grade, each 98c
Khaki, heavy drill or sateen shirts, all sizes ..... $ [illegible]
U. S. Army and Navy new cotton underwear, nice and drawers, each ..... [illegible]
U. S. Army saddle bags, new, cost government $3.50 ..... $ [illegible]
U. S. Army cotton O. D. sox, or black, a pair, 15c, or dozen ..... $ 1.65
U. S. Army wool underwear, reclaimed, good as new, each garment 79c
New Army, all wool underwear, very heavy weight, a big bargain, cost Govt. $2.75, each **98c**
Medium weight union suits, new, buy lots at this price ..... $ 1.49
U. S. Army folding galvanized iron candle lanterns (Farmers' and aviators') ..... [illegible]
U. S. Army wool breeches, reclaimed, but good as new; big bargain; worth $6.00 $2.45 and $1.95
U. S. Army khaki breeches, cotton, rec., good as new, first-grade, pair 75c

ORDER BY MAIL

Write plainly, give name and correct address, and state size and color desired. If you doubt size give us your weight and height.

U. S. Army heavy hobnail or trench waterproof shoe, strongest shoe ever made for farmers, miners, or hard workers; it's unbeatable, all sizes, Govt. Issue **$3.95**
Comforts, new, two sides, silkolene, large size, floral patterns, hotelman's chance ..... $ 3.25
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Officers' dress coats with belt, moleskin finish, guaranteed 48 hours rainproof, very dressy, $35.00 value $16.95
Army new saddle, McClellands, world's easiest riding saddle, cost about $40 ..... **$8.95**
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Full length 40 or 44-inch all leather calfskin coats, reversible, with overcoat of gabardine on other side; two coats in one, easily worth $50 to $75. Our price **$27.95**
Khaki quilts, or satin centers, extra large size new; fine for outdoors, hotel or bunk houses ..... $ 4.45
10-oz. 5-ft. wide white canvas, new, yard 67c
Army roast beef, corn beef and corn beef hash, by the case cheap.

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Of Intensive Poultry and Berry Farms

One Acre and Independence

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ONE ACRE IN CALIFORNIA

For those who desire to dwell in sunny California without living up hard-earned capital.

For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 25 miles from Los Angeles.

Write for Literature

CHARLES WEEKS

Owensmouth California

New Type Poultry House

CHARLES WEEKS, of Palo Alto "Runnymede" fame, who is now developing a poultry colony at Owensmouth, is demonstrating how it is possible to keep a great many hens on one acre. He has just built a chicken house 300 feet long, which is capable of housing 2500 hens. It is all located on one acre, including feedroom, house, garage, and cultivated plot for growing green feed. Mr. Weeks describes the building as follows:

"There is a double row of pens, with open fronts to both east and west, thus allowing the hens to have the advantage of both the morning and afternoon sunshine or shade. Each pen is 12x12 feet, and a door connects each two pens.

"The hens are allowed the run of these two pens through a small door in the bottom of the large door set in the solid partition. The large door can be opened on hot days, thus allowing a circulation of air direct from east to west through the two pens. All who have seen this house concede it to be the coolest summer house ever invented. Also, it is the most comfortable house in the winter. There are no yards or runs.

"The perches are arranged above the dropping floor, which is placed on the south side of the pen, opening east, and on the north side of the pen, opening west, thus affording protection from the prevailing winds of California. The nest boxes are arranged under the edge of the dropping boards. The green-feed trough runs the full length of the house outside, so that it may be filled without opening the doors. The dropping boards are cleaned by letting down the small outside door at the outer end and raking droppings into carrier or cart.

"Eight or ten inches of clean, sharp sand covers the earthen floor and is raked over once each week with a fine-tooth rake.

"Each hen has the full run of these two 12x12 pens, making a complete run of 12x24. Fifty hens are kept in each 12x12 space, or 100 hens to two pens.

"This new improved house has been designed to meet climatic conditions in all parts of the Coast. In fact, I think it can be used in any part of the United States. It has a 3-foot overhanging roof on each side, which protects pens from blowing rains and at the same time affords shelter for the attendant. The extending rafters are capable of supporting a track for a litter carrier.

"At the end of this poultry house is a feedroom 20x30 feet, which can be entered from a door on either side under the projecting roof of the poultry house. This large room is also used as a garage, egg room and workshop."

Poultry Ranch De Luxe

(Continued from Page 8)

stat keeps the temperature uniform, while an abundance of fresh air is provided by a ventilating system which avoids direct drafts.

The chicks soon learn to scratch straw in adjoining cooling rooms and to pick at green stuff in nearby yards. In the evening 12,000 little chirpers are put to bed in 15 minutes by quietly closing the curtains from outside the brooder rooms, preventing piling up.

The pullets are given free range of the big apricot orchard, the idea being to develop vigor by permitting the growing birds to grow as nearly as possible under natural conditions.

RAISE GREEN FEED

Sprouted barley and chopped alfalfa, the latter fresh from the field, supply the green feed for pullets, hens and cockerels, while various dry mashes, each scientifically mixed, afford all the necessary nutritive and medicinal elements. The roosts are cleaned daily and everything about the place kept spick and span.

Burlap is tacked to fences in some places to protect the chickens from wind, and in the larger breeding yards the same material is used to separate jealous cockerels. Blinds three feet high and twelve feet long are set over the yards in strategic positions. Ten hens are apportioned to each cockerel.

In each of the special breeding pens there are 15 hens and one male. For very special matings six hens are kept with one male in separate yards.

Professor Rice says that "Mr. Summers is on the right trail in making constitutional vigor and laying capacity his foundation and maintaining it by proper selection and right range methods."

In order to accommodate customers who wish to buy exhibition stock, a "conditioning room" has been fitted with 28 galvanized iron coops, 30 inches each way, with metal bars in front. The all-metal construction makes it easy to keep the quarters in a thoroughly sanitary condition. Birds are confined here until they are put in the pink of condition and then shipped direct to the show ring.

Harrison's Poultry Success

(Continued from Page 12)

with ground feed, while grain is scattered in the adjoining yard, thus obviating the accumulation of offal in the building. Electric lights are turned on at 4:30 o'clock during the winter season, causing the hens to rise early and go to work.

A cement or board floor covered with clean straw, which would give the hens scratching exercise, would be an advantage, Mr. Harrison admits, but it is also an advantage to save the additional cost of these materials and the labor which their use would entail. Cheaper feed also can be used under the present system, as hens which do not take much exercise do not need corn and other rich feeds, having no means of working off superfluous fat. Very little corn is fed, and that in cold weather.

IS WHEAT ESSENTIAL?

Some poultry authorities assert that wheat is an essential feed, but Harrison obtains equally good results with milo maize and barley, the latter costing nearly a dollar less per cwt. Fifteen tons of barley were purchased a year ago at $1.55, a considerable saving being effected.

Green, chopped barley is used for succulent feed. Hens are sold after they have laid three seasons, and each spring enough pullets are raised to replenish the flock. Careful selection and culling keeps the egg production up to a satisfactory figure.

After considerable experience with chicken pox, Harrison has come to the conclusion that the remedies recommended are of no real value, only postponing the attack of this contagious ailment. He has tried mixing 2 per cent of sulphur with the mash feed and giving small doses of permanganate of potash, but does not recommend this treatment. Keeping hens healthy and segregating diseased birds is about all that can be done, he has found.

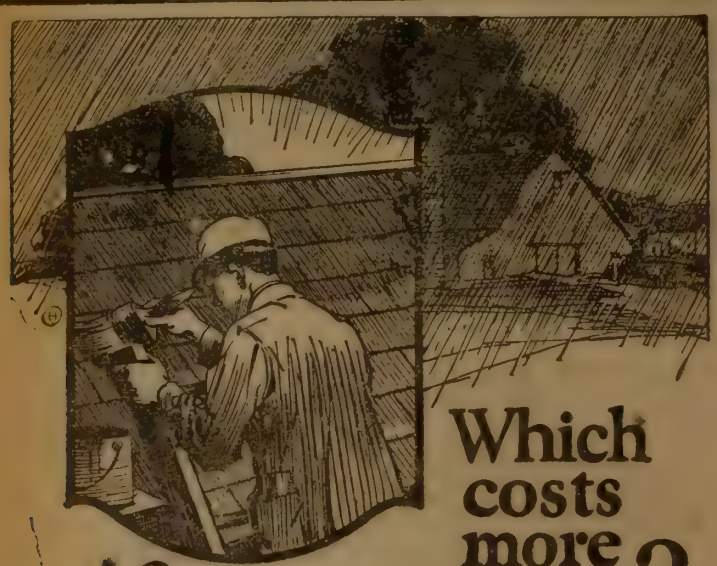
A comfortable residence has been built with poultry profits and Mr. and Mrs. Harrison are now enjoying health, wealth and happiness in the great suburban valley of Los Angeles County.

Shuts Out Chinese Eggs

A LARGE importer of Chinese eggs is of the opinion that the new tariff of 8 cents a dozen on eggs in the shell will stop entirely the importation of Chinese eggs in their common form, a consummation devoutly desired by American poultrymen. It is believed the duty of 6 cents a pound on frozen eggs and 18 cents a pound on dried eggs will not afford adequate protection from these products, but will enable home producers to compete advantageously.

SANTA CRUZ HEN BREAKS WORLD'S RECORD?

A hen owned by Alex Stewart of Santa Cruz is said to have broken the world's record by laying 324 eggs in one year.



Which costs more ~ fair weather or foul?

Violent storms are not the only enemies to good shingle roofs—gentle rains, aided by the warping effect of warm sun and drying breezes, are more frequently the real cause of deterioration. Repair bills prove it.

A well-laid roof can be *kept* tight and strong by treating it every few years with ORONITE SHINGLE OIL, the high quality preservative made by Standard Oil Company (California) especially for the care of shingle roofs and side walls. ORONITE SHINGLE OIL penetrates the wood fibre, helps prevent warping and cracking,—cuts repair costs. In fact, it postpones indefinitely the expense of a new roof.

Talk over color-mixing formulas with our nearest agent. Let him show you, also, how easily ORONITE SHINGLE OIL may be applied.

STANDARD OIL COMPANY
(California)

ORONITE SHINGLE OIL

Agricultural Leaders of the Pacific West

2—A. C. Hardison, President California Farm Bureau Federation.

A. C. HARDISON, a very extensive rancher at Santa Paula, Ventura County, California, recently was elected president of the California Farm Bureau Federation, with headquarters at the University of California, Berkeley.

The Farm Bureau is the largest agricultural organization in America today, and in the Golden State there are more than 25,000 active members of the organization.

Mr. Hardison was born and raised on a farm at Caribou, Aroostook County, Maine, where he received his early training in the practices of agriculture. He was educated in the common schools of Maine, and in 1890 graduated from the University of Maine in a civil engineering course. This same year he came to Ventura County, California, where he has been located ever since. He immediately took up the practice of civil engineering, and a year later, in 1891, was one of the seven original incorporators of the famous Limoneira Company, which is now the largest lemon-producing grove in the world.

Mr. Hardison has been actively connected with and a director in the company ever since its incorporation.

A. C. Hardison

TO SOUTH AMERICA

In 1896 he went to South America on an engineering project and was engaged as assistant engineer, Inca Mining Company, at Peru, where he remained until 1901. During a portion of this time he also acted as assistant manager of this company.

Immediately after his return to the States, in 1901, he managed a mine in Arizona for a year. From 1902 to 1904 he was engaged in private engineering practice.

Mr. Hardison also was engaged in the oil business in Kansas and Indian Territory from 1904 to 1907, at which time he returned to California and became actively connected with the Limoneira Company.

In 1911 he organized the Hardison Ranch Company and San Cayetano Mutual Water Company, and, as vice president and manager of this company, is developing 250 acres of citrus land near Santa Paula, Ventura County.

CITRUS MARKETING

From 1912 to the present time Mr. Hardison has been a director of the Santa Paula Citrus Fruit Association, shipping 700 cars annually, and since 1919 has been vice president of this association. Since 1913 he has been a director of Mupu Citrus Association, shipping 150 cars of oranges annually, and has been vice president of this company since 1917.

From 1914 to 1917 he was chairman of the Ventura County Highway Commission, which built 104 miles concrete highway, expending about $1,250,000.

APPOINTED BY GOVERNOR

This year he was appointed by the Governor a member of the Commission on Agricultural Education, to succeed the late G. H. Powell. He was elected chairman of this commission, and recently returned from an extensive tour of the agricultural colleges throughout the East and Middle West, investigating the general problems of agricultural education.

He has assisted actively with the Farm Bureau since it was organized in Ventura County and knows Farm Bureau work thoroughly. As co-operative marketing is one of the great problems before the Farm Bureau, this organization is exceedingly fortunate in getting Mr. Hardison at its head at this time. He is considered one of the ablest authorities on co-operative marketing in California.—V. C. BRYANT.

WHY FARMERS FAIL

C. L. Smith, who was familiar with farming in three States before the Civil War and has since kept close tab on agriculture in the West and Northwest, is firmly convinced that, as a rule, successful farmers are those who have adapted themselves to changing conditions, while those who fail have clung to the conditions and prejudices of a by-gone age, obsessed with the idea that successful farming can only be achieved through legislation.

ENGINEER GROWS APRICOTS

H. M. Crocker, engineer for James Irrigation District in the San Joaquin Valley, is having splendid success developing a young orchard of apricots and prunes, ten acres of each. The trees are two years old and are expected to bear considerable fruit next year.

BOELE BUDS AND PRUNES

The very successful job of inarching 150 gopher-girdled orange trees on the Pasadena City Ranch last spring was done by B. Boele, who also superintended the pruning of 70 acres of orange trees and 5 acres of grapefruit. Mr. Boele is not a wood butcher, but an expert tree surgeon.

IMPORT AFRICAN BUGS

Mealy bugs in Merced County are being destroyed by ladybugs imported from South Africa by Horticultural Commissioner E. E. Welty.

GRAPE SIGN MISSING

What has become of the sign, "Prohibition Will Ruin This Vineyard," which was so common in the San Joaquin Valley a few years ago? Fred Howard, the genial Sun-Maid raisin publicity manager, counts among lost opportunities the chance to photograph one of those signs.

BUYING MUCH VETCH SEED

Four hundred tons of purple vetch seed has been purchased from the Humboldt Farm Bureau by the Fruit Growers' Supply Company of Los Angeles.

SHOW THE GRADES

Fair and stock show managers are beginning to realize that it is a mistake to bar out good grades, declares C. L. Smith, Oregon's well-known agricultural authority, who believes breeders of purebreds could boost their business by showing the value of herds which have been improved by the use of purebred sires.

BUILDING FORTY HOG HOUSES

Forty hog houses are being built on the Tagus Ranch, near Tulare, which makes a specialty of Poland China swine, having recently purchased A. J. Elliott's herd of purebred pigs of this breed. Two carloads of feeder hogs have been imported from Texas and 400 acres of alfalfa is being planted to furnish pig provender.

Cook With Coal Oil Gas

The simplest and most economical coal oil gas burner ever known has been patented by Leonard Conow of San Francisco. This great invention is entirely different from other burners now in use. Fits any wood or coal stove, oven and water back. No priming, no roaring, no carbon. Just turn a valve and get an intense heat that is regulated at will. Cheaper than coal or wood—and better. Brings happiness into the home.

To prove that the Conow Burner is exactly as represented, the manufacturers agree to send the outfit on 30 days' trial and let you see how it works before deciding to keep it. Write today for free literature, which explains all.

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The most Simple, Accurate, Durable and Complete Farm Level Outfit ever made is the

BOSTROM IMPROVED

The TELESCOPE with FIVE Magnifying Lenses makes the work a genuine pleasure, and when you finish a job of

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or any farm work requiring a Level you just KNOW it is O. K. Agricultural Schools, County Agents and progressive farmers from Atlantic to Pacific swear by the Bostrom, and so will you, after using it. If not, just remember our unqualified money back guarantee brings every red cent right back into your pocket. Write TODAY for description, testimonials, money back order blanks and names of our distributors in Los Angeles, San Francisco and Sacramento.

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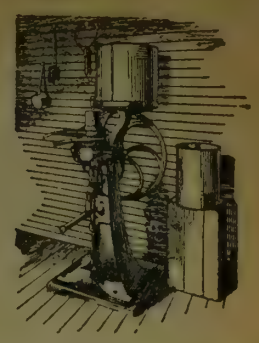
A Faster Log Saw!

The new 1923 Model OTTAWA is the World's fastest Log Saw—350 strokes a minute! Better built, lighter, easier to move. Burns kerosene. Less than Wholesale Prices now in effect.

Mechanically Operated Valves **OTTAWA**

FREE BOOK! Send for "Wood Sawing Encyclopedia," illustrated; also Big Special Offer. Ottawa Mfg. Co., 22 Wood St., Ottawa, Kans., Pittsburgh, Pa.



Over 20 Years Old

The old De Laval Cream Separator shown above is owned by Mr. Geo. D. Caney of Richfield Springs, N. Y. It has been used every day for over twenty years and is still doing good work.

This is not an unusual instance of De Laval quality and service, as there are thousands of De Laval Separators which have been in use as long and even longer. In order to determine the oldest De Laval Separators still in service, we will give a prize of

$25 to the Owner of the Oldest DE LAVAL in Each State

Simply write to your nearest De Laval office, giving the date you purchased the machine, length of service, size, serial number, and a statement regarding the service you have received from it.

Prize winners in each state will be announced in due course.

De Laval Pacific Company
61 Beale Street San Francisco

Sooner or later you will use a
De Laval
Cream Separator and Milker

Prove it —this way

Don't take anyone's word for it that KOW-KARE definitely increases the milk yield. Actual proof is too easy to secure.

Make a simple test—and make it now, so that you may benefit all winter and spring by what it proves. Select a part of your herd—even one cow—and place in her feed morning and evening, for just one week out of the month, a tablespoonful of KOW-KARE. If you keep accurate production records, you will be surprised at the increased yield, and at the surprisingly low cost of the treatment.

The reason is simple. The vigor of the cow's digestive and milk-making organs "runs down" during the winter months when green pasturage is not available. KOW-KARE has the medicinal properties to keep these organs toned up and working at summer capacity.

It is just this building-up of the genital and digestive functions that makes KOW-KARE so valuable in treating the diseases which originate in these very organs, such as *Abortion, Retained Afterbirth, Barrenness, Scours, Bunches, Milk Fever*, etc. No medicine shelf is complete without this nationally-used cow remedy.

KOW-KARE is sold by feed dealers, druggists, general stores; large size $1.25; medium size 65c. If your dealer is not supplied, we will send postpaid. Our valuable book, "*The Home Cow Doctor*," free.

Dairy Association Co., Inc., Lyndonville, Vt.

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50 cents a line (average 7 words). For white space, cuts, or display type, cost is computed according to total space occupied by advertisements.
Advertisements must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

PLANTS AND BULBS

CORY'S Thornless Blackberries. Large, early, delicious flavor, few seeds; a good seller, better eating. One year. Strong transplants from heavy producing vines. 12 for $12, postpaid. Wm. Mortenson, R. 4, Box 20, Lodi, Calif.

FOR SALE—Millions of cabbage plants of different varieties. L. C. Johnson, Pomona, California.

STRAWBERRY PLANTS

STRAWBERRY PLANTS—Passed thorough inspection. Gold Dollars, Magoons, Oregons, $5.00 per 1000 f. o. b. Special offer, 200 for $1.75 prepaid. Progressive Everbearing, $1.50 per 100 prepaid. J. W. VINACKE, Aurora, Oregon. Route 1.

FOR SALE—Oregon improved strawberry plants, $1 per hundred and $8 a thousand, and over 1000 plants special rates. WM. KELTHOFF, Occidental, Calif.

CHOICE STRAWBERRY plants, loganberry, gooseberry and raspberry. Lowest prices. Send for complete list. Ward K. Richardson, 198 Hickory, Salem, Oregon.

STRAWBERRY PLANTS. $4.50 1000—Gold Dollar, New Oregon, Trebla. Otto Watzig, Myrtle Creek, Oregon.

NURSERY AND GARDEN STOCK

WRITE for prices on fourteen different samples of alfalfa seed for your trial plot, and free circular telling how each kind behaves under California conditions.
BOMBERGER SEED COMPANY,
P. O. Box 986, Modesto, Calif.

NURSERY STOCK—The right kind at right prices. Get in touch with our MONEY-SAVING SYSTEM. A general line of hardy stock. 32 years in business. Send for prices, etc. CARLTON NURSERY CO., Carlton, Ore.

FIELD SEEDS AND PLANTS

HUBAM clover-certified seed. Booking orders for future delivery. Get our prices. Order early. W. A. HOLMBERG, Denair, Stanislaus County, Calif.

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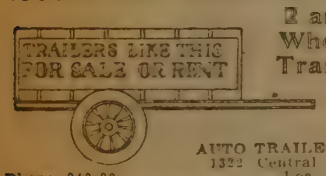

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AUTOMOBILE Mechanics, Owners, Garagemen, Repairmen, send for free copy America's Popular Motor Magazine. Contains helpful, instructive information on overhauling, ignition, wiring, carburetors, batteries, etc. Automobile Digest, 606 Butler Bldg., Cincinnati, Ohio.

DOGS

DOG OWNERS' TEXT-BOOK FREE. Expert advice on proper care, training and feeding. Free with 3 months' trial subscription to America's popular dog and hunting magazine. Send 25c today (coin or stamps). Sportsman's Digest, 606 Butler Bldg., Cincinnati, Ohio.

WANTED—Agents, Salesmen

FOLLOW THE DOLLARS

$50 to $100 per week, the money yours; something new, not an old, worn-out proposition; field untouched; experience unnecessary; takes everybody by storm; money rolls in; show 50, sell 40; demonstrated in one minute; sells on demonstration; the new Inkless Fountain Pen, the twentieth Century Wonder; never leaks or spills; with this pen no more use for the ink bottle; sample pen 50c; this proposition is 18 karat; money back if not as represented; agent's profit 200 per cent; exclusive territory, send for agency today. Inkless Fountain Pen Co., Dept. H, 1522 Eighth St., Des Moines, Ia.

AGENTS—Sell Comet Sprayers and Autowashers. Sprays plants and vines. Applies whitewash and disinfectants. Big profits. Particulars free. RUSLER CO., Dept. Z, Johnstown, O.

HELP WANTED

U. S. GOVERNMENT wants help. Men-women, over 17. Steady. $100-$195 month. No strikes. Common education sufficient. Many examinations coming. List free. Write immediately. FRANKLIN INSTITUTE, Dept. K-125, Rochester, N. Y.

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HOMESPUN TOBACCO—Chewing, 5 lbs., $1.75; 10 lbs., $3.00; 20 lbs., $5.00. Smoking, 5 lbs., $1.25; 10 lbs., $2.00; 20 lbs., $3.50. Send no money, pay when received. Co-operative Tobacco Growers, Paducah, Ky.

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The Charles Weeks System of Intensive Poultry and Berry Farms

ONE ACRE AND INDEPENDENCE, OR
The Fine Art of Earning a Comfortable Living on One Acre in California

For those who desire to dwell in sunny California without living up hard-earned capital.

Charles Weeks, for 18 years proprietor of the most intensive Egg Farm in the world and founder of the famous CHARLES WEEKS POULTRY COLONY at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles.

Write for literature.

OWENSMOUTH,
Los Angeles, California.

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Decide on the branch of agriculture you wish to pursue
THEN

WRITE TO HEADQUARTERS.

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We will advise you as to the best locality
LET US DO THE WORK AND GET YOU EXACTLY WHAT YOU WANT.
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We have over 60 associated representatives throughout the State, who have listed only the choicest properties in their localities. Be it an acre or fifty thousand, if we do not already have it listed we will find it for you at once. Possibly this extensive FREE service may be of considerable value to you.
CALIFORNIA FARM LANDS BUREAU,
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ORCHARD homes in Paradise. Deep, fertile irrigated fruit, nut, berry land; delightful, healthful climate, fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

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WANT to hear from owner having farm for sale. Give particulars and lowest price. John J. Black, 110th St., Chippewa Falls, Wis.

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PROFITABLE POULTRY NEWS—Capacity 200,000 chicks. Off every week of the year. This fall we've quadrupled our fall and winter capacity, yet can't supply demand for chicks from our 200-290-egg strain, nor from our large mature hens for rapid growth for market. People are learning that every fall and winter month chicks grow into profitable layers and meat. Booking for December to April delivery. Reduced booked ahead. White, Brown, Buff Leghorns, Reds, Rocks, Minorcas, Wyandottes, Anconas, Andalusians, Brahmas, Orpingtons; ducks, turkeys. For quarter century imported, trapnested, selected for vigor, growth, beauty, eggs. Mail address: Profitable Poultry, Box O, 13 North Fair Oaks, Pasadena.

White Leghorn Baby Chicks and Hatching Eggs

From TRAPNESTED STOCK
Our 1923 annual illustrated mating list now ready, send for a copy. WE GUARANTEE SATISFACTION.
INWOOD LEGHORN FARM
C. E. ARMSTRONG,
CORVALLIS, OREGON.

STURDY BABY CHICKS—S. C. White Leghorns, White and Barred Rocks, R. I. Reds, Anconas, Black Minorcas and Buff Orpingtons. We urge our customers and those interested in our stock to favor us with their orders as far in advance as possible that delivery may be arranged in all cases according to their wishes. Spring season, January to June. PURE BREED HATCHERY, Breeders and Exporters of Poultry Breeding Stock, Route 1, San Mateo, Cal.

CERTIFIED WHITE LEGHORN baby chicks hatched in the world's largest Electric Hatchery, for spring, 1923, delivery. January prices $4 per 25; $8 per 50; $15 per 100. Special prices 500 and 1000 lots. Order early chicks now and realize big broiler profits. Choice free range, high egg-producing breeding flocks inspected by Sonoma County Farm Bureau. Safe arrival guaranteed. Must Hatch Incubator Co., 432 7th St., Petaluma, Cal.

BABY CHICKS 12th year specializing on properly incubated chicks — the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, Blue Andalusians. Now booking orders for January and later delivery. Safe arrival guaranteed. Free circular. Order early and get the date wanted. McDonald Poultry Ranch and Hatchery, Route 1, Box 246, King Road, San Jose, Cal.

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ELEC-CHIC HATCHED Baby Chicks are the finest and best and pay BIGGEST PROFITS. Buy them through us from Elec-Chic Co-operative Hatcheries or hatch for yourself. Send for prices and delivery dates on all popular breeds. Ask for free literature about Elec-Chic Incubators, Brooders and Co-operative Hatchery Plan. POULTRY EQUIPMENT CO., Burbank, Calif., Dept. O.

WHITE Leghorn Baby Chix for May and June DELIVERY AT $12.00 PER 100; $115.00 PER 1000; FROM FLOCKS INSPECTED AND ACCREDITED BY Sonoma County Farm Bureau. SAFE ARRIVAL OF FULL COUNT LIVE STRONG CHIX GUARANTEED. The Pioneer Hatchery, 418 Sixth St., PETALUMA, CALIFORNIA.

BABY CHICKS From selected breeders. Order now for 1923 delivery. White Leghorns, R. I. Reds, Barred Rocks. Safe arrival guaranteed. Write for circular and price list. The J. H. Stubbe Poultry Ranch & Hatchery, Box 67-C, Palo Alto, Calif.

AMERICAN and MEXICAN wild strain breeding gobblers and hens, 350 to choose from, $10 to $25 each. We also have eggs and poults in season, starting January 1. Jenkins, Dundee Crossing and San Fernando Road, R. F. D. 2, Box 148, Burbank, Calif.

FREE—1923 Daily Egg Record; ready for mailing in December. Most up-to-date method of recording daily egg yield. We want you to have a copy. Send a postal today. Golden Eagle Milling Co., Petaluma, Calif.

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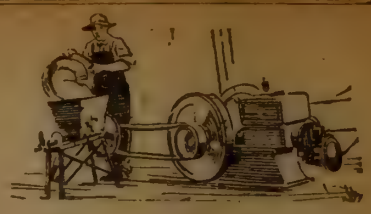
MAMMOTH BRONZE toms and hens, also eggs in season. Our stock are California State Fair winners and graded from the best Eastern stock procurable. Twenty years of practical experience with turkeys. We offer good opportunity for turkey raising on this 30,000-acre range. JOHN G. MEE, breeder of turkeys and herding Collie dogs, San Miguel, Calif.



Financing the Feeder

THE dual hopes of feeders and meat consumers are centered in the new Union Stockyards at Los Angeles, the latter hoping for improved quality of product and the former for better facilities for purchasing and financing. The chief obstacle in the way of adequate financing has been the difficulty bankers encountered in appraising and fixing the price of animals on which a loan was desired. In the case of large herds, the expense of competant inspection and appraisement could easily be managed, but with small lots located on distant ranges the problem was a difficult one.

At the Los Angeles stockyards a number of bankers and stockmen of long and successful experience have organized an institution for the express purpose of furnishing funds to feeders who wish to convert lean range animals into fat, juicy steaks and chops. The daily price range at the yards furnishes an official basis for the appraisement of feeders, which can be easily and readily inspected.

It is estimated that 95 per cent of the feeder business of the corn belt is conducted on credit, showing the importance of this phase of the industry and indicating the possibilities of its expansion in the territory tributary to Los Angeles, now that first-class financing facilities for feeders have been provided.

Tractor Schools Coming

TRAINED mechanics from the State Agricultural College will hold one-week tractor schools in the following counties: Santa Cruz, week beginning December 18; Los Angeles, January 15; Orange, January 29; Fresno, February 12.

Sixty students compose a class or school. Lectures are given in high school auditoriums at 8 o'clock each morning, followed by actual work on tractors and gas engines the rest of the day. A small fee is charged each student.

All local arrangements are made by and fees paid to the county agricultural engineer of each locality. The object of the schools is to help farmers and fruit growers more thoroughly to understand and become more proficient in the use of tractors and gas engines. Those held last year were so well attended they will be continued this year. Increased interest is being manifested in this important work, writes E. J. Stirniman, extension specialist in mechanical engineering, Davis Farm School.

PLANNING COLD STORAGE PLANT

The Lindsay Farm Bureau is planning a cold storage plant similar to the one which was built by the Durham colony last year. Each member is asked to subscribe for at least three shares of stock at $10 a share and to rent a box for three years at $1 a month.

WILL WASCO LETTUCE PAY?

One hundred acres of lettuce is being raised experimentally near Wasco, where conditions are considered favorable for this succulent salad crop.

USE FIRE EXTINGUISHERS

Seven fire extinguishers were used by five Butte County farmers in putting out fires the past season, out of a total of 60 extinguishers which were sold to farmers in that county.

SHIPPING GRAIN TO JAPAN

The Tulare County Farm Bureau shipped 35 cars of grain the past season, some of it going to England and Japan.

Going to Build?
Send for our Price List of Lumber. We save you middleman's profit. Sash, Doors and Builders' Supplies.
Contractors' and Builders' Supply Co.
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In Place of the Sun

Part II—Dehydration Appeals to Housewife—Secrets of Successful Drying Explained Briefly

By WALTER H. GARDNER

THE housewife of today prefers to buy her dried fruits in two or five pound cartons. She does not like to have her purchase gouged out of a twenty-five pound open box on the grocer's counter. Fruit, particularly prunes, that is packed in pasteboard cartons has a tendency to "sugar," which is the term used to describe the condition whereby the fruit becomes bone dry with white sugar crystals clinging to the skin.

Wholesome though it may be, the housewife holds such fruit undesirable and prefers the black, shiny skin, free from crystallized sugar. Fruit dried in an evaporator seldom sugars in the carton—and here is why:

LOOK OUT FOR FERMENTATION!

You don't have to spend much time in the vicinity of a dry yard before your nose announces that fermentation is going on somewhere. A certain proportion of the fruit sugared will ferment—and fermentation is the accepted term for the chemical action by which sugar changes to alcohol and carbon dioxide, both of which are volatile and pass of into the air.

Now it is the sugar that preserves the fruit and the more sugar, the more water the fruit can retain. The more sugar, the sweeter the product—the more water, the heavier it is. Mechanical drying eliminates the loss of sugar by fermentation.

There are yet other savings; one large California plant is operated with five men. It took a bigger crew than that by far to handle the trays in the years when the owner depended on the dry yard. Mechanical drying finds itself in direct competition with canning, the cost of the cans and the extra transportation costs due to handling the greater weight of fruit from which the water has not been removed, sharply accents the economy of the dehydrator.

Grapes that are dried in the sun don't retain their natural flavor, they become raisins—not dried grapes. Today grapes are being dehydrated so as to retain their original color and flavor to such a degree that upon being refreshed with water, they yield a juice that is very similar to the fresh juice. Apple sauce "like mother used to make" is today being prepared from dehydrated apples.

Indeed, the advantages of the mechanical evaporator amount to an imposing total. Two years ago they were theory. One year ago they were hopes. Today they are proven facts and all because of the mechanical improvement of the necessary machinery!

TWO VARIABLES TO CONTROL

The whole secret of successful drying is in maintaining control of both humidity and temperature. In the modern plant the operator has both of these variable factors absolutely at his command. The latest device circulates the air in a corkscrew motion around the fruit, the fruit itself being kept in motion toward the point of greatest heat and least moisture. The product standing as it does for fours at a temperature of 160 degrees fahrenheit, arrives at a condition which the doctors call "sterile"; that is to say, absolutely free from all germ life. The result is a product which is pure and wholesome, with splendid keeping qualities, free from fermentation and hence heavier, sweeter and more nutritious than when dried in the sun.

Peach Varieties—Weldon

(Continued from Page 3)

But according to present standards of excellence, the latter peach would be more popular.

SHAPE IMPORTANT FACTOR

Shape is another factor that is deserving of consideration. Like those already mentioned, it is rather variable in the same variety under different conditions.

For example, Southern California districts produce a Phillips cling which has quite a prominent protuberance at the blossom end. In Northern California this peach is nearly round and almost totally devoid of the protuberance.

The most desirable shape for a canning peach is round or slightly oblong, with the two halves, when separated, about equal.

Any marked protuberance is objectionable, as it has to be trimmed from the slice and may be associated with gum pockets.

From the standpoint of the grower, productivity is exceedingly important, and he should choose varieties which in his locality can be depended upon to produce a good crop of fruit. Most of our peach varieties have a tendency to bear well, but there are differences which each locality must determine for itself.

COMMON CLING VARIETIES

Clings may be classified according to the time of ripening as "early," "midsummer" and "late" kinds. Up to the present time there have been no midsummer varieties of any consequence to supply the canneries during the period between the early and late varieties.

In very recent years considerable effort has been put forth to develop good midsummer sorts, and some of the most promising will be mentioned later.

The earliest good cling handled by the canneries is Tuskena. There are several peaches bearing the name Tuscan (a contraction of Tuskena) which ripen about the same time. Some of them are quite different from this variety and should not bear names that would mislead the planter.

One of these varieties is the Ontario (Southern Tuscan), which in Southern California has been more popular than Tuskena, or the Northern Tuscan, as this variety is known in the "up-State" peach districts. Tuskena and Ontario both are good peaches for early season canning. Ontario, when ripe, becomes a little red near the pit and has met objections on that account. Tuskena seldom develops any red color. For Northern California planting, this variety surpasses any of the other early season kinds, while in the South many growers prefer the Ontario.

Between the ripening time of either Tuskena or Ontario and Phillips, our most common late cling, the Sims, is ready. In some districts it is quite popular.

Sims is a solid yellow peach of good quality. Its chief fault seems to be in its dropping from the trees before ready to pick. Between the so-called Tuscans and Sims, the Orange and Lemon clings ripen. At one time there was a considerable acreage of these varieties, which in recent years has dwindled down to almost nothing, and orchardists would not be justified in planting either of them at the present time.

MIDSUMMER CLINGS

Since the freestone peaches no longer are very greatly prized for canning, and since the canning trade has depended upon certain freestones to fill in the gap between Tuscans and Phillips, the advent of some good midsummer varieties of clings is considered by those in closest touch with the peach canning business to mark an epoch in the industry.

Some of the better midsummer clings are Peak, Paloro, Libbee, Hanss, Johnson, Levis, Gaume, Harris, Walton and Sutter. As far as present records of these varieties are concerned, there would seem little question about placing Peak and Paloro at the head of the list. These two peaches follow Tuskena closely.

SUPERIOR TYPES

In quality, these are superior. The flesh is yellow to the pit, with no trace of red when the fruit is ripe. The quality, when they are canned, is most excellent and, according to many who have tasted them, is better than that of any others of our clings.

Electrician $50 TO $75 PER WEEK
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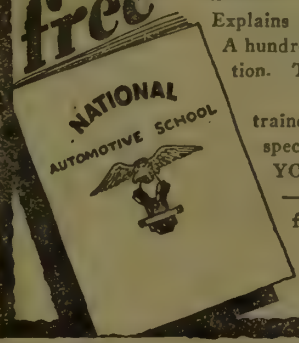

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Less than fifty years ago an application was made for a patent which created the possibility of speech between distant points. It was the culmination of years of study, research and experiment. It suggested a new aid in commerce and domestic life; a new tie to bind the people together. But it was only a suggestion—a dream.

To make that dream come true required the creation of an organization unlike any other. It demanded a kind of scientific knowledge that was yet to be formulated, as well as a type of equipment still to be devised. And it necessitated the financial and moral support of many communities.

Out of this situation grew the Bell System, bringing not only a new public service, but a new democracy of public service ownership—a democracy that now has more than 200,000 stockholders—a partnership of the rank and file who use telephone service and the rank and file employed in that service. The American Telephone and Telegraph Company exists to serve the people and is owned directly by the people—controlled not by one, but controlled by all.

Evolution is going on. Each year the ownership is more widespread. Each year the various processes of the service are performed more efficiently and economically. Each year new lines and extensions are constructed. The responsibility of the management is to provide the best possible telephone service at the lowest possible cost and to provide new facilities with the growth of demand. To do these things requires equipment, men and money.

The rates must furnish a net return sufficient to induce you to become a stockholder, or to retain your stock if you already are one; after paying wages sufficient to attract and retain capable men and women in the service. They must adequately support and extend the structure of communication.

These are considerations for the interest of all—public, stockholders, employees.

"BELL SYSTEM"

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy, One System, Universal Service, and all directed toward Better Service

Crossing Grapes by Grafting

See Illustrations on Opposite Artgravure Page—How New Varieties Were Produced—Important Grafting Discoveries

HORTICULTURAL scientists long have been aware that it was possible to cross grapes by grafting, as occasional instances are on record where they has been accidentally accomplished. The exact method was not discovered, however, until two years ago, when R. B. Holcomb, Tulare County farmer and nature student, finally worked out the process, after eighteen years of investigation.

The study of this problem was taken up as a result of the accidental hybridization of two varieties of grapes in Mr. Holcomb's vineyard. Twenty years ago a Malbeck vine was top-worked onto a Zinfandel root by the ordinary process of cleft grafting. The latter variety is a large, black wine grape and the former an early, red table grape. The result of the grafting was fruit which partook of the characteristics of both stock and scion.

This set Holcomb to thinking. The bud of a grape, he reasoned, was the seat of all its life, since leaves, roots, tendrils and fruit spurs all emanate from this biological center. If, he concluded, two buds were brought into close contact, they would unite and the resultant growth would partake of the characteristics of each bud.

Working on this theory, Holcomb put in a number of grafts, having the scion bud and the stock bud match as closely as possible. Some of the experiments were successful, proving the correctness of the theory. The failure of many of the trial grafts showed that they were not put in exactly right and that further study and practice would be needed to perfect the process.

The vine which resulted from the Zinfandel and Malbeck cross was crossed with the Moscatello Fino, a wine-colored, oval table grape. The result of this second cross is a large, black table grape, not as sour as the Zinfandel, and growing in long, loose clusters.

The method of crossing grapes which has heretofore been used consists in collecting the pollen from one variety with a camel's-hair brush and shaking it over the blossoms of another sort. Sometimes a cluster of blossoms is removed from the parent vine and placed immediately above a cluster of blossoms on another vine, the whole being covered with a paper sack. A half hour is considered sufficient time for cross-pollination.

The seeds from cross-pollinated grapes are planted, the resultant fruit being of many varieties, most of them worthless. This reproductive process requires four years to get results, while grapes may be crossed by grafting and hybrid fruit produced the same season, although the new vines sometimes do not fruit until the following year. One vine grew 22 feet the same season it was grafted.

NEW PROCESS SAVES TIME

Not only is much time gained by the new process, but the work can be performed more intelligently and with greater assurance of satisfactory results. It is only in rare instances that a meritorious seedling is secured, their great variation and poor average quality being well known.

Plant breeders who work by the pollination method are forced to waste a great deal of time and effort in producing "worthless" varieties. Cross-grafting, when properly done, produces a hybrid which partakes in greater or lesser measure of the characteristics of both parents, which largely eliminates the element of chance and enables the breeder to operate with scientific certainty.

The first difficulty encountered in cross-grafting is in locating a bud in the stock or trunk of the old vine. Instead of a protuberance, it often appears as a small, sunken place, easily overlooked. The trunk is sawed off one-half inch above the bud and the stump split as close to the latter as possible.

The scion consists of a two-joint section of last year's growth. Wood near the base of the vine and about three-eighths of an inch in diameter is preferred. The lower end of the scion is whittled to a wedge, one side of which is close to the bud. The usual method is to start the slope well below the bud, accidental hybrids having been due to occasional instances where the cut extended up to one side of the bud.

The scion and stock buds are made to match as closely as possible, the same being true of the white wood of both graft and root. The success of the process depends largely upon the skill with which the buds and white wood are made to match.

Grafting is done as soon as the buds swell in the spring. A scion is inserted in each side of the stump, the top of which should be about two inches below the surface of the ground. The grafts are protected with cloth and then covered with dirt.—O. H. B.

Explanation of Illustrations on Opposite Page

Upper row, left to right: (1) Cross between Malbeck and Zinfandel. This fruit partakes of the characteristics of both parents. (2) Result of cross between Berry and Violet Chasselas — a round, red medium-season grape with Concord flavor. (3) Moscatello Fino and Concord cross; a new variety said to be ten days earlier than the Thompson and of very rich flavor.

Below, left: A cross of No. 1 (the original hybrid) upon Moscatello Fino. Lower right: An accidental cross, one parent of which was Moscatello Fino and other parent unknown, giving a long, black, finger-like fruit of high sugar content.

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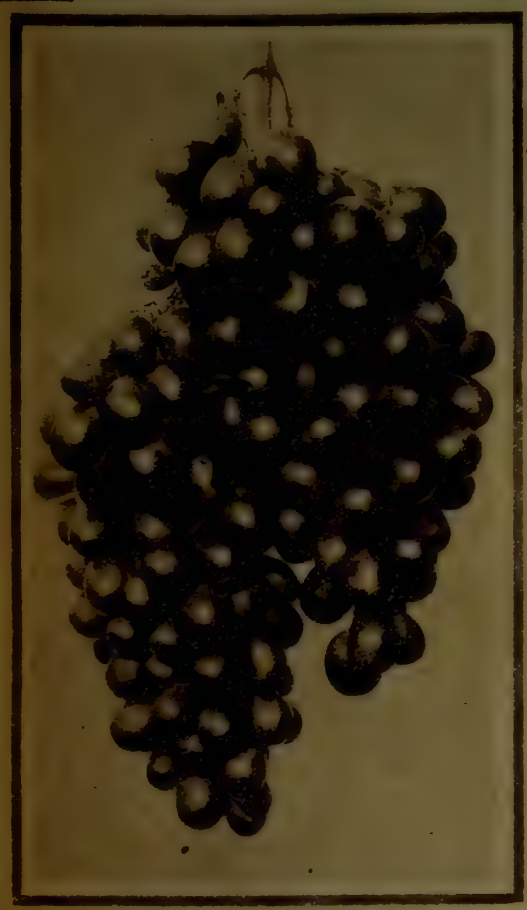
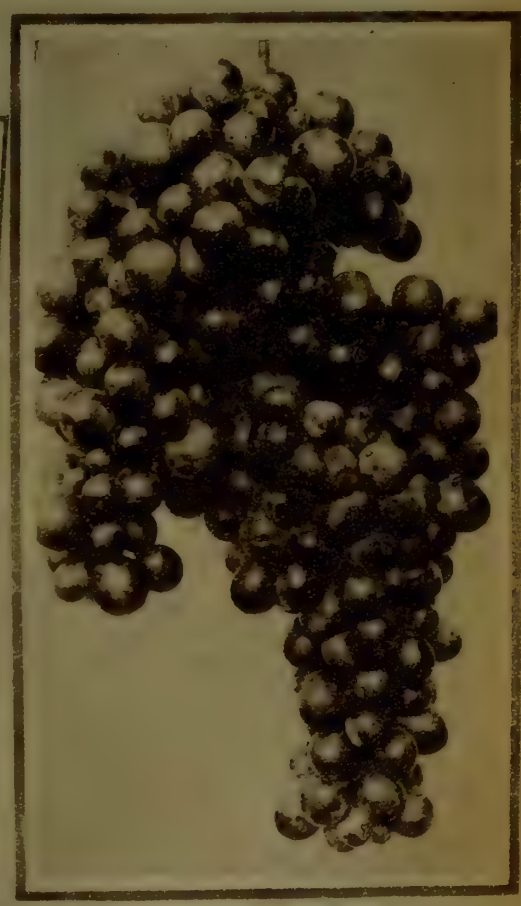
JOHN L. KNORPP, President

R. A. Knorrp, Vice President **B. B. Reynolds, Cashier**

He Creates New Grape Varieties

HAS R. B. Holcomb, Tulare vineyardist, discovered a principle that will revolutionize grape growing? After eighteen years of patient experimenting he claims at last to have found the simple secret of crossing varieties by grafting. His achievements have attracted the attention of leading viticultural authorities, who pronounce some of his new grapes superior in many respects to common varieties. A $200,000 company is reported to have been formed at Fresno for exploiting the discoveries of this practical producer. See the article on opposite page





New Types—New Flavors

The fruit illustrated is described on opposite page. Top, center—Violet Oliver, the "Sun-Maid Queen" of the raisin industry, who toured the country recently and conferred the Knighthood of the Raisin upon many prominent men, lends her winning smile to the adornment of a luscious cluster.

"Delicious and Refreshing"

That Mr. Holcomb's grapes are "all there" as to size and flavor is attested by the editors of ORCHARD and FARM, who had the pleasure of sampling them. Left—An irrigation scene in the great San Joaquin Valley, where the grape has created millions of dollars in new wealth. Below—A purplish-black "lady finger" variety of unusual sweetness.

R. B. Holcomb in his vineyard.

THE chicks you save mean money *in*. The chicks you lose mean money *out*. So, why take chances, why experiment, when Sperry BABY CHICK SCRATCH puts the whole baby-saving secret in the hollow of your hand?

Made of prime re-cleaned seeds and cracked grains, together with bone meal and charcoal, Sperry BABY CHICK SCRATCH gives baby chicks exactly what Nature intended them to have: a uniform, balanced ration properly granulated and proportioned. And it is clean, *clean*, CLEAN from start to finish.

The granulation is just the right size for baby stomachs. The bone meal is a great bone builder. The charcoal helps to keep the digestive tract sweet—and that means a lot to the chick (and to you).

Make it a point to feed Sperry BABY CHICK SCRATCH *right from the start*—and you'll find the cost of the feed as nothing compared with the chicks you save.

SPERRY Baby Chick SCRATCH

Sperry Baby Chick Mash

Made of ground grains and high-protein nutrients, Sperry BABY CHICK MASH meets a demand of many poultrymen. It should be fed in conjunction with Sperry BABY CHICK SCRATCH after the first week. It makes for rapid growth without overtaxing the gizzard and digestive tract of the baby chick.

What goes into this mash? Clean mill feeds, ground whole grains, soya bean meal, meat meal, bone meal and buttermilk. The mill feeds have a cooling, slightly laxative effect. This makes for better digestion. Oat groats (without hulls) are one of the ground grains important to chicks. Bone meal is important too—it gives the chicks bone-making material as they develop; while buttermilk and meat scraps supply the animal protein needed for muscle, tissue and feathers.

Feed Sperry BABY CHICK MASH together with Sperry BABY CHICK SCRATCH—and you won't have to worry about saving a big percentage of your hatch.

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Naturally, I want to save all the baby chicks I can. Please send me your book "MAKES HENS HAPPY" which contains expert directions on feeding baby chicks.

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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

DECEMBER 24. 1922

Columbia Belle, White Leghorn, with 324 egg record in Santa Cruz contest.
Alex Stewart, owner. (Courtesy R. B. Easson.)

A city that has turned to farming

Top—General View of Pasadena City Farm. Above, left—Administration buildings. Right—Superintendent Bougher examining good hill of White Rose seed potatoes. Left —The superintendent with one of the farm trucks.

One of the mature orange trees, showing results of good treatment and proper care. The entire grove has been rejuvenated.

Right—Showing how a badly damaged tree, girdled by gophers, was saved by inarching.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
DECEMBER 24, 1922

Municipal Farm Solves Sewage Problem

Southern California City Carries on Unique Agricultural Project

A YEAR ago Pasadena took over the management of her 500-acre farm and placed it in charge of Bert C. Bougher, former farm adviser and ranch superintendent, who is making a conspicuous success of rejuvenating a large citrus grove, improving potatoes and solving other farm problems. The city has begun the construction of a new $325,000 septic tank for the treating of sewage, the disposal of which forced the acquisition of the land. It is intended to develop a model farm, under absolutely sanitary conditions, making it a credit rather than a reproach to the municipality. Other cities, as well as farmers, are watching the experiment with keen interest. —*The Editor.*

By O. H. BARNHILL

THE people of Pasadena did not buy a thousand acres of land lying along a dry wash four miles southeast of the city because they were land hungry or wished to speculate in real estate, but because they were forced to provide a place for the disposal of sewage.

The city has far outgrown the capacity of the septic tank now in use and is constructing a new sewage plant to cost $325,000, which is expected to take care of the waste water from homes of 100,000 people living in Pasadena and its suburbs.

The system to be employed is in successful use in other places and it is claimed, will purify the sewage water so thoroughly that it will be more sanitary than ordinary city water, entirely devoid of odor and disease germs. It is estimated the sale of sludge—solid matter which remains after sewage is treated—will pay for operating the plant and that the farm will yield enough profit to retire the sewage bonds and leave a surplus for putting up new farm buildings and buying needed equipment.

ADVANCED METHODS

The Pasadena farm is of special interest because of the excellent work being done in growing high-grade seed potatoes and in rejuvenating a run-down orange orchard. The experiment also is of value because Los Angeles and other Southern California cities may be forced to dispose of their sewage in a similar manner, in which case it will then be up to farmers to utilize the sludge and waste water.

The 515 acres Pasadena has under cultivation is divided as follows: Citrus fruits, 75 acres; walnuts, 70; potatoes, 250; corn, 70; alfalfa, 50. The potatoes are of the White Rose variety and are grown exclusively for seed.

CORN YIELDS 30 TONS

The corn is sold to dairy farmers for silage. This crop is to be discontinued for the very unusual reason that it grows so rank (sometimes attaining a height of 18 feet and yielding 30 tons to the acre) that when it is transported along the highway the traffic is obstructed. A truck and trailer haul 12 tons at a load.

The heavy corn growth is due to the large amount of nitrogen in the form of ammonia which the irrigation water contains. The problem of the Pasadena farm is not how to obtain enough water and fertility, but profitably to dispose of the surplus. On account of the lay of the land and the kind of farming done in the immediate vicinity, it is impracticable to sell water.

Because of the conditions mentioned, potatoes yield as high as 200 and even 300 sacks per acre on the best land, although the average for the entire acrage is about 100 sacks. Twenty acres planted for seed last spring made 175 sacks to the acre. The average for the State is 65 sacks and for Southern California, 48 sacks.

DOUBLE CROPPING ABANDONED

The double cropping method which had been followed in former years was discontinued when the city took over the farm at the beginning of the present year and a cover crop grown on most of the potato land. The seed patch was certified and severely "rouged" by pulling out all poor plants. Only perfect tubers were used for planting the main fall crop, which also was certified.

The crop this year was cut short by flea beetles, leaf hoppers and tobacco worms. But the nematode is believed by Mr. Bougher, manager of the farm, to be the most serious of all the pests which threaten the vegetable industry of California. He believes the soil on which seed potatoes have been grown, as well as the tubers themselves, should be examined for this pest and that it is advisable to plant corn or small grain on land where it is found.

BREEDING BETTER POTATOES

An interesting experiment in breeding better potatoes is being tried on the Pasadena farm. From five rows which were planted last February, all poor plants were pulled out and the crop dug by hand. Only those hills having eight or more good-sized tubers were saved. The seed obtained in this manner was used to plant a larger patch in the fall, which was treated in the same way. In three years there will be enough of this selected seed to plant the entire 250 acres.

EXPERIMENTAL PLANTINGS

Fifteen or twenty experimental plantings were made to test the different methods of storing seed, fertilizing and other operations connected with potato growing. The results are being carefully tabulated and will be used to determine future cultural methods.

The citrus orchard, which comprises mostly oranges, was in a very bad condition a year ago, the trees having been weakened by improper irrigation, shallow cultivation, injudicious pruning, gopher girdling and frost injury. In less than a year the improvement made in this orchard has been most remarkable, suggesting that the poor condition of many other orchards may be due as much to neglect and wrong treatment as to frost injury. (It is easy to blame the weather for poor farming.) Most of the trees look thrifty, having put out new shoots and feeder rootlets, and are bearing some very fine fruit.

The ground was plowed a foot deep and a subsoiler run down another foot, thoroughly aerating the soil and putting it in fine shape for root and moisture penetration. The ground was then cultivated five inches deep and a weed knife run four inches beneath the surface. Instead of running water in four furrows in the middle of the row, eight furrows were made and cross furrows opened, so as to carry the water close to all sides of the tree. A fine cover crop of melilotus indica is now growing in the orchard and will be plowed under next spring.

SURGERY SAVES TREES

The first step in the rejuvenation of the orange orchard was to examine each individual tree carefully and stencil on its trunk the row number and number in the row. A record then was made of the orchard and each tree given the treatment it needed. Over 150 were found to have been birdled by gophers. These were repaired by inarching; that is, three small seedlings were set close to the trunk and cut off a few inches above the ground, and the ends inserted in an opening in the bark and covered with wax. All but about a dozen of the injured trees were saved.

Other trees were given special fertilization or topworked with buds taken from thrifty, heavy-bearing individuals. If the response is unsatisfactory, the tree is removed and another planted in its place, as the ground is considered too valuable to be encumbered with poor, scrubby trees. The tree surgery, stenciling and a careful pruning cost $2500.

The orchard is to be equipped with ten-gallon smudge pots—one for each tree—burning crude distillate, which costs two and one-half cents a gallon. An 80,000-gallon tank and two tank wagons are to be procured at a cost of $2500 and 16 men employed at 90 cents an hour *(Continued on Page 17)*

Spray Lemon Trees Now for Brown Rot

Crop Short This Year—Those Who Spray Will Collect Dividends—How and When

By DR. J. ELLIOT COIT

Formerly Professor of Citriculture, University of California. Author of "Citrus Fruits" and other standard reference works. An exclusive contributor to ORCHARD and FARM.

THERE is no longer any excuse for losing a part of the lemon crop each winter with brown rot.

The cause of this decay has been worked out by scientific investigators and is well understood. Moreover, the method of prevention has been perfected and has been tried out on commercial ranches and it is known to be effective, practicable and cheap.

Within the packing houses, brown rot control has become a matter of routine, but there are always a number of growers who neglect to take the necessary precautions. This year, particularly, the supply of lemons is short and those who have them will do well to give them every protection.

WET WEATHER PROBLEM

Brown rot is always worse after wet weather. It causes a large number of mature lemons to decay while still attached to the trees. The fruit turns light brown all over, usually without the formation of dusty spore masses, but with an odor peculiar to this particular decay. All affected lemons are a total loss, as once the fungus has gained access to the interior of the fruit, it spreads very rapidly. The true cause of this trouble is a fungus with a formidable name, *Pythiacystis citrophthora*, which is normally a soil fungus, living at considerable depths in the dry season and coming to the surface to bear fruit in the form of spores in wet weather.

This fungus is of a very low order, not far removed from the dividing line between animal and plant kingdoms. While this form is classified as a fungus plant, the reproductive bodies or spores are very delicate, thin-walled cells with cilia or tails which enable them to swim around actively in a thin film of water.

HOW FUNGUS SPREADS

During moist weather these spores are formed in large numbers at the surface of the ground, especially in damp and shady places such as under low-pruned lemon trees. During a rain the drip from the trees spatters the spores up onto low hanging fruit or those within splashing distance of the ground. The spores swimming through the film of water on the fruit finally enter through the stomata or natural breathing pores, of which there are many thousands on each fruit. Once inside, the spores grow and produce decay in three or four days.

Some spores may fall on the bark of the trunk but are able to gain entrance to the cambium only near the ground—especially where the soil has accumulated above the bud union. Decay of the cambium tissue stimulates the tree to produce a mass of gum at that point. This is what is known as gum disease and is caused by the same fungus which caues brown rot.

If a brown rot lemon is mashed and some of the tissue placed in a fresh wound in lemon bark and the wound kept moist for a few days, a typical case of gum disease will develop. This is known as inoculation, and is used only by plant pathologists to prove out the causes of different diseases. Sour orange bark is highly resistant to gum disease and that is the reason why all lemon nursery stock in California nowadays is budded high on sour stock.

CHEAP EFFECTIVE PREVENTIVE

Fortunately a simple, cheap and very effective method of preventing brown rot is now available. Because these spores are so thin walled they are susceptible to bluestone solution even in minute quantities. If the surface of the ground under the trees is wet with bordeaux mixture all spores will be killed and additional spores prevented from forming. Therefore, it is necessary only to spray all the ground under the trees with bordeaux, going well out to the extreme drip of the trees, in the early part of the rainy season, practically to eliminate brown rot and greatly to reduce gum disease for that season.

Some growers object to this on the ground that subsequent fumigation may injure trees sprayed with bordeaux. This excuse is not valid, however, because there will be no injury except to leaves coated with bordeaux.

Inasmuch as brown rot does not attack leaves, the workmen should be directed to wet the surface of the ground, and as few leaves as possible. If a handful of leaves unintentionally sprayed should be dropped by fumigation, it will not matter when compared to the much greater damage of brown rot.

NOW IS THE TIME

Spray now all lemon trees. Use bordeaux mixture, "4-4-50," if home made; if the commercial paste is used, ten pounds to 100 gallons of water; or if the prepared, dry powdered bordeaux, six pounds to 100 gallons. Every grower is urged to get busy before the next rain.

ORCHARD and FARM

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.

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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give advice or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

FARMERS STUDY SPEAKING AND WRITING Should journalism and public speaking be taught at our agricultural colleges? By all means, we believe. The ability to express oneself fluently and forcibly both by word of mouth and on paper can be utilized to good advantage in forming agricultural organizations and in securing legislation for the benefit of the farmer. The average agriculturist is a man of action, rather than words. He is not trained in the art of writing and speaking. The result is those who are more proficient along these lines wield a greater influence in the official and business world. Farmers of the future should be trained to hold their own in business and politics.

WHERE'S THE 54-EGG HEN? A professional poultryman will seldom admit that any of his hens lay less than 150 or 175 eggs a year, while 200-egg hens are getting to be quite common. The average hen, however, lays only 54 eggs a year, which shows the vast amount of room for improvement. The greatest gains in the chicken business, both in quantity and quality, are being made on the Pacific Coast, especially California, which during the past decade has increased her egg production 24,000,000 dozen. During the same period the egg yield of the New England States fell off 17,000,000 dozen. The Petaluma district alone is shipping a carload of eggs daily to New York City. Mild climate, cheap building material, and year-around green feed are probably the main factors in Biddy's success on the Pacific Coast.

HOW LONG WILL THE MASSACRE CONTINUE? ORCHARD and FARM in the past has had considerable to say about the injury to fine breeding animals through overfitting for shows. The fair and stock show season just closing has emphasized the importance of this factor. Every year hundreds of fine animals, especially hogs, are harmed by the "finishing" process deemed necessary for showing. And all too frequently this actually results in the "finish," as far as utility is concerned. Breeders may be willing to sacrifice a few animals upon the altar of pride, but the usual result is to prevent exhibition of many of the best individuals. And when the highly fitted stock is sold to inexperienced buyers who do not understand the "letting down" process, dissatisfaction detrimental to the entire industry results.

LET US BE FAIR, ALTHOUGH PROGRESSIVE Authorities of the agricultural colleges, extensive service and U. S. Department of Agriculture are subjected to a great deal of criticism for failure to recognize and indorse new crops, improved methods and various commercial projects. Yet a little thought will make apparent the difficulty of their position. They cannot jump at conclusions; nor on the other hand, have they time to investigate thoroughly and immediately every innovation that arises. The farmers have come to realize they must solve more and more of their own problems and depend upon the specialists for consultation, assistance and advice rather than immediate results. Let us be quick to seize new opportunities but slow to criticize our overworked educators and scientists!

"What's New?"—Keeping Abreast of Agricultural Progress

Hawkins Hauls Milk

JOSEPH HAWKINS of Pomona is hauling 750 cans of milk daily to Los Angeles. This truck-transported dairy product is worth a million dollars a year.

Quick Wireless Crop Reports

WITHIN five minutes after a report on the beet sugar crop of Germany had left Berlin, it had been sent by radio to receiving stations in all parts of the United States.

'Finger Printing' Cows

IN order to identify valuable pedigreed cows, the Minnesota Experiment Station is making imprints of cows' noses, in much the same manner that finger prints are taken to identify human beings.

Now, We'll Chew 'Chevon'

GOAT growers at last have found a satisfactory name for their meat product—"chevon." The word is of French origin and in the future should suggest meat which partakes of the characteristics of both mutton and venison.

Raises Berries for Miners

MISS CARRIE POWERS raises strawberries on her ranch at Goodyear's Bar, Sierra County, and sells them to miners and lumberjacks at good prices. Although her berry patch is 4000 feet above sea level, ripe berries were picked from unprotected vines November 1.—E. G. KINYON.

Promising Hybrid Walnut

A VALUABLE new walnut—the Grunel—has been originated by J. G. Grundel of the Orange Blossom Colony, near Stockton, by crossing the Eijon seedling with the English variety. From three-year-old trees a good-sized crop was harvested the past season. The nuts are said to be larger than any other variety, with soft shells and solid, sweet meat.—MATTHEW HAMILTON.

Trees Need More Water

NINE-TENTHS of the deciduous fruit trees of Southern California suffer from under irrigation, according to V. F. Blanchard, who says that most orchardists would be amazed if they were to take a soil augur and bore down four feet into the dry subsoil. He is of the opinion that more tree troubles are due to fluctuating moisture conditions than to all other causes put together.

The 335-Egg Hen Is Here

LADY JEWELL, a White Leghorn hen owned by H. M. Leathers of Woodland, Cowlitz County, Washington, laid 335 eggs in 365 days, at the egg-laying contest of the Western Washington Experiment Station, which closed in November. This is eleven eggs more than any other hen ever laid in one year, according to reports received.

Boston Blanket Protects Produce

AN insulating material called "Boston blanket" is being very successfully used to cover warehouse walls both inside and out, in Lassen and Modoc Counties. The contents of the buildings are protected from both heat and cold and kept for a considerable length of time in good condition. Fruit and vegetable growers in the Surprise and Honey Lake Valleys have taken advantage of a string of Boston blanket warehouses recently established in the counties named, to hold their crops for favorable markets.—E. G. KINYON.

Unusual Cow Testing Plan

NINETY-EIGHT dairymen in Whatcom County, Washington, have formed a cow testing association which differs from most others in that the milk is not tested at the dairy, but at some central place, to which all samples are brought. Each dairyman takes his own samples, which are collected once a month by the tester, who determines the butterfat content of the milk. Fifteen hundred cows will be tested for $1.25 each per year. This arrangement gives the tester time for assisting the dairymen in balancing rations for the best milk production.

Spraying for Blight

"I BELIEVE that before long we shall find in spraying our most practical means of protection against pear blight," declares Prof. F. C. Reimer, director of the Southern Oregon Experiment Station at Talent, Ore. "I believe that bees, flies, thrips, aphids and ants are responsible for most of the blight infection. The ant is probably to blame for half of all cases of carry-over blight and reinfections." Professor Reimer is recognized as one of the greatest authorities on blight control and his conclusions carry corresponding weight.

Hens Destroy Walnut Worms

THE best way to get rid of walnut codlin moth worms is to feed them to hens, is the conclusion reached by Harry Stiner, of the State Department of Agriculture, who for three years has been studying methods for controlling this pest. Although nine-tenths of all the worms leave the trees in the nuts, only one in fifty ever reaches the packing hopper, he points out. This means that 88 per cent of the worms escape from the nuts on the premises. A good many of them hide in the sacks, which sometimes are steamed and ironed to get rid of the larvae. This method, however, has not proved very effective, he maintains.

Fumigating the empty sacks is recommended by Stiner, who says this job can be performed co-operatively for one-half cent per sack. The bulk of the worms, however, may be caught by chickens running underneath the drying trays, which should be raised a foot or so off the ground. The old speckled hen is a champion pest destroyer, asserts the State entomologist.

Unique Method of Olive Planting

THE Estacada method of planting olives, which is said to reduce the time of coming into bearing from ten years to four years, has been tried by J. H. Brown, manager of the Ehmann Olive Company, Happy Valley, Butte County, with encouraging results. The method was developed in Spain.

A limb eight feet long and four to six inches in diameter at the base is buried horizontally within a few hours after cutting, in a foot of soil, leaving a few inches of the small end exposed. This is done in December, the cutting being ready for planting the following spring.

A hole four or five feet deep is dug and in the bottom six or eight inches of manure is placed, covered with a layer of soil of similar thickness. The limb then is set in the hole, resting upon the soil, and the hole filled. Dirt then is piled up around the limb until only a few inches of the top is left exposed.

During the summer the limb is watered through a small, sharpened pipe, driven to a point near the base. In the fall the mound of dirt is removed, considerable new growth having appeared by this time and roots having been put forth from the base. Mr. Brown set out 200 trees on his own place by this method last spring and all but six or seven now are thriving.—H. F. BAKER.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

I—LUTHER BURBANK

NO plant propagator or horticulturist ever known has attained the world-wide recognition accorded Luther Burbank. His Santa Rosa home is the shrine for thousands of visitors from all States and all countries. To measure the value of his work to mankind is manifestly impossible.

The Burbank potato and tomato alone have added millions of dollars to the world's agricultural wealth. And the gorgeous flowers he saw created by improving and crossing existing varieties have given much in the way of aesthetic value to appreciative plant lovers. Hundreds of fruits, vegetables and flowers owe their present perfection to his patient endeavor and guiding genius.

Now, in his seventy-third year, Burbank is working with the same intensity that has characterized his lifetime of labor. And such articles as he finds time to prepare are published exclusively in ORCHARD and FARM.

In no other magazine will you find the original literary work of Luther Burbank. It appears only in this publication. Watch for future contributions from this world-famous naturalist.

This Season in the Apiary

Practical Suggestions for the Professional Beekeeper and the Novice—What to Do This Month

By J. D. BIXBY SR.

THE last of this month marks the end of the quiescent or broodless period for bees in California. This period corresponds to the "hibernating" period in the colder States, when bees are more or less confined to the hives.

In climates where they can fly nearly every day it is the arrival of a pollenless period rather than cold that causes the bloodless condition of the hives. Pollen greatly stimulates the activities of the queen, while a flow of nectar, unaccompanied by sufficient pollen, has little effect upon her laying.

J. D. BIXBY

From about the middle of October to the latter part of December, little or no brood will be found in normal colonies, those which have been given new queens or which have superseded their queens late, being possible exceptions. During the last of December eucalyptus begins to furnish pollen, especially near the coast, and the queens are at once stimulated to moderate egg laying.

The eucalyptus Rogusta, a rough-barked, brittle-limbed variety growing 30 to 40 feet in height, shows the first bloom, often by or before December 1, although near the sea the common Blue Gum is almost as early.

These are followed about January 1 by the pussy-willow along the streams, and from this date both willows and eucalypts furnish an almost constant succession of bloom up to April. San Diego city, where the E. Robusta is much planted as a street tree, is noticeably earlier than other localities in its blooming period.

Open hives as little as possible during this month, as the colonies are small and the weather is likely to be cool and windy. Test every hive by "hefting" (lifting the rear end), and if any are short of stores supply them with honey or sugar syrup. The best way to feed this is to fill an empty comb with the syrup—made of sugar and water, equal parts by measure—remove a comb from the brood chamber and insert the filled comb. A tablespoonful or more—the more the better—of honey added to the feed will make it more acceptable to the bees.

If a large quantity of feed is to be prepared, a speedy way is to mix it in a tub, which is placed under the gate of an extractor. Then with a spray pump, such as is used to wash windows, etc., spray the feed into the cells of the empty comb, placed on top of the extractor reel. When one side is full, reverse the comb.

Make the syrup a little thinner than as directed above; say, one-third sugar, two-thirds water. Have the water a little warm. By this method a comb can be filled in one or two minutes and not a drop be wasted.

EXCLUDING ROBBER BEES

Have the comb-boxes in which the combs are transported, carefully closed to exclude robber bees, and put the empty combs, taken from the brood-nests, back into the comb-boxes; don't leave them about to excite robbing. Cover the hives again carefully, using a quilt of some kind over the frames to conserve the warmth of the hive.

These suggestions will apply to all the citrus-growing sections of California. At higher elevations, especially in the northern sections of the State, little need be done but to see that every colony has abundant food and is protected from cold winds.

Getting the Early Honey

IN the counties of the great valleys of California "North of the Tehachapi" there are two honey-flows for which it will pay the commercial honey producer to be on the lookout—the manzanita and the almond.

The manzanita, of which there are four or five varieties, grows abundantly in all the wooded sections, and is one of our most beautiful native shrubs in flower, foliage and fruit.

In mild winters its lovely waxen bells yield an abundance of nectar, producing honey varying from pure white to light amber, according to locality. Like many of our widely distributed nectar-bearing plants, it will not thrive below a certain elevation, and its nectar is whiter the higher up it grows, while its delicate flavor persists everywhere.

GOOD YIELDS SECURED

In favorable winters—warm and sunny—yields of 40 to 60 pounds per colony frequently are secured, while the colonies are built up in splendid shape to gather the almond and deciduous fruit honeys which follow.

The period of bloom commences in midwinter, about the holidays, when the colonies are at their lowest ebb and least fitted, because of small field forces, to store a surplus.

Therefore, get your "think-tank" at work to overcome this defect. Find your strongest colonies and mark them. All queenless colonies and all weak ones, unless they have particularly good queens, should be united with one of the very strong colonies. Never unite a weak colony with another weak one, unless you can unite enough to make a very large one. (Fourteen united in one is my limit, and it paid me big.)

If you have a few colonies below the average, but still moderately strong and having a little sealed brood, remove a comb or two from such colonies and give it to one of your strongest ones. So proceed until the strong colonies are markedly stronger than the rest of the yard. You may be able to repeat the drawing of sealed brood from the weaker colonies in ten days or two weeks.

WEAK COLONIES BENEFITED

These strong, built-up colonies will give you surplus, if any is to be obtained, while the weaker colonies will build up on the manzanita and be ready for the later flows from deciduous fruit trees.

In many localities of the great northern valleys almond bloom is of great importance to the apiarist, not only because a noticable surplus is often obtained, but for the great increase given to the colonies. Not only are they built up strong, but sometimes the natural increase, by swarming, is considerable.

Where increase is desired, or there is prospect of surplus honey, much the same method as outlined above is to be followed. All queenless colonies should be united with strong, normal colonies. A colony that long has been queenless is almost worthless as a stock from which to build up a normal colony, as it has no young bees, to whom, naturally, falls the care of the brood and emerging bees.

ADD EMERGENCY BROOD

Such a colony must be brought as near as possible to normal by the liberal addition of hatching (emerging) brood, which might more profitably be devoted to strengthening an already normal, active colony.

All sealed brood that can be spared from the support of the weaker colonies should be added to stronger colonies until their complement of frames of brood is full—say, 7 frames to an 8-frame hive or 8 to a 10-frame.

CALIFORNIA has 27 nectar-bearing plants that produce honey in commercial quantities. And some of these produce two or three shades of honey, according to the elevation or latitude where grown. Is it any wonder that we have such awful rows over "grading"?

Bee Notes—Combed or Extracted

MOST COMMON NECTAR PLANT I am reminded that the only known nectar-bearing plant which is native to every county of California is Blue Curls. (You may know it under the name of camphor weed, vinegar weed, coyote weed, mustang, flea weed or a dozen other "aliases." The botanists know it as *Trichostema lanceolatum*.) This is a common weed of the stubble fields. The "woolly blue curls," a not very common shrub, growing at considerable elevation on volcanic soil, and one of our most beautiful wild flowers, is another plant.

WRONG TIME FOR REQUEENING—Don't attempt to do any requeening or making up of nuclei at this time of year. This is a very common fault of amateurs or beginners, and is almost sure to result in failure.

DISTINGUISHED VISITOR Prof. A. E. Lundy of Cape Colony, South Africa, is investigating apiary conditions in the United States, in the interest of his Government. He has been touring this country by motor with his wife and little daughter, and recently arrived in Los Angeles from Washington, D. C. Both Prof. Lundy and his wife were born in South Africa. They report Southern California as the most "like home" to them of any State they have visited, owing to the similarity of vegetation and weather conditions.

LESS NOVICES OUT A meeting of the Fraternal Beekeepers' Society recently held at Exposition Park, Los Angeles, called out a good attendance of commercial honey producers, many of them old-timers. There was a noticeable absence of the amateur class, especially women, who have been so prominent of recent years. An effort is being made to organize a co-operative selling association, to succeed the defunct State Honey Exchange.

AN OLD-TIMERS' TESTIMONY Among the attendants at a recent beekeepers' meeting was W. H. Allen of Santa Paula, one time county inspector of Ventura County, 83 years old, still hale and vigorous and still a beekeeper. Three or four years ago, after a very severe operation, Mr. Allen was given up to die. "And," he says, "I would have died if my folks could have had their way about it; but I couldn't stand sitting around doing nothing, so I got a half dozen colonies of bees and went to work; now, the third season, I have secured a good crop of honey, have 190 colonies of bees, and am in better health than for years."

DOWN AND OUT, BUT COMES BACK—Another man present was caught in a big financial smash in the city a few years ago, losing his entire fortune and his health as well. In the sixth decade of life, and with absolutely no knowledge of rural conditions, he started out to find work for support. A beekeeper friend found him a job to look after a mountain apiary, at—listen now!—$5 per month and "found." A rigorous course of dieting and outdoor life restored his health, and today he is an expert queen-breeder, can command a living wage, and has money in bank.

AN ARTISTIC ERROR One of the counties making an apiary exhibit at a leading Southern California fair this season, lost the first prize award because of an artistic error. This county had an exceptionally fine display of extracted honey in crystal glass, but, unfortunately, the background of the exhibit was of a light sky-blue.

Now, honey of every variety has more or less of a yellow tinge, and yellow and blue are complementary colors and produce green; therefore, all the honey was given a green tinge, which detracted from its true color value. This was especially noticeable because two years ago this same county secured the second prize solely because its small exhibit was enhanced by a background of contrasting color.

Home Farm Happenings

By One of Us

PRUNES AND WET WEATHER

"Now, John, let's get a lot of these prunes off the trays and into the bin. I don't much like the looks of the weather," said "the boss" as he walked through the yard with the foreman.

"Yes, but another day's sun will do them a lot of good," replied Foreman John.

"No question about that; but if we 'get by' with them, there's just that much more weight, and most of them are pretty dry."

"Plenty of soft ones, though; lots of them roll on the pit, you'll notice," continued John. "Of course, if it does rain, there's a lot of work to stacking and unstacking and all that, but after we've got this far with them I'd sure hate to lose them in the bin."

"Well, if worst comes to worst, we can work them over in the bin, or maybe spread them out thin on the shed floor. Let's dump a lot of them and try it, anyway."

And we did.

And it rained.

And there was a "spell" of damp weather.

And we shoveled the prunes over in the bin, and finally spread a lot of them out thin on the floor, and after a while put some of them on the trays again before we got them dry enough to go.

Yes, we were better off than we would have been if they had stayed on the dry-yard during the rain, but it was a lot of work and has made dehydrator converts of every man on the ranch.

ABOUT THE GEESE

"How much grain do you suppose those geese have eaten during the past three years?" asked the boss one day of John, as they were doing the evening chores.

"Never thought how much, but it would count up to quite a few sacks, I expect," replied John.

"Of course, they are pretty to look at, but we don't seem to have much luck with the increase, and I expect we might as well sell the whole lot to the next one who comes along looking for geese.

"All right," said John—and then he continued:

"A goose is sure a deceiving looking thing. They eat a lot but don't weigh much. When you were away the other day a man came along and wanted four geese. I told him he could have some of those young ones for 30 cents a pound. I figured they would weigh up pretty well, for they looked big—supposed they would go around 8 or 10 pounds anyway. We caught them and they weighed a little over 4 pounds apiece!"

Some folks can raise all kinds of poultry, but on some other places, for some reason, it just doesn't pay. Now these geese raise only 8 or 10 goslings a year—it just looks like a good idea to clean them off the ranch. Guess maybe we'd better leave the specialties to the specialists.

ARE WE GOOD CORN GROWERS?

We had a pretty fair crop of corn this year—brown "gyp." Just finished picking it the other day.

Like most corn crops it got less care than it should have, with consequently less yield.

If we had to take care of our corn out here in California as they do in Kansas and Iowa, we could make some wonderful yields, but we are a lot of poor farmers—especially for some crops—and corn seems to be the "orphan child" on a good many ranches.

But when a Japanese or a good corn farmer really gives it care, it is a good money maker. With a 30-sack yield at about $2.00 to $2.40 a sack—as some made this year—it is a good paying grain crop.

The writer of "Home Farm Happenings" is engaged actively in farming on a typical California diversified ranch, and his chatty account of "What happened last week" affords much information of practical value, as well as entertainment. Watch for this column in future numbers of ORCHARD and FARM. "For all of us by one of us."—Editor.

Egg Laying Contests Are Great Success

Long Distance Champions of Feathered World Make Wonderful Records —How Birds Were Handled and Fed in California Competitions

By R. B. EASSON

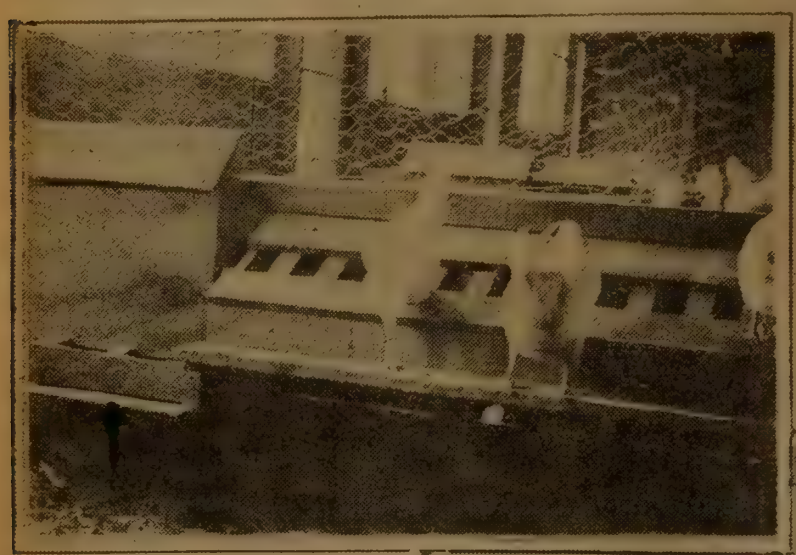
Extension Poultry Specialist, University of California. Written for ORCHARD and FARM.

THE California egg-laying contests at Santa Cruz, Petaluma and Pomona have a tremendous influence upon the poultry industry of the State. This influence is manifested in several ways; the primary one, however, is the increasing demand on the part of the average poultry raiser for stock with high production records back of it.

INDIVIDUALS EXCEEDING 270 EGGS

(3 California Contests, 1921-22)

HEN NO.	OWNER	EGGS LAID
38	Alex Stewart, Santa Cruz	324
44	L. A. Thornwell, Santa Cruz	312
71	W. H. Marshall, Santa Cruz	289
23	D. B. Walls, Petaluma	284
43	Alex Stewart, Santa Cruz	280
57	J. A. Hansen, Corvallis, Ore.	279
40	L. A. Thornwell, Santa Cruz	277
201	E. E. Eisenberg, Riverside	274
12	H. H. Corbett, Santa Cruz	272
84	W. J. Neif, Santa Cruz	271



Arrangement of grit, shell and mash boxes, Petaluma contest.

The results obtained at all three contests, during the 1921-1922 season, demonstrate that California breeders as a whole are second to none. The total number of entries for all contests was 158. Of those, twenty-four entries of ten birds each, laid 2000 eggs or better. Twelve birds laid 270 eggs or more, four of which exceeded 300 eggs for the year.

PEN RECORDS EXCEEDING 2000 EGGS

(3 California Contests, 1921-22)

OWNER.	EGG YIELD.
Alex Stewart, Santa Cruz	2651
J. A. Hansen, Corvallis, Ore.	2546
J. A. Thornwell, Santa Cruz	2337
J. J. Shore, Santa Cruz	2310
Geo. C. England, Inglewood	2260
D. B. Walls, Petaluma	2206
Hollywood, P. F. Hollywood, Washington	2190
Sunrise, P. F. Santa Cruz	2190
W. J. Neif, Santa Cruz	2185
M. L. Frick, Los Angeles	2183
Boehm E. Noel, Hayward	2175
C. H. Russel, Santa Cruz	2174
H. H. Corbett, Santa Cruz	2152
E. E. Rogers, Los Angeles	2127
Piper's Poultry Ranch, Santa Cruz	2100
Kenmount Poultry Farm, Santa Cruz	2095
D. C. Berry, Santa Cruz	2066
S. L. Gibson, Santa Cruz	2047
E. E. Eisenberg, Riverside	2033
W. H. Marshall, Santa Cruz	2025
Pacific Trap Nest, Santa Cruz	2020
A. L. Swinton, Los Angeles	2016
Bonnie Brae Farm, Los Angeles	2015
R. C. Gibson, Newhall	2013
226 H. R. Thomas, Petaluma	304
41 Alex Stewart, Santa Cruz	301

Above—Trap nests, Pomona contest pens. Below—Windows under dropping boards and double boarding over porches.

The three contests have accomplished more than creating interest in better stock; they have demonstrated, for the benefit of the entire poultry industry of California, practical methods of feeding and housing. At Pomona, extensive tests were conducted to show the value of milk products; at Petaluma a test was carried on to determine the value of the culling practices recommended by the Agricultural Extension Service of the College of Agriculture.

CALIFORNIA CONTEST RATIONS

The contest rations for the 1921-22 season were as follows:

(Parts by Weight)

	SANTA CRUZ.	PETALUMA.	POMONA.
Barley	40	33.3	40
Wheat	22.5	33.3	20
Cracked corn	37.5	33.3	20
Milo	....	....	20
Total	100	100	100
Ground oats	12.5	..	..
Bran	30	29.7	35
Middlings	20	16.7	..
Red dog flour	..	..	20
Ground barley	..	11.2	..
Corn meal	12.5	24	[illegible]
Soy bean meal	[illegible]	..	5
Linseed meal	5	..	5
Beef scrap	7.5	9.2	7.5
Fish scrap	7.5	9.2	7.5
Total	100	100	100

The method of feeding at the contests varied somewhat, although the general practice was to give grain twice a day; two-thirds in the evening and one-third in the morning. The dry mash was kept before the fowls continually in self-feeding hoppers. During the winter months an additional feed of crumbly mash was provided. Ample greens were available, and hopper-fed twice a day. At Santa Cruz and Petaluma electric lights were used from 4 a. m. to daylight during the winter months.

The milk products test carried on by officials of the Southern California egg-laying contest at Pomona was probably the most interesting feeding test conducted any place during the past year. The birds were housed in exactly the same manner and with the exceptions noted, were fed the same ration as given the contest fowls. A partial summary of results obtained in the feeding test, is given below:

NO.	EGG PRODUCTION	FEED COST PER DOZEN EGGS.	PER CENT MORTALITY.
1. Check pen (Contest ration containing 15% meat scrap)	150.8	10.9	[illegible]
2. Buttermilk (Meat scrap in mash replaced by all the buttermilk fowls would consume)	161.1	12.1	14.3
3. Dried Skim Milk (Replacing 15% meat scrap in mash)	158.3	12.1	8.0
4. Semi-Solid 1:2 (No meat scrap in mash, product accessible at all times)	123.5	13.0	11.4
5. Semi-Solid 1:2.5 (No meat scrap in mash)	134.0	12.0	12.5
6. Dried Milk Albumen (Replacing 15% meat scrap in Semi-Solid 1:2.5 mash)	155.7	11.0	23.8
(And same mash as check pen)	139.2	12.6	34.3
8. Lactein 1:26 (And same mash as check pen)	137.0	12.6	[illegible]

The Petaluma egg laying contest fowls were examined to determine the number which would be culled out if handled under average conditions. At the completion of the contest the individual records of culls, "No. 2's" and selected hens were checked determine the value of the culling recommendations. The following table summarizes the average production record of the three types to July 15 and the total production for the year:

	NO.	AVERAGE PRODUCTION TO JULY 15.	AVERAGE PRODUCTION FOR YEAR.	AVERAGE EGGS LAID, JULY 15, TO OCT. 31.
Selected pens	336	146.5	173.0	46.6
Seconds	29	94.3	126.7	30.0
Culls	70	88.4	112.0	24.5

The influence of these egg-laying contests gradually will raise the average production of the California hen. The stock that shows consistent production year after year will be in greater demand and will gradually eliminate the unreliable near-breeder and his home-made records. The buyer wants to be shown, and these contests are excellent places to display samples.

Speeding Up Rice Harvest

F. F. DUSTIN, Colusa hardware salesman, has a plan for expediting the rice harvest which, if followed, should result in many more growers making a winning race with the rainy season.

It is an open secret that the rice harvest is greatly delayed each year because of binders standing idle a good share of the time. This is due to incompetent mechanics, who do not know how to keep a binder in running order.

Mr. Dustin's plan is to have the State University farm at Davis furnish instructors to train mechanics in the operation and care of rice binders. The school has signified its willingness to do this and the binder manufacturers have agreed to supply machines for demonstration purposes, while rice growers are anxious to cooperate in every way possible to make the binder school a success.

"There is no doubt that 50 or 100 well-tutored mechanics could keep our harvest wheels spinning steadily and advance our rice season far ahead of the possibility of rain," Dustin asserts. "I believe every 'trouble shooter' who goes on a field should be able to show as strong credentials in his line of work as a college graduate."—M. L. WILSON.

Learning by Doing

COMMUNITY service, rather than helping individuals, is the keynote of the plan of work being developed by J. J. Wilder, San Bernardino County farm adviser.

"Our field is so large," explains Mr. Wilder, "that it would be impossible to visit more than a small portion of the farms and attempt to solve individual problems. In order to be of the greatest service, therefore, our plan is to put on demonstrations, experiments and schools which can be visited by all interested in order to obtain the information needed."

Mr. Wilder came to California a year ago because he preferred to work here. He likes San Bernardino County especially on account of the importance of the fruit industry in that district. Formerly he worked with the Department of Agriculture at Washington, where he helped organize the extension service, which is composed chiefly of farm advisers or county agents. Planning farm adviser work, therefore, is one of his specialties.

Pointers on Green Feeds for Poultry

WHILE a few poultrymen advocate the omission of green stuff from the ration, the practice of furnishing succulent feed has become almost universal in California.

Kale is the great favorite for this purpose in the Pacific West, producing an immense tonnage of juicy, palatable plants for many months each year.

Seed is sown in the spring and the plants set out early in the summer, like cabbage or cauliflower. When the grass fails in the fall, chickens begin on kale, which keeps them in green feed all winter and throughout the early spring months. This crop is best adapted to western Oregon and Washington and portions of California where the climate is similar, as is winter oats and rye.

Alfalfa is another ideal green poultry feed, containing much protein. In order to secure best results it should be cut every three weeks, as hens will not eat it when the stalks get woody and the leaves lose their tenderness.

OTHER GOOD FEEDS

Green barley is another excellent feed, and is well suited to Southern California and the great interior valleys. Swiss chard, beets and cabbage also are splendid. Beets and chard can be planted a foot apart in three-foot rows, kale in hills three to four feet apart, and giant cabbage four to five feet.

The latter grows to immense size, single specimens weighing 90 pounds having been reported. The under leaves can be broken off and fed, as with kale, or an entire plant hung in a yard for the chickens to pick at.

Sudan grass is comparatively a new kind of green poultry feed, which needs a hot climate and plenty of water for best results. It should be drilled in rows three feet apart.

All crops intended for green poultry feed should have plenty of moisture in order to make them tender and juicy, for chickens will not eat plants unless they are in this condition. Green plants do not rank high in nutrients, but make a fine conditioner, assisting in the digestion of dry provender. Before acquiring his flock, the beginning poultryman should first arrange for a supply of green feed, experienced producers advise.

Evolution of the Hen

THE reason why high-scoring hens failed to make as good records on the nest as in the show ring was because breeders began "fudging" on the specifications of the standard of perfection, according to D. C. Summers, San Fernando County expert, who is managing the largest chicken breeding farm on the Pacific Coast.

"About a dozen years ago," relates Mr. Summers, "there was a revolt in the ranks of practical poultrymen, who were dissatisfied with the type of hens being produced by professional breeders. It was contended that while such hens might be considered first class from an exhibitor's standpoint, they failed to leave a sufficient number of eggs in the nest.

"In order to prove just what such chickens were worth commercially, a number of egg-laying contests were held. Tom Barron, an English breeder, cleaned up everything in sight at these contests, causing consternation in the ranks of American poultrymen. The latter, however, bought some of Barron's stock and soon beat him at his own game.

"Dryden, Hanson, Tancred and other Western breeders produced 300-egg hens which did not altogether suit poultry judges, but made a hit with market egg producers, forcing a change in the methods of breeders. The trouble was not with the standard of poultry perfection, but with the way it was followed.

"If breeders had been sufficiently conscientious in adhering to the specifications laid down in the standard, commercial poultrymen would have had no just cause for complaint, because hens which are built exactly according to these rules—which, of course, include vigor and vitality—will perform as well on the nest as in the show ring. The best breeders now are striving to produce birds which conform to all the requirements of both the judge's standard and that of the market egg producer."—O. H. B.

Nests and Feeder as a Labor Saver

A COMBINATION partition containing nests and automatic self-feeders is a labor-saving poultry device. It may be built as an alley wall in the poultry house or it may be the outside wall of a small laying house.

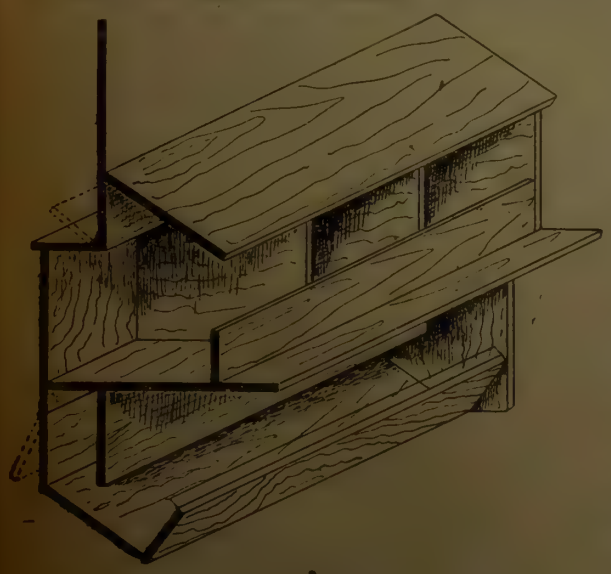
In either case, the box partition should be made in sections to be easily taken apart for cleaning and spraying with lime whitewash or other disinfectant.

The drawing shows one end of the partition, with nest boxes above and the self-feeder below, resting on the floor of the poultry house. It is easy to fit the upper or nest section to the feeder bins by means of cleats that will hold it in place until cleaning time. It then may be lifted off and carried out for washing or spraying.

The top of the nest boxes should be made steep enough to slide the hens off when they attempt to perch on it. The nests should be large enough to feel comfortable to the hens. For Leghorns, the nests should measure 16 inches across, and for Rhode Island Red hens they should be at least 16 inches in width and 18 inches from front to back.

The feeder bottom should slope down towards the front sufficiently to let the feed slide forward as the hens pick it out from the trough.

These feeders usually are divided into bins, so that different dry feeds, as well as charcoal, oyster shell and grit, may be kept before the fowls at all times.



There are hinged lids on the alley side of the partition in order that the eggs may be gathered and the feeder bins filled without disturbing the hens.

The dotted lines at the back show the rear nest lid partly raised and the feed-box door let down.

When it is carefully made, this nest box and automatic feeder is a great labor saver. —HERBERT A. SHEARER.

Reduce Egg Freight

THE reduction of freight rates on Eastern shipments of eggs from $3 to $2.60 a hundred pounds amounts to 21 cents a case, or about two-thirds of a cent a dozen. If this rate—which went into effect Oct. 2—had been in effect last year, it would have saved California poultrymen about $50,000.

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YOUR GARDEN of FLOWERS

by Helen Temple

WINTER in California? Why, there isn't any such time. Of course we may be compelled to stay indoors on rainy days; but after the rain, when the sun comes out in all its glory, we can go out in the garden and be glad we're alive.

HELEN TEMPLE

The owner of adobe soil may "stick" if he digs too soon after a rain, but he or she who has sandy soil should be out "the first thing," pulling weeds and planting a row or two of sweet peas.

And perhaps there will be a big bouquet of chrysanthemums ready for picking.

Coast and Southern Sections

WE should sow a large quantity of sweet peas in December and January. Plant a variety of both the fragrant and the orderless. The fragrant sweet pea is a little smaller than the highly improved specimens, but is perfect in every detail.

We should sow in flats pansies, stocks, centaurea, larkspur and coreopsis for early transplanting. All seedlings that were sown in September or October should be set out. Protect them with empty cans with both ends cut out, or pieces of "shakes," for a couple of weeks. By this time they will be established and begin to send out new growth.

Cuttings usually root when taken this month. Among the trees, cuttings from the weeping willow, catalpa, celtis, mulberry, poplar and sycamore should be successful. Select cuttings from healthy last year's growth. Use sharp sand in the cutting box, which should be protected in a lath house or conservatory. Keep boxes moist at all times.

Shrubs to be started from cuttings at this season are the snowball, spirea, rose, althea, lemon verbena, cydonia, pomegranate, tamarix, kerria, privet, crepe myrtle, deutzia, berberis and cotoneaster.

Among the climbers that may be started successfully from hard wood cuttings this month are the climbing roses, wistarias, tecoma and ampelopsis.

In the frostless sections, gardening work with bulbs is almost unlimited. In fact, winter is considered one of our best times for bulb planting. Bulbs make the best growth in a friable loam, although I have seen wonderful specimens growing in our "dobiest" adobe. Adobe will grow them, too, if it is worked properly at the correct time. It must not be wet or dry, but half way between.

Among the bulbs to be set out this month are cannas, callas, freesias, iris, hyacinths, tulips, ranunculus, narcissus, anemones and Easter lilies. A beautiful bed of pink and white hyacinths planted in the form of a maltese cross is very effective. It requires 68 bulbs set 8 inches apart to form the maltese cross.

Another large bed of hyacinths planted in the form of a star is very striking in red and white, or yellow and white. Eighty-one bulbs set about 8 inches apart will make a star-shaped bed of hyacinths with the extreme points 9 feet apart.

Tulips also are excellent for formal planting. A crescent, an oval or square of tulips in two colors is effective. A parallelogram of tulips 8 feet long requires 252 bulbs; one of 6 feet requires a quarter less.

A tulip bed of this kind is wonderfully effective when planted in two colors; for instance, a very bright rose and a white.

Bulbs should be planted at the same depth to insure uniform blooming. Tulips and hyacinths are planted about 5 inches deep.

Interior Valleys

SOME of our Eastern cousins feel quite disappointed over our famous climate when they go into some of the interior sections and find a heavy frost has killed tender plants. We have variety in the winter climate in our interior sections—a warm, sunny day followed by a night of real nippy frost; then perhaps rain, and later a series of lovely clear days with slight frosts at night. And our tender plants just curl up and go to sleep if they are not protected. A muslin frame and a thick mulch of old manure will protect the larger tender shrubs and plants.

Winter is an excellent time in which to plant bulbs in the interior valleys. There is little seed sowing in this section this month, but the garden work still may be carried on even though the ground is frozen. A pick-axe will loosen the frozen ground sufficiently to allow bulb planting.

Break the soil with the pick-axe if necessary, plant the bulbs, covering them with soil from a spot where it is not frozen. This soil will settle around the bulbs and make them firm. After planting, cover with a thick layer of old manure and straw. In the spring, you will be rewarded for your trouble.

The crocus gives very early spring blossoms, being in bloom almost before the frost is out of the ground. A warm day brings them up when other plants are dormant. These are not effective unless planted in large quantities. Plant them about two inches deep and two inches apart. The crocus is one of the favorite bulbs for planting in masses in interior sections.

In the valleys, sweet peas may be sown now. They may grow very slowly for a period, but will surprise the planter with early blooms. Sow pansies and other hardy annuals and perennials in flats for early transplanting in the spring. Best results are obtained when the hot bed is used. Start cuttings from the hardy shrubs, vines and trees given in the list for Southern California planting, using more caution to keep them at an even temperature than is necessary where there is little or no frost. The chrysanthemums that have been left in the ground after blooming are cut back and mulched this month.

When carnations are started from cuttings in the interior, it is necessary to protect the boxes with muslin frames during the cold weather. Early spring should find the cuttings well rooted and ready for the open ground where they will grow much more rapidly than in the boxes. Often carnations are stunted when they have remained in the boxes for a lengthy period.

Start Annuals Now

AFTER Xmas has departed with all its happy excitement and the New Year comes hurrying in with its bundle of good resolutions, we usually feel a glow of renewed interest in our gardens.

Among the annuals to sow at this time we have the ageratum, which grows easily and very quickly. The Tom Thumb Agerata, of the blue and white varieties, make very good borders along walks, being especially recommended for the warm interior valleys. The Mexicanum blue and white Agerata are about two feet in height, while the Tom Thumbs seldom reach more than a foot. Start seed in flats under glass and transplant as soon as all frosts are over. Ageratum often is used in beds with candytuft and alyssum, which are also hardy bloomers.

Celosia is another of our gay annuals. They should be started in a hotbed or in pots in the house. In April they should be transplanted outdoors in a warm situation in a reasonably rich, friable soil. Try the new "styles" in celosias.

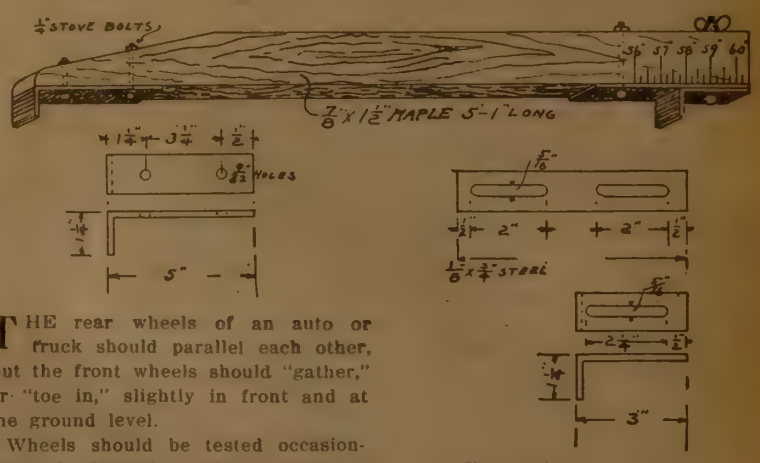
We have the large Celosia plumosa, which are very large and fine. The rich carmine is one of the finest of these, although we have a wonderful golden yellow and orange red. Another variety of the celosia is the Chinese woolflower, ball shape, which resembles a ball of fine wool in bright colors. Among these are crimson, pink and yellow.

The Celosia spicata is borne on long slender stems of lilac-pink. These are very good to mix with other flowers, producing a dainty, lacy effect. They also are good to dry for winter decorations. Last, but not least, we have the old-fashioned cockscomb bearing peculiarly shaped flowers of velvety richness in various colors. When transplanting the celosia of the large types set 18 inches apart. If the celosia is intended for a permanent bed, sow after the frosts are over and thin to 12 or 18 inches apart.

Other annuals to be sown at this time of the year are the lobelia and nicotiana, both of which are half hardy, the latter being a good background border plant. These should be started indoors and transplanted in March in the semi-tropical regions and in May in the interior.

At this season of the year we should transplant any of the large shrubs and plants that are "in the wrong place." The sap is running very slowly at this season and much of the shrub-life is almost dormant; thus the cutting back and severe pruning which usually attends transplanting, causes very little damage. When transplanting do not crowd the root system. Make the hole in which the plant or shrub is to be set, large enough to allow the roots to be spread out, not doubled and forced into it. Fill the hole with loose, friable soil and settle the earth with water, then add another layer of dry soil.

How to True Auto Wheels



THE rear wheels of an auto or truck should parallel each other, but the front wheels should "gather," or "toe in," slightly in front and at the ground level.

Wheels should be tested occasionally and adjusted to take up wear or slack. Once a month is not too often.

First jack up each wheel and test it for side play, and set the bearings to run free without being loose. Then measure the rear wheels carefully from rim to rim, to learn if they are running true to each other.

Then adjust the front wheels if necessary, so that they stand about three-eighths of an inch closer together at the middle front than they do at the middle rear. The measuring should be done at the height of the center of the hub.

Automobiles of different makes differ as to the up-and-down angle of the front wheels, but that feature is determined by the shape of the axle, so that any difficulty in the up-and-down angle is a case for the repair man. But the fore-and-aft adjustment of the front wheels generally is provided in the steering gear.

The illustration shows a gauge that is useful when testing wheels. Some makes of cars would require longer lugs on the measuring gauge than the drawing shows.—HERBERT A. SHEARER.

Plant Fewer Vines

OWING to the possibility of production overtaking the raisin market and the loss of table grapes because of car shortage, Tulare growers are expected to plant only 7000 acres of vines next spring, compared to 9000 last spring and 19,000 the previous season. Fig plantings, on the other hand, are expected to be very heavy for the next few years, due to the profitable prices received for this fine fruit and the expanding market.—FLOYD BYRNES.

Paint With Bean Oil

ONE hundred pounds of soy bean oil will yield six quarts of oil suitable for house painting, according to the Wisconsin College of Agriculture. Since soy beans will yield 1000 to 1500 pounds of beans per acre, bean oil for painting may displace linseed oil for that purpose, thinks G. M. Briggs, of the institution named.

PLANTING WINE GRAPES

W. H. Hevrens is planning to plant wine grapes on his San Joaquin Valley ranch; also figs and table grapes.

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We hatch only eggs from our own high-producing two and three-year-old hens, which have been bred for years for heavy winter production. Our modern incubation insures strong, healthy chicks.

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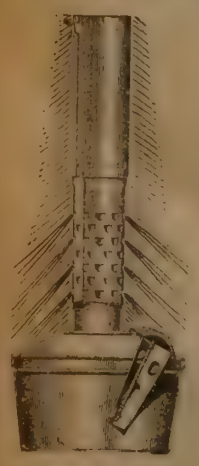


Shows how the DUNN radiates heat to the side and to the ground—with more intense heat waves coming from bottom of the improved stack with perforations depressed to INSIDE. Also shows permanent asbestos lighting wick.

Berryman's Bushes Bear Big Berries

HEALTH, berries and pictures are three valuable products which B. C. Berryman has found on his small farm near San Bernardino, Cal. The three angles of this odd triumverate may not seem related, but Berryman—who is well named—says they fit together "fine and dandy."

The location was chosen partly because of the hill which it embraces, giving an unobstructed view of the sky above and the country round about. After making many beautiful photographs from this elevated position, the artist became hungry as his health returned—and longed for a nice dish of home-grown berries and cream.

Dairy work did not appeal to him, but gardening did, and he planted a few vines on the level land at the foot of the hill, soon being gratified at the excellent growth they made.

SECURES ENORMOUS YIELD

Additional plantings followed—until now the little berry patch has grown to three and one-half acres, and yields an income of that many thousand dollars, derived from the sale of fruit and plants.

In order to make a berry plantation produce thousand-dollar-per-acre crops, usually it is necessary to obtain the heaviest possible production, and to dispose of it at extra fancy prices to private customers, the latter being located by much careful combing of sales territory. Berryman, however, gives his vines only ordinary care and has never left his home to find a buyer.

HIS SUCCESS SECRET

The explanation is simple: He planted varieties which are scarce and in great demand. The fruit consists mostly of mammoth thornless blackberries, which not only possess the advantage of having no "stickers," but also produce such luscious fruit that people come for miles and miles to buy the berries, paying $4.50 per crate of 30 twelve-ounce baskets. As many as nine automobile parties have been waiting at once for a chance "to get theirs." During the time in which the vines have been bearing, none of the fruit has sold for less than $3.50 a crate.

PRODUCE SECOND YEAR

The blackberries begin producing the second year, and after they attain growth in two years yield enormously, producing anywhere from 100 to 200 crates an acre—3000 to 6000 baskets.

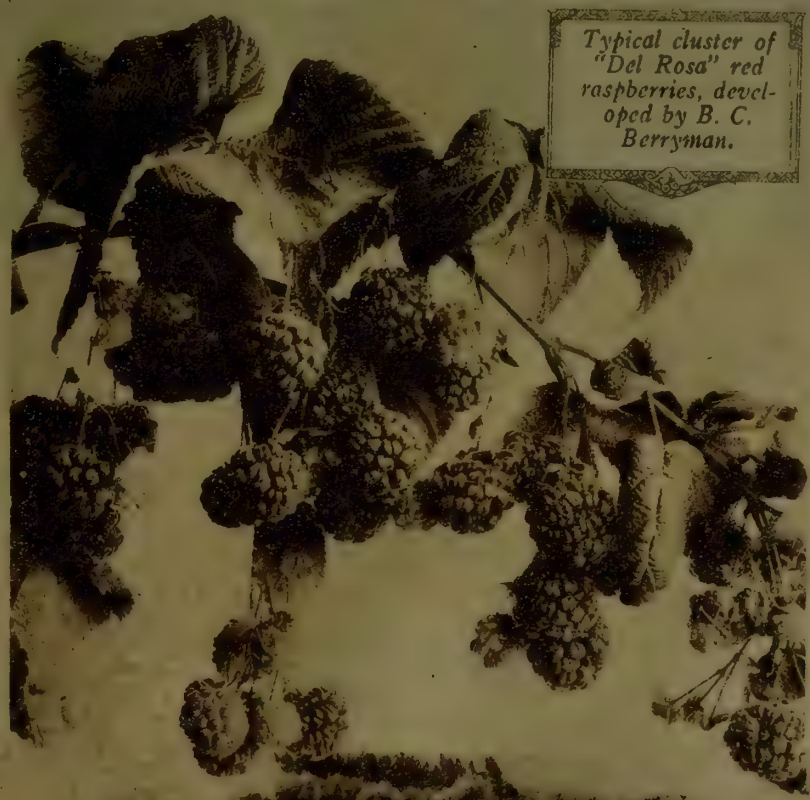
The vines sometimes grow a rod and a half long and the berries over two inches, having a fine flavor and very few seeds. The thornless nature of the vines is appreciated by the horse that pulls the cultivator and the girls who gather the fruit, as neither requires overalls.

About four years ago Mr. Berryman noticed in his small raspberry patch a cane which grew "ranker" than the others and bore different fruit, a reddish-brown berry of large size and splendid quality, neither too tart nor flat and insipid. Further observatio showed that this new raspberry bega ripening fruit in May and continue in the good work all summer and fal ripe berries being picked as late a the middle of November. This beat the blackberry, which ripens fruit a through June and July, but lies dow on the job during the dog days."

The heavy growth made by the ne raspberry at first was attributed to a unusually fertile spot of ground, bu was found to be characteristic of th variety. New shoots were transplante and the Del Rosa—as the fruit wa named—propagated as extensively a possible. Nurserymen try to buy al the plants produced, but the originato will only sell a few to any firm or in dividual, believing that when one find a good thing he should pass it aroun as much as possible.

A VALUABLE DISCOVERY

Common varieties of raspberries ar adapted to the greater portion o Southern California and it is fortunat that one has been discovered whic will thrive here and bear big crops o luscious fruit all summer long. Som specimens of the Del Rosa are larg enough to cover a quarter, and th quality is certainly par excellence. T see the vines blossoming and weighte down with ripe fruit at the same tim is a wonderful sight. The yield thi year was at the rate of $1180 an acre the berries selling readily at $4.50 pe crate of eight-ounce baskets.—O. H. B



Typical cluster of "Del Rosa" red raspberries, developed by B. C. Berryman.

A Photographer Who Developed a Taste for Berries and Thus Found His Way Into Print

THE cluster of red raspberries shown at the top of this page represents a new type, discovered by accident as a "sport." Center, left: Mr. Berryman is seen standing near vines of the new "Del Rosa" variety. Center, right: Pickers at work on the Berryman ranch. Lower view: Mammoth thornless blackberries, which have been profitable producers and have aided in simplifying the labor problem.

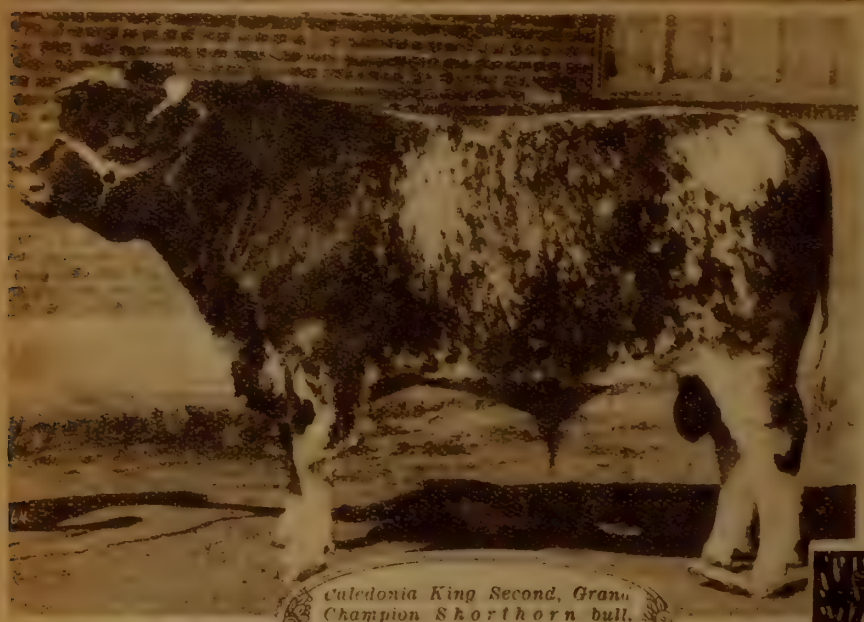
Raise Better Raisins

F. A. SEYMOUR, general manager o the Sun-Maid Raisin Growers, be lieves that as the quantity of this frui is increased the quality must be mad better and better, else consumption wil not keep pace with production. Raisin were packed the past season unde more sanitary conditions than eve before, practically all dust and loos stems being eliminated.

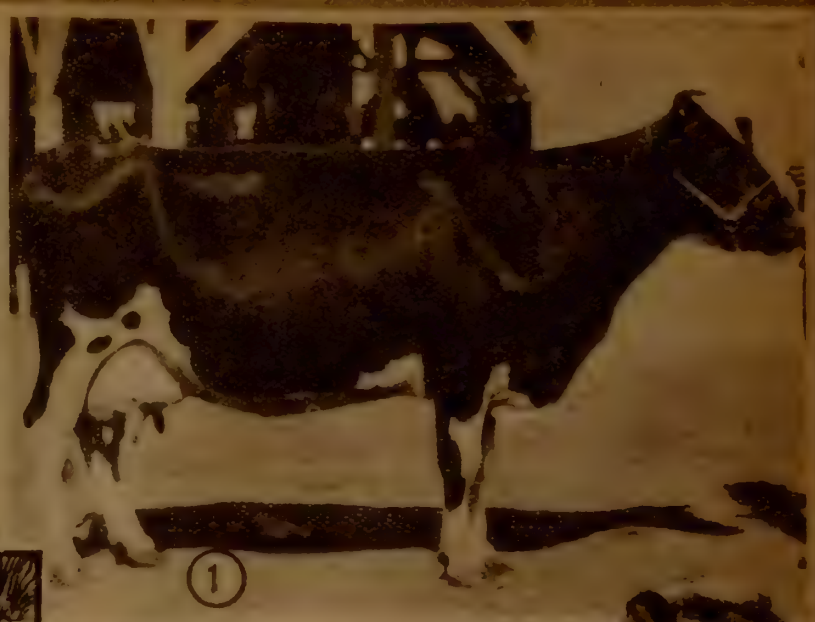
For five years prior to 1912 the an nual production of California raisin was about 70,000 tons, which was 20,00 to 40,000 more than the market con sumed. The production the past sea son was 225,000 tons, and present plant ings indicate a crop of 400,000 ton within five years.

Significant in the movement of th great raisin crop are the advertisin plans of the association. The eno mous sum of two and one-half millio dollars was appropriated for the pu pose of educating the trade and th buying public as to the value and im portance of raisins in the diet. Thi amount is said to represent the larges annual budget ever devoted to an single food product advertising cam paign.

The Sun-Maid association is handlin 200,000 tons this year at 26 plants, em ploying at times nearly 5000 peopl who are paid approximately $100,000 week. The daily receipts were as hig as 6000 tons a day, for which the grow ers received a half million dollar The 17,000 members will get abou $24,000,000 for their crop, which wil sell for $40,000,000.



Caledonia King Second, Grand Champion Shorthorn bull, California National Livestock Show, 1922. Owned by Estate of Thomas B. Diblee, Lompoc, Cal.



1

Gamboges Majesty Flacon, outstanding Jersey bull, owned by Ferdinand Bain, Los Angeles.

2

California Is Proud of Her

(1) Ava Model Hungerveld 2nd., Grand Champion Holstein female, 1922 State Fair. Fred Hartsook, Lankershim.

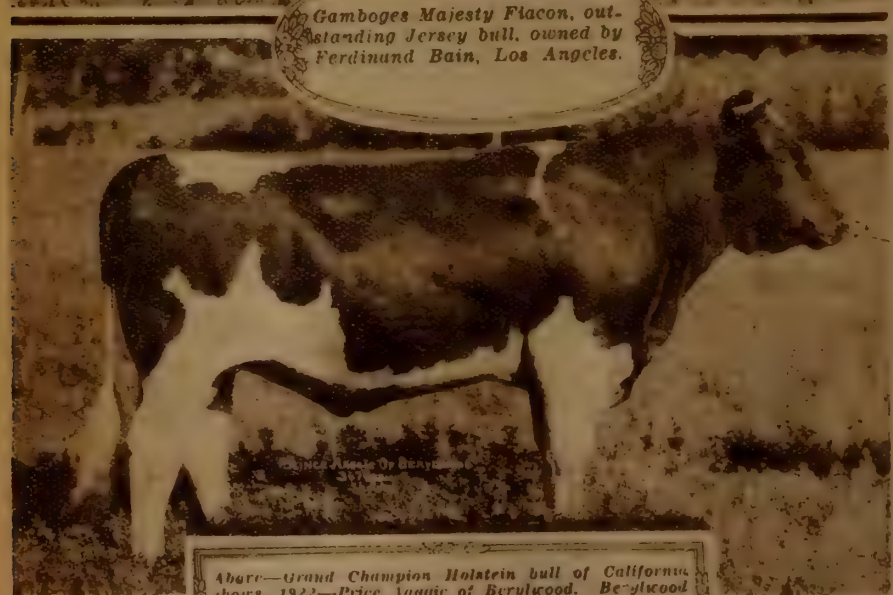
(2) Straloch Farm, Woodland, produced this Grand Champion Hampshire wether.

(3) Sensation Ellen, Grand Champion Duroc female, California State Fair, 1922. Owned by Chas. J. Le Moyne, Lankershim, Cal.

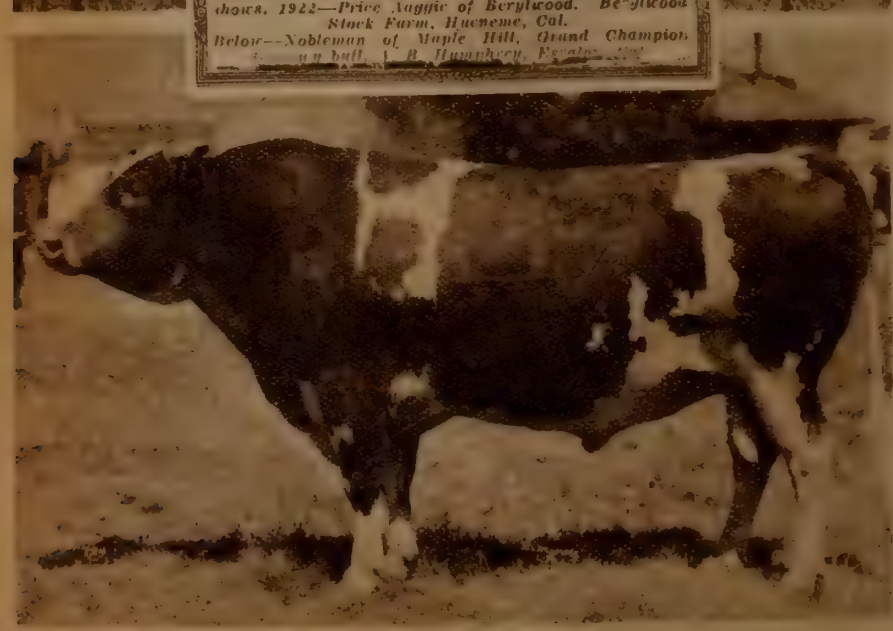
(4) Grand Champion Poland China boar, Navy Boy. Owned by Gatewood & Stevens, Fresno, California.

3

—All photographs by Blackmore, L. A.



Above—Grand Champion Holstein bull of California shows, 1922—Price Aggie of Berylwood. Berylwood Stock Farm, Hueneme, Cal.
Below—Nobleman of Maple Hill, Grand Champion [illegible] bull [illegible] B. Humphrey, Fresno [illegible]



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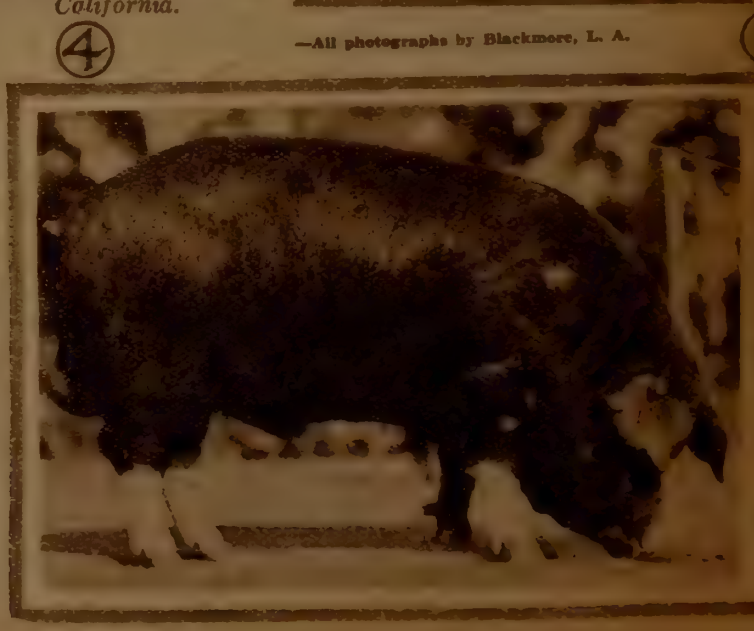
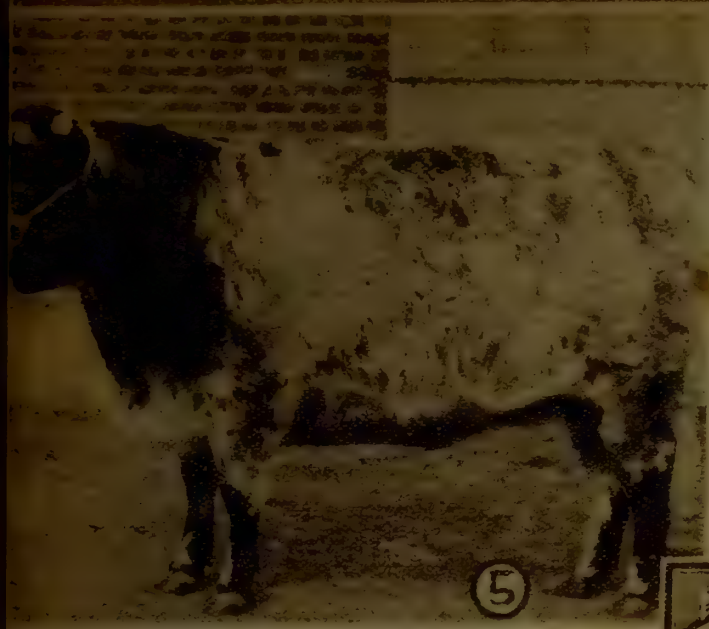




Count Tickford, Grand Champion Milking Shorthorn bull, property of Thomas Harrison, Santa Rosa

California State Fair, 1922, Grand Champion Hereford bull, Lincoln Domino.. Wm. Briggs & Son, Dixon, Cal.

...ebred Prize Winners

(5) Knight's Lassie, Grand Champion Shorthorn female. Pacheco Cattle Co., Hollister, Cal.

(6) U's Top Chief, Grand Champion Hampshire boar. Francis Underhill, Santa Barbara.

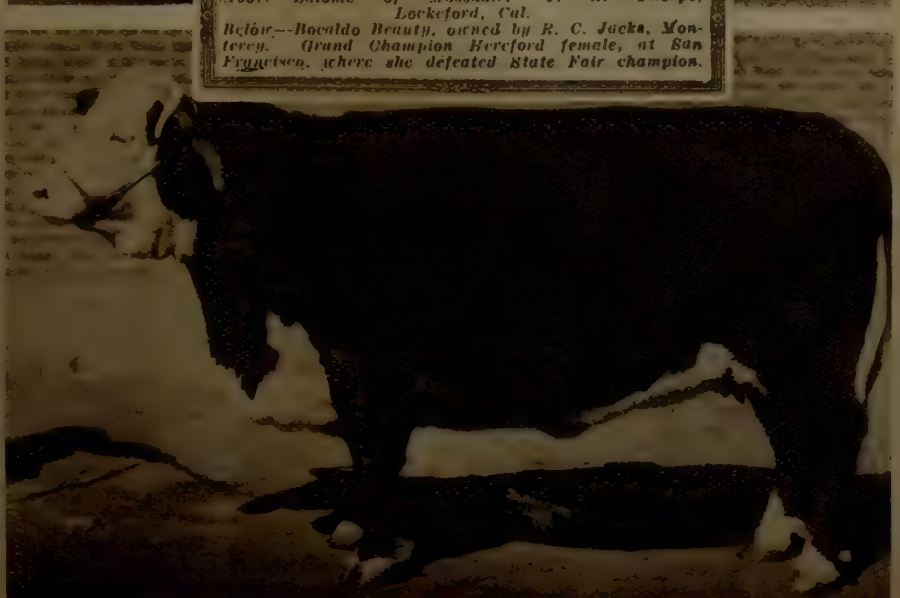
STARS IN THE LIVESTOCK FIRMAMENT

The Golden State rapidly is forging ahead as one of the world's greatest centers of fine animals. The reader is urged to study these representative selections as outstanding types of their respective breeds.

(7) Violet Festline, Grand Champion Berkshire female. Italian Vineyard Co., Guasti, California.

...—Subjects selected by R. P. Royce

Above—Salome of Mossdale. J. E. Thorpe, Lockeford, Cal.
Below—Rocaldo Beauty, owned by R. C. Jacks, Monterey. Grand Champion Hereford female, at San Francisco, where she defeated State Fair champion.



How Jenkins Succeeds With Turkeys

He Raised This Year More Than Ninety-five Per Cent of the Poults!

THIS San Fernando Valley producer has discovered a secret sought by many growers—how to raise the majority of the young poults, of which more than half are lost on many ranches. Moreover, he has upset theory and precedent in the matter of close confinement of the birds, winning out by turning Nature topsy-turvy. This brief article describes his methods and results.—Editor.

By ALBERT J. MASON

"MY troubles as a turkey raiser seemed to come to an end when I introduced wild blood into my flock." Thus B. F. Jenkins, successful Burbank little-lander, summarizes his secret of success.

Starting with 42 hens, three wild toms and two acres, this enterprising producer now has more than 350 husky young "turks," representing 97 per cent of the season's hatch.

Valuing his young birds conservatively at $5 each, Jenkins figures he has realized already a net profit of $240 per hen. He has disposed of $952 worth of eggs and $125 worth of "baby" poults, and still has all of his original stock.

"I attribute the appalling loss of young poults experienced by many growers, largely to weakness in the stock," says Jenkins. "After I introduced the blood of Southern wild turkeys my flock had practically no liver trouble; in fact, very little sickness of any kind. Moreover, the birds seem to be unusually active, vigorous and prepotent. At four weeks of age they can fly over a 6-foot fence!"

All the eggs were produced on the ranch and hatched under turkey hens. The flock is kept under comparatively close confinement, with no free range whatever. However, alfalfa and barley are raised for green feed, and given in liberal quantities daily.

Only the less desirable birds, from the breeding standpoint, are marketed for meat; practically all the income is derived from the sale of eggs, baby poults and breeding stock.

Equally interested in the care of the flock is Mrs. Jenkins, and to her is given much of the credit for the unusually large percentage of poults raised.

METHOD OF FEEDING

The youngsters receive no food at all the first 48 hours. They are sheltered in large boxes set about the yards. Their early ration consists of rolled oats, mixed with chopped onion tops and carrot tops, and black ground pepper. This mixture is given three times a day, and a commercial mash is kept constantly before them. Later, grated whole carrots are given, as well as the carrot tops. Chopped green alfalfa is fed frequently, but in small quantities each feeding. Semi-solid buttermilk is supplied every morning.

Occasionally, as an appetizer, the ration is moistened with soup made from meat scraps and bones.

After the birds are well started in their development, white oats, thoroughly soaked, mixed with dry wheat and cracked corn, are given every evening.

The mature fowls receive a mixture made in the following proportions:

1 pail feed meal;
1 pail cracked corn;
2 pails best grade bran;
1 pound bone meal;
1 pound ground beef scrap;
A little charcoal.

These ingredients are moistened into a crumbly mass with salt water.

Once a month a little sulphur is added to the feed—not more than a tablespoonful to a batch.

Soaked white oats are given in the evening.

Mr. Jenkins emphasizes the importance of giving all birds, young and old, a liberal supply of grit and charcoal. Fresh water, also, is absolutely essential, he says. Every two weeks a teaspoonful of carbolic acid is added to each gallon of drinking water.

CLEANLINESS IMPORTANT

"Never leave grain, or, in fact, any food, upon the ground to spoil," warns the turkey man. "This is a common source of serious ailments. We try to give only as much as birds will clean up, and to remove any that is not consumed"

Owing to the inclination of the wild and "part-wild" fowls to fly, it has been found necessary to cover the tops of the yards *(Continued on page 13.)*

Wires stretched over pens prevent injury to birds.

Mr. and Mrs. B. F. Jenkins, holding some of their "half-wild" turkeys. Right—One of the wild toms whose blood has improved the flock Below — General view of pens.

"Close-up" view shows button in door of turkey house

Any prowler opening a door or window when burglar alarm is connected, causes bell to ring in dwelling house.

with wire. However, instead of using expensive netting, Jenkins has met the situation cleverly and economically by stretching lines of light, insulated wire "criss-cross" to form 6-inch squares. Should any of the heavy turkeys fly up against this network, so soft and flexible is it that they are uninjured.

Morning glory vines are planted around the pens, giving welcome shade during the hot summer days. The turkeys relish the blossoms, it is said.

Every night all birds, young and old, are confined in the houses, which are fitted with simple roosts. Every opening has a burglar alarm connected with a large bell in the dwelling house, and dogs are kept for the express purpose of foiling thieves. The wires connecting the burglar alarm are piped underground and controlled by a single switch at the house.

"Yes, I like turkeys," admitted the energetic little-lander. "I will never be without a flock, if possible for me to have them. And I am in this business to stay, because I don't know of any other proposition that promises greater returns in proportion to the labor and investment.

"I expect to realize at least $4000 a year net profit from my two acres and the turkeys are rapidly furnishing the means to equip the place with every modern convenience."

A PROFITABLE INVESTMENT

Jenkins bought his little ranch which is located on San Fernando road, near Burbank (a suburb of Los Angeles), just two years ago, and believes it has more than doubled in value since that time. A family orchard and garden aid in reducing the cost of living. Rhode Island Red hens and Toulouse geese are kept as "sidelines."

A small cultivated area is devoted to alfalfa and other green feed, and irrigated by means of "whirligig" sprinklers. Mr. Jenkins states his irrigation expense seldom exceeds $5 per month, including domestic water.

This turkey raiser was for many years a railroad man in the Middle West. He served two enlistments in the army, including campaigns in the Philippines and Cuba, where he was wounded.

"But now I have discovered what I've been looking for all my life," he asserted. "I'm going to stay right here—and raise good turkeys."

Captain Jack Sails Into Grape Growing

Former Mariner Now Guides Tractor Over Rolling Acres

THE famous Captain Jack of the Horse Marines may have had more equine knowledge than his nautical brother, Captain James Jack, of Shafter, Cal., but when it comes to growing good grapes and lots of them the latter could sail all around the officer in the song.

Tiring of the wild, wet life of a Great Lakes steamship officer, Captain Jack came to Kern County two years

Captain James Jack

ago and purchased twenty acres of grape land. His subsequent viticultural success is the talk of the town and has caused the neighbors to wonder what is the secret of the old salt's achievements.

Six acres of Thompson's seedless and three acres of muscats were planted last year and the remaining acreage set out last spring. There are now six acres of Thompson's, six of muscats and seven of malagas. The Thompson's produced three tons of fresh fruit to the acre the second year and the muscats one-half as much, a most remarkable yield. Five acres of Thompson's yielded 862 trays of raisins, each tray containing about six pounds of dried fruit. Some of the vines are nearly two inches in diameter. They were planted eight feet apart in rows twenty feet apart, and as far as the eye can reach not a weed is visible.

CARE IS REWARDED

Constant, careful cultivation is one of the secrets of the newcomer's success. In his nautical work he early learned the lesson of thoroughness, and believes in doing everything just right, regardless of the cost in time and labor. As a further tribute to his thoroughness, a row of apricot trees in front of his vineyard bore in their second year as many as thirty specimens to the tree.

Although thus far the Captain has sailed the sea of life alone, his tiny four-room bungalow—which the neighbors have named "The Doll House"—would be the pride and joy of any housewife. The building is equipped with modern appliances, including an electric stove, and everything is kept spotlessly clean. The little, white kitchen is a marvel of neatness, and the living room, with its tiny curtains and soft rugs, suggests peace and comfort.

The screened back porch, laundry tubs, immaculate sink and drainboards are all in keeping with the rest of the Captain's quarters.

Captain Jack went to sea when only 11 years old. For sixteen years he served acceptably as an officer for the Pittsburg Steamship Company, and is making an equally good record growing grapes in the San Joaquin Valley. —MANDY JUMPER.

Tour Discloses Good Farming in Butte County

SOME excellent examples of up-to-date farming were witnessed by forty-five persons on a demonstration tour conducted by the agricultural extension service in Butte County in November. Fifteen acres of old peach trees on R. Ingram's place were wire-braced so successfully that the rest of the orchard is to be treated in this manner. It was agreed that the best time to do this work is immediately after pruning, while the trees are still dormant.

An example of good pruning was observed on peach trees which formerly had borne no fruit on the lower limbs, because all the twigs and small branches on that part of the tree had been removed. By encouraging a low growth of new, green wood the fruiting area was greatly enlarged and it was made possible to pick most of the peaches without the use of a ladder.

At E. B. Clark's prize peach orchard, where 20 tons per acre of No. 1 fruit were grown the past season, it was learned that the ground had been heavily manured and cover crops of melilotus indica grown in the orchard the past five years.

What County Agent Drobish pronounced the best example of long pruning was observed in the McFarlane peach orchard, which bore six tons of No. 1 Tuscans per acre on four-year-old trees. The fruiting wood was very evenly distributed throughout the framework of the trees.—M. T. Rice.

FINED FOR SELLING WORMY APPLES

A Los Angeles dealer was recently fined $50 for selling wormy apples.

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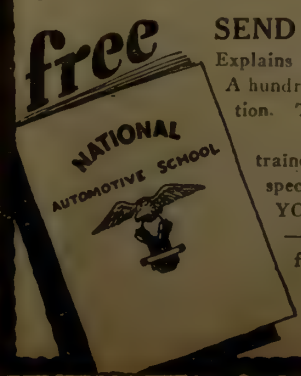

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California Wins at Chicago Show

Golden State Makes Wonderful Showing at Great International Livestock Exhibition

By WILLIAM REYNOLDS BUTLER

WORD from Professor True, head of the Animal Husbandry Division of the University of California College of Agriculture, who attended the recent International Livestock Exposition at Chicago, in that the Golden State ran true to past traditions at this greatest of livestock shows.

In view of the exceptionally keen competition this year, the California stock made its usual high record, which is but further proof of the superior livestock produced under western conditions where barley predominates as the grain feed. The California exhibit attracted much attention at the ringside; this type of demonstration gives the State and the entire West a large amount of worthwhile publicity and advertising.

In the steer classes, California won first and reserve champion on California Topman, the Shorthorn-Angus crossbred steer calf.

California Standard, senior yearling Angus, won second in a very strong class. This steer was the champion Angus and reserve champion calf at the 1921 show.

California Bystander, junior yearling steer, won third. (He also won in his class as a junior calf last year.) The herd of three Angus steers won first. The Hereford steer calf, California Lincoln Lad, won second and the three steers get of one sire, won second. Best herd of five steers won second.

EXCELLENT SHEEP SHOWING

In the fat wether classes, the University of California made an exceptional showing in what was considered the greatest wether show ever held in this country. Southdown wether lambs won first and second and first on pen of three. Shropshire wether lambs won first and second and first on pen of three. Cross-bred wether lambs won first on pen of three. Best pen of five wethers won first.

In the John Clay & Co. specials, which is a competition confined to the Agricultural Colleges of the United States, the Southdown wether lamb shown by the University of California won first and champion wether, defeating the reserve grand champion of the show.

In the classes for fat barrows, the Poland China junior barrows exhibited by the University of California, won first, second and third in class, first and second on pen of three and reserve champion pen. The senior Duroc Jersey barrow won third in class. In the pen of five barrows class the University of California won third.

The University of California's entries in the 1922 International were conceded the best lot of fat stock ever shown by this institution. In fat steer classes, seven head were entered, including four Aberdeen-Angus, two crossbred Shorthorn-Aberdeen-Angus and one Hereford. As heretofore, these steers all were bred at the University Farm at Davis and fitted by the veteran herdsman, Alec MacDonald. All of these steers carried a high finish and were uniformly smooth throughout.

EXCEPTIONAL BREEDING

The senior yearling, California Bystander, the champion Angus steer and reserve champion calf at the 1921 Chicago International, came through the year remarkably well, maintaining his excellent balance of type, and carrying a wealth of flesh uniformly placed and smooth all over. His stable mate, California Sultan, a cross-bred Shorthorn-Angus senior yearling steer, grand champion steer at the recent California National Livestock Show at San Francisco, also has done remarkably well. This is a steer of exceptional depth of flesh and of the true beef type which fills the eye of the judge. He has for his sire the noted Sultan Mayflower, the grandson of Whitehall Sultan.

The senior cross-bred Shorthorn-Angus calf, California Topman, was considered by Western admirers the most desirable entry in the California exhibit. He is an exceptionally well-fleshed calf, and shows remarkable beef type and uniformity.

The Hereford steer, California Lincoln Lad, while not as uniform in his lines as the other steers, was highly finished and carried a lot of quality. He was sired by Lincoln Domino, grand champion at the 1922 State Fair, owned by William Briggs & Son, Dixon.

University authorities as well as many California stockmen and breeders, who passed on the group of five steers just prior to loading for the Chicago Show, pronounced it the best lot of finished baby beef the University Farm had ever produced. It was considered at the 1921 Chicago Show that the group of five California steers was the best exhibit of baby beef ever seen in an American show ring. The following named steers made up the group-of-five at this year's show: California Bystander, California Standard, California Topman, California Sultan and U. C. Jock 5th. The group possesses wonderful finish and exceptional uniformity throughout.

FAT WETHER CLASSES

In the fat wether classes the University entered twenty head, including two yearling Southdowns and a pen of grade yearlings. Perhaps the most desirable wether of the latter five is the purebred Southdown which stood second in his class at Chicago in 1921. The grade yearling wether included in the above entry is also an exceptionally well covered and well formed sheep, which, all along, has been a favorite among those in charge at University Farm.

The University entered in the classes for pens of fat wether lambs a pen each as follows: Shropshires, Hampshires, Rambouillets and Crossbreds. Robert F. Miller, Professor of Sheep Husbandry at the Farm, in commenting on the pen of three Shropshire wether lambs, said, "I consider this the best pen that has ever left California. They surely are as alike as three peas in a pod and are the approved California Shropshire type, the envy of breeders the world over.

"The pen of Hampshires do not run quite as uniform, although every one is good, the two tops being the most desirable as to type and uniformity."

Included in the Southdown pen of wethers was one which was grand champion at the recent California National Livestock Show. He was of ideal type, with the best of covering and firm to the touch. The Rambouillets also were well fleshed and heavily fleeced, one of them being particularly well covered and uniform.

California's exhibit of fat barrows included two pens of Poland China juniors, a pen of Duroc Jersey juniors and one Duroc Jersey senior. They are unusually smooth and uniform all the way through. The group of five Poland China barrows is a choice lot from the *(Continued on Page 18.)*

Three Winners

Top—California Topman, cross-bred Shorthorn-Angus senior calf, which won signal honors for Golden State at Chicago. Center—One of the winning California Poland-China barrows. Below—Purebred Southdown lamb, one of Professor Miller's pets, which aided in bringing home the bacon.

"BOB" JONES' CORNER
Little Stories of Farming

By ROBERT E. JONES,
Associate Editor of ORCHARD and FARM

MAKES $34,000 FROM A HEIFER
Robert Miller, the Shorthorn breeder of Ontario, Canada, told me a story at the Chicago International Livestock Show which will bear repeating to Pacific Coast farmers. You know, we are just beginning with purebred livestock out here, but, as the years pass, watch us go! We shall want the best stock the British Isles, cradle of good stock, affords.

BOB JONES

Miller was speaking of Frank Harding, secretary of the National Shorthorn Association of the United States. "A few years ago I was attending an auction sale near Chicago," he said, "and Frank Harding, who had been called home, asked me to buy one or two animals for him. I liked the heifer Sayer's Rose 101915, and bid on her. She was knocked off to me for $320, and I sent her up to the Harding place. To make a long story short, this is what happened: Her first five calves sold at auction for $34,000. The last one to sell was her bull calf, sold just the other day at the Harding auction sale to John R. Thompson of Chicago for $5000. Yes, this little $320 heifer has paid her way."

FROM TRUCKER TO FRUIT BARON—Joseph Di Giorgio, president of the Earl Fruit Company, which ships fruits East from the Pacific Coast, started at the bottom. He came to America from Italy about twenty years ago and trucked freight on the Baltimore docks for a while. Now he heads one of the largest fruit-shipping organizations in the world.

MOVING STOCK BY TRUCK
The motor truck is mighty useful for moving stock. Purebred stock breeders who show at the fairs know this. A farmer friend of mine made all the fairs within a radius of 300 miles of his home last year, taking a small herd of Holstein dairy cows in his truck and trailer. In the "Corn Belt" it is stated that 6,000,000 cattle, hogs and sheep were shipped to market by truck last year.

VAST DAIRY OPPORTUNITIES
"You have unlimited possibilities for the expansion of dairying," said O. F. Hunziker of Chicago, one of the foremost dairy authorities of the United States, who recently made a tour of California, with the particular purpose of attending the Pacific Slope Dairy Products Show at Fresno and seeing the new Dairy Industry Building at Davis. Hunziker was a member of the faculty of Purdue University for a number of years, but now is interested in the manufacturing end of the industry. Like so many of those persons who come out from the East, Hunziker emphasized the fact that California has the "all-year" climate desirable for profitable dairying. This cannot be too forcibly driven home—we have something out here on the Coast that no other part of the United States has. If our dairymen don't profit thereby, it is because they are slack in their methods. When a cow can spend nine or ten months of the year in the open, with no expense for feed to heat her body, she certainly will produce more butterfat at a given cost than the cow of the East which must consume feed to maintain body temperature as well as to produce milk.

THE NEW COLLEGE PLAN
As the time for the report of the College of Agriculture Commission appointed by the last Legislature draws near, it is more and more evident that the Commission will not recommend a segregation of the College of Agriculture from the University of California. This is not an announcement, but merely a prediction based on observation and what has already leaked out about the Commission's ideas. Without a doubt many of the farmers who tried to get the Legislature last session to separate the College of Agriculture from the University have changed their viewpoint. Much progress has been made in recent months in bringing the University Farm at Davis closer to the farmer. Dean Thomas F. Hunt of the College of Agriculture is by nature a builder and, though some were impatient for quick changes, the policy of well-considered improvements undoubtedly is best in the long run.

THE DEPARTMENT OF AGRICULTURE—Perhaps this is not a place for politics to be discussed, but the writer cannot help saying a word regarding the State Department of Agriculture, which, rumor has it, will be upset with the coming of a new State Administration. I doubt if there will be many drastic changes in the personnel of the Department, for the time has come in State affairs when the highly trained men of the Department of Agriculture should not have to look forward to possible sudden decapitation. The work is too important and the acquaintance of an efficient man long on the job too valuable to the State and its agriculture to be disturbed by political preferment. At best the State is a poor paymaster; the sort of brains it hires in the Department of Agriculture at meager pay brings higher prices in the business and industrial world. As for the man on the job—financially, it would probably be better that he were thrown out; but as for the State—well, the State is lucky to get him at the price. The Federal Department technical men never are disturbed with a change of administration.

TOO SYMPATHETIC
Roy Hagen, Secretary of the California Cattlemen's Association, tells the story of a "bull trial" held in Pope Valley recently wherein a scrub bull was convicted, but clemency was advised. These mock bull trials have been held in various parts of California for the purpose of driving home to the farmer the fact that scrub bulls really rob the farmer by siring inferior progeny which eats and eats and provides little meat or milk to compensate for the feed. It is usual to condemn the bull to death and have him slaughtered. But Hagen was careless in selecting his jury with the result that although the bull was found guilty, clemency was advised. The judge thereupon condemned the bull to spend the rest of his life in Death Valley, which was the hottest place he could think of.

TELLING THE PUBLIC
Recognizing the value of favorable public opinion, the California Associated Raisin Company of Fresno recently invited the country editors of California to visit its plant and get better acquainted with the industry. Public opinion is needed in every business, and the farmer, in his co-operative marketing growth, must realize that he needs the public with him at all times. In co-operating, the farmer is always in danger (with other lines of business) of being accused of trying to monopolize. The enlightened marketing officials of the farmer organizations realize, however, that this is not economically possible; prices must be kept at a reasonable figure to stimulate greater production. A fair price is the slogan of such men as Wylie M. Giffen, manager of the Associated Raisin Growers; yet, the public must be kept constantly informed of this, he points out.

SCIENCE BRINGS PEACE
Fruit men of California, as well as of Utah and Colorado, will recall the many suits that were brought in years past against copper smelters in these States, because of the destructive nature of the sulphurous acid fumes which came from the smelter flues. These fumes would spread over the agricultural country adjacent and destroy all plant life. The Sacramento River Canyon, north of Redding, is an example. Here the hillsides have been denuded by the smelter fumes of the big plants around Kennett and Copper City. But science has solved the problem now, as it usually does when two great industries come into violent conflict. I met William DeGroutte, formerly superintendent of a big smelter in Colorado, recently, and he told me the story. Today these fumes are transformed into a valuable product by the electrolysis method. Two copper wires running through the fume flues, are charged with a 2000-volt alternating current. This heavy charge of electricity changes the fumes into solid matter—lead, copper and sulphur, which can be used. The little remaining gas is mostly carbonic acid gas, Mr. DeGroutte says, and this is beneficial rather than deleterious to vegetation. The sulphurous acid gas that escapes is so slight and so light that it floats far away and does no damage. This story has a moral. Men frequently get into terrific battles over some clash of interests, when if they would just ask science to help; if they would get together and try to work out their problems, a way would be found.

DR. MEAD DISAPPOINTED
With a slump in land colonization now facing California, Dr. Elwood Mead, head of the State Land Colonization Board, expresses his surprise at the apathy of land owners toward the new plan. Recently, Doctor Mead said: "The thing that does disappoint me is the lack of interest on the part of the public and the organizations existing for the purpose of boosting California, in this most vital problem of settling the vacant lands with a permanent, producing population of American citizens." Several spasmodic attempts have been made to arouse the interest of the large land interests in Doctor Mead's plan, as exemplified by the success of Durham and Delhi Colonies, but little progress has resulted in recent months. Even now several organizations are at work on the matter, but little is being done. One thing is certain—the big land owners will wake up some day to the fact that they cannot get by without a change of program. Very little land is being moved now.

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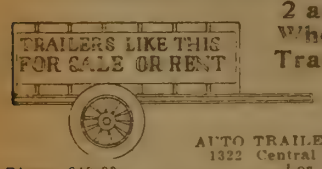

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PROFITABLE POULTRY NEWS. Capacity 200,000 chicks. Off every week of the year. This fall we've quadrupled our fall and winter capacity, yet can't supply demand for chicks from our 200-290-egg strain, nor from our large mature hens for rapid growth for market. People are learning that every fall and winter month chicks grow into profitable layers and meat. Booking for December to April delivery. Reduced booked ahead. White, Brown, Buff Leghorns, Reds, Rocks, Minorcas, Wyandottes, Anconas, Andalusians, Brahmas, Orpingtons; ducks, turkeys. For quarter century imported, trapnested selected for vigor, growth, beauty, eggs. Mail address: Profitable Poultry, Box O, 13 North Fair Oaks, Pasadena.

White Leghorn Baby Chicks and Hatching Eggs

From TRAPNESTED STOCK
Our 1923 annual illustrated mating list now ready; send for a copy. WE GUARANTEE SATISFACTION.

INWOOD LEGHORN FARM

C. E. ARMSTRONG,
CORVALLIS, OREGON.

BABY CHICKS—12th year specializing on properly incubated chicks — the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, Blue Andalusians. Now booking orders for January and later delivery. Safe arrival guaranteed. Free circular. Order early and get the date wanted. McDonald Poultry Ranch and Hatchery, Route 1, Box 246, King Road, San Jose, Cal.

BABY CHICKS of best quality, hatched by experts from healthy, vigorous hens that have been BRED to lay—not forced to lay. Wh. Leghorns, 14c each; Barred Rocks and Reds, 20c. Strong, vigorous chicks. The kind that live and thrive. Order today! ELECCHIC HATCHERIES, Dept. L, Roscoe (via Burbank), Calif.

AMERICAN and MEXICAN wild strain breeding gobblers and hens, 250 to choose from, $10 to $25 each. We also have eggs and poults in season, starting January 1. Jenkins, Dundee Crossing and San Fernando Road, R. F. D. 3, Box 148, Burbank, Calif.

FREE—1923 Daily Egg Record, ready for mailing in December. Most up-to-date method of recording daily egg yield. We want you to have a copy. Send a postal today. Golden Eagle Milling Co., Petaluma, Calif.

TURKEYS

TURKEYS—PURE-BRED GIANT BRONZE. CHOICE YOUNG GOLDBANK-COPPER KING STOCK, from our original matings with such imported sires as GOLDBANK VIII, first cock Madison Square Garden Show (New York) '21, GOLDBANK BOY (his son), first cockerel same show, GOLDBANK KING (his grandson), first cockerel same show, '22; COPPER KING'S BOY 3rd cockerel same show '22, COPPER KING JR., first cock California State Poultry Association Show, Oakland. SECURE THE BEST BLOOD FROM PRIZE WINNERS OF AMERICA'S PREMIER POULTRY SHOW. Reasonable prices. Send for circular. Bronze King Farm, Merced, Calif.

WILD TURKEYS

Producers this year show unequaled records for large profits and productivity from WILD BLOOD, many hatching and raising over 95 per cent.

1922 SHOW RECORD

Shows sweepstakes, special award best display, and silver cup and cash special award, and 13 regular cash awards out of 18 entries, Los Angeles County Fair.

M. A. STUTSMAN, Sales Mgr.,
All ranches, 333 Bryson Bldg., Los Angeles.

MAMMOTH BRONZE toms and hens, also eggs in season. Our stock are California State Fair winners and graded from the best Eastern stock procurable. Twenty years of practical experience with turkeys. We offer good opportunity for turkey raising on this 50,000-acre range. JOHN G. MEE, breeder of turkeys and herding Collie dogs, San Miguel, Calif.

GEESE

GEESE—PURE-BRED TOULOUSE. Two young ganders and two young geese 1st and 2nd prize winners at recent Oakland Auditorium Show, $12.50 each. Bronze King Farm, Merced, Calif.

Sonoma Saves Spuds

MANY native aborigines helped save the 1922 Sonoma spud crop, which was one of the largest on record. In the western part of the county, especially in the Bloomfield district, the acreage was unusually large and the Indians were prominent in picking operations.—MRS. G. B. RODD.

WILL RAISE TURKEYS

C. T. Johnson, who formerly managed what was said to be the largest turkey farm in the world, near Hemet, is preparing to produce Thanksgiving meat on a similarly extensive scale on a section of land west of Earlimart.

The New BULLETINS

AMONG new bulletins issued by the United States Department of Agriculture, the following are deserving of special mention. They may be obtained free on application to the Division of Publications, Department of Agriculture, Washington. Order by number:

	NUMBER
Breeding Dairy Farms	1272
Alfalfa Root Studies	1087
The Marketing of Mill Feeds	1124
Apple Orchard Renovation	1284
Bank Loans to Farmers on Personal and Collateral Security	1044
The Bulk Handling of Grain	1296
The Livestock Industry in South America	928
The Production of Tulip Bulbs	1082
Internal Browning of the Yellow Newtown Apple	1104
Breeds of Swine	1291
Farm Ownership and Tenancy in the Black Prairie of Texas	1068
Legal Phases of Co-operative Association	1156
Impounding Water in a Basin to Control Breeding of Mosquitoes	1088
Tenn Barley, a Superior Variety for Irrigated Land	2[illegible]
Plain Concrete for Farm Use	1278

UTAH PUBLICATIONS

Utah Agricultural College has contributed the following interesting data. Copies of the bulletins may be obtained by request from the Experiment Station, Utah Agricultural College, Logan, Utah:

Celery Culture in Utah	47
Duty-of-Water Investigations on Coal Creek, Utah	181
The Net Duty of Water in Sevier Valley	183

CALIFORNIA CIRCULARS

The following new and helpful circulars have been issued by the University of California and will be sent free upon request. Address Director, Agricultural Experiment Station, Berkeley, California:

Cheese Pests and Their Control	343
The Control of Red Spiders in Deciduous Orchards	347

The Number 10 monthly Bulletin of the Department of Agriculture, State of California, for the month of October is now available and may be obtained by applying to G. H. Hecke, Director, Department of Agriculture, State of California, Sacramento.

Other bulletins of special value are:

Statistical Report of California Dairy Products, No. 30, California State Department of Agriculture, Sacramento.

Raising Dairy Cattle, No. 104, Agricultural Experiment Station, University of Montana, Bozeman, Montana.

Agricultural Leaders of the Pacific West

III—F. A. SEYMOUR,

Manager, Sun Maid Raisin Growers

F. A. SEYMOUR, who has been very successfully connected with the Sun Maid Raisin Growers the past six years, came to California the same year he was born, which was 47 years ago.

From 1901 to 1905 he was in the exporting business in the Philippines, handling mainly food products. After five years spent in the banking business in Nevada, Mr. Seymour returned in 1910 to the Philippines, where he remained three years as treasurer and assistant manager of the largest exporting firm in our insular possessions.

F. A. SEYMOUR
Photo by Hartsook

As San Joaquin Valley manager of the American Seedless Raisin Company from 1913 to 1917, Mr. Seymour received practical experience in the California dried fruit business. In the year last named, he became connected with the Sun Maid Company as assistant to the president, serving in that capacity until February, 1922, when he was made general manager.—O. H. B.

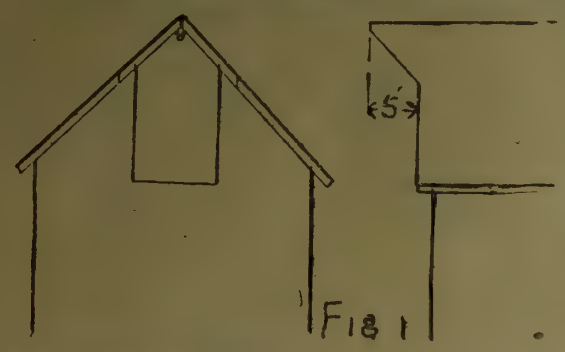
A Strong Hay Fork Hood

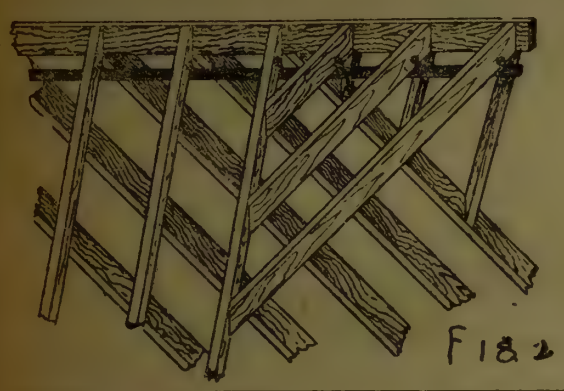
THE 2 by 6 inch ridge piece projects about five or six feet beyond the barge rafter; the jack rafters are spaced 20 or 22 inches apart and are firmly spiked to the ridge piece and to the barge rafters on both sides of the peak of the roof, as shown in the drawing.

The steel hay-carrier track is suspended about one foot beyond the ridge piece, or to both, as the manufacturers designed. Suitable hangers are furnished and sent with the track.

Fig. 1 shows two views of the gable end of the barn roof. The large hay door is outlined.

Fig. 2 is a perspective view, showing the rafters, the ridge piece, the suspended steel hay rack, and the jack rafters.—HERBERT A. SHEARER.





How to Make a Good Stock Gate

WILD range cattle often break gates when they are driven home and housed in a corral or barnyard. They do it from fright—not ugliness.

Time and temper may be saved by making gates and gate posts heavy enough and high enough to prevent animals from learning that a gate or fence may be broken.

The stock gate here shown is made of 4x6 timbers for uprights and 2x6 for the lengthwise bars.

The hinges are blacksmith-made, of heavy iron. The upper hinge consists of two eye bolts, linked together as shown. They are made of ¾ inch round iron with threads and nuts on the ends. They are set cornerwise through the gate post and the heel post of the gate.

The lower hinge is made of flat bar iron 2¼ inches wide by ⅜ inch thick. It is made in clamp form, in two parts, to tighten around the heel post of the gate, as shown. There is a pin hinge bored and driven into the gate post the proper height so the pin engages the eye of the lower heel post hinge.

The hinges are set cornerwise on the gate and the gate post to throw the gate free when open.

The upper eye hinge prevents the gate from lifting. It is the simplest combination of mechanical principles ever applied to the opening and shutting of a stock gate.

The gate may be ten or twelve feet long and it should be five feet high.—*Herbert A. Shearer.*

Pasadena City Farm

(Continued from Page 3.)

for filling and tending the pots, if this becomes necessary. White help is paid for regular work $2.00 a day and board, which is $7.00 above the going wages. Mexicans irrigate and pick up the potatoes and walnuts. By far the greatest expense of running the Pasadena farm is labor, which costs $3000 a month.

Compared to horses, everything is in favor of mules on the Pasadena farm, believes Mr. Bougher, who says that the latter eat about half as much as horses, do much more work, are more easily handled and hardier. Six mules costing $350 each, now are in use and 16 more are to be purchased. Those weighing 1350 to 1400 pounds are preferred.

"Los Angeles and other California cities are making a great mistake in not using her sewage for agricultural purposes," says Mr. Bougher. "Every bit of the 160,000 acre feet of domestic water now being used by the metropolis of Southern California is needed to help irrigate the 620,500 acres of arable land in Los Angeles County.

"The superior value of sewage water for irrigating, was demonstrated by its use on orange trees, which made twice the growth of those irrigated with ordinary water, chiefly because the former is rich in nitrates. The sale of sludge will pay for treating sewage and the sale of water for irrigating will pay for the plant and leave a nice profit over, besides increasing agricultural production very materially.

"Pasadena sewage is to be treated by the reactivated sludge process, which consists of forcing air into the sewage from the bottom, thus supplying the oxygen necessary to complete the natural process of decay. The purification thus made possible by the action of aerobic bacteria results in the complete destruction of both organic wastes and pathogenic or disease germs. The perfection of this process is proved by the fact that the sewage of Paris is treated in this manner, turned back into the water system and used for domestic purposes.

O. H. BARNHILL.

Successful Gardening

L. C. Johnson, author of The Home Garden, ships more tomato plants outside the State than all other Southern California growers put together. The demand for his products often exceeds the supply. His little book is chock full of homely wisdom and practical pointers on plant and vegetable growing, the result of long and successful experience. It is written in language that anyone can understand and tells just how the home garden can be made a source of pleasure and profit. The author loves growing things and his book tells just how he feeds and breeds them. Write for this extremely interesting and practical work. PRICE 50 CENTS.

Address L. C. JOHNSON, Pomona, California.

Do You Know—

How to cull pullets early in the season?

What are the possibilities in growing persimmons for market?

How to make a hog weigh 750 pounds in 18 months?

What varieties of peaches to plant in the new orchard?

How to cross grape varieties by grafting?

What to do at this season in the vegetable garden?

What makes pomegranates split?

How to increase the demand for purebred livestock?

How to kill gophers with strychnine?

How to control brown rot of lemons?

What to do at this season in the apiary?

What flowers to plant now?

How to destroy walnut worms?

Where to get the new free agricultural bulletins, and the names of those now available?

How peach trees are propagated?

THESE ARE BUT A FEW OF THE QUESTIONS ANSWERED IN

the first three issues of

ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY

Read the ORCHARD and FARM Section every week for practical help and interesting information.

The Evolution of a Budded Peach Tree

How Our Orchard Stock Is Propagated—Not as Difficult as It May Seem —Some of the Fundamental Principles

By GEORGE P. WELDON

For many years recognized as one of California's leading horticultural authorities. Pomologist, Chaffey Junior College of Agriculture, Ontario. An exclusive Contributor to ORCHARD and FARM.

THE propagation of our fruit trees usually is left to the nurseryman. But despite the popular impression that great difficulties confront a novice, the process is not complicated, and with a fair knowledge of a few of the fundamental principles coupled with a little experience, any one can meet with at least a fair degree of success.

Fruit trees are propagated in several different ways. First, any of our seed developing varieties may be grown from seed. However; the seed method of propagation alone is not satisfactory, for seedling trees will vary because of crossing, that is, a certain variety may be cross-pollinated by any other variety that may be growing near by and the seedling as a result of the cross will not be true to the characteristics of either variety.

GEORGE P. WELDON

Therefore it becomes necessary to bud or graft the variety the propagator desires, into the seedling tree.

THE FIRST STEP

In the case of most of our fruit trees the first step in their propagation is the growing of the seedlings. When the seedlings are of sufficient size they are either budded or grafted. It is this method of propagation that will be discussed fully in this article; but first of all, another system used in the development of some kinds of trees, should be mentioned. This is known as the cutting method.

A "cutting" is simply a section of a branchlet or root which when placed in the soil under favorable conditions, will develop roots.

Not all kinds of trees grow readily from cuttings; some that do and that usually are propagated in this manner are olive, quince and fig. Practically all of the deciduous fruits under favorable conditions, may be grown from cuttings, but nurserymen are inclined to the belief that a stronger and better root system is developed from a seedling. Perhaps nowhere else are conditions better than in California for the rooting of cuttings which under the influence of our mild winter weather develop roots readily.

Little skill is required to grow trees from cuttings, although there may be failures due to the soil becoming too dry where cuttings have been planted. New growth is best for use in making cuttings.

PEACH PROPAGATION

A description of the methods used in growing peach trees will give a good idea of the manner in which all budded or grafted trees are developed. The main difference between peach propagation and that of other stone fruits or that of pome fruits, is found in the fact that peach seeds are very hard, and splitting, which must take place before germination, may be somewhat difficult to accomplish. The series of pictures which accompany this article show the various steps necessary.

SEEDS FIRST BURIED

In order that the splitting of the seeds may take place, they are buried in a pit about the middle of October. A hole should be made about 18 inches deep and of sufficient dimensions to hold the amount of seed that is used.

A layer of seeds 2 or 3 inches deep is covered with a layer of soil of about same depth; then like layers of seeds and soil are placed alternately in the pit until it is filled.

In a climate like that of California where the soil does not freeze except on the surface at any time during the year, moisture must be depended upon to cause the seeds to split. In the Eastern States where the weather is colder, freezing will cause splitting.

Much moisture is a necessity for best results in California, and frequent irrigations of the pits are essential. If bedding of the seeds is done near a hydrant it is a simple matter to apply sufficient water with a hose to give the desired results. Water should be used once a week during periods of light or no rainfall.

Under the treatment outlined, seeds will be ready for planting in the nursery row about February 15, in Southern California. If everything has been favorable a large percentage of the seeds should show sprouts at this time.

PLANTING THE SEEDS

Seeds may be planted in furrows about 5 inches deep. The distance between the rows must be sufficient to permit of cultivation. About 3 feet is satisfactory.

The trees in the rows should be from 3 to 6 inches apart. In order to insure a good stand, the seeds may be dropped in the furrow very close together and the trees if too thick can be thinned after they have started. The seedlings are grown for about five months before budding if dormant buds are to be grown, or about three or four months if June buds are desired.

In other words, budding of the seedlings may be done as early as June, in which case the inserted bud will be forced into growth as soon as it has united with the seedling stem. Most of the budding is done in August and September and the buds remain dormant until the following spring.

BUDDING THE TREES

The process of budding is simple and consists of the insertion of a single bud cut from the new growth of the desired variety, in a T shaped slit.

After insertion, it is tightly tied with twine or raffia and held in place until union is complete. The twine or raffia must be cut before it has damaged the trunk of the tree by becoming too tight on account of diameter growth.

REMOVING THE SEEDLING TOP

In the early spring before tree growth begins, the top of the seedling tree is removed by cutting at least an inch above the inserted bud, which by this time has become a part of the tree. If the cut is made too close to the bud there is danger of drying out, and consequent loss of the bud.

In a short time the new bud will begin its growth, and must be encouraged by the removal of all growth that starts from other buds on the trunk of the seedling.

At the end of the growing season, a thrifty tree should be the result. This is the kind of tree that the orchardist purchases from the nurseryman—and is known as a "one-year-old." It is the most popular tree for planting.

Where the soil of the tract to be planted to orchard is not too sandy, dormant buds instead of one-year-old trees may be used. In this case the removal of the seedling top is accomplished in exactly the same manner. Trees grown in the orchard from dormant buds can be headed at almost any convenient height and for this reason are very desirable. Growth of both dormant buds and June bud trees in the orchard usually is satisfactory and in either case low heading of the orchard tree is easily accomplished.

Call Our Cows Rough

"YES, Oregon cows have made some great records in milk and butterfat production, but it's all due to the climate and each man has only a cow or so to take care of. Your animals are rough looking specimens, the Jerseys resembling Brown Swiss."

The above is the line of talk which easterners handed out to the western students' judging team at the recent National Dairy Show, according to Lester Love of Corvallis, Ore. Anyhow, the Beaver State boy showed the easterners that he knew what a good cow looked like, being a member of the team which won second place among twenty contestants. The Oregon boys earned $300 of their expense money by selling 7000 ice cream bars during Junior week-end.—O. H. B.

Cow Earns $14 a Month

MISS MARGARET CONANT of Modesto has a cow, Fox's Sunshine Betty, which produced five pounds of butter fat in three days and won first prize at the State Fair for best heifer under 30 months of age. Betty eats each day three pounds of rolled barley, one and one-half pounds of oats, one and three-fourths pounds of oil meal, a pound of molasses on a pound and a half of corn meal, and a quarter of a pound of soy bean meal, all topped out with nine pounds of alfalfa hay. She pays Margaret a net profit of $14 a month and furnishes a fine example of what good care and good breeding will do in individual dairying.

CATTLE PRICES UNEQUAL

As an example of a condition which the new union stockyards at Los Angeles are expected to overcome, John T. Caine, Utah livestock specialist, tells of a California farmer who sold his cattle for $4.75 to a buyer, who the following day purchased from a neighboring rancher a similar lot of cattle for $6.25, the price at Los Angeles being $8.

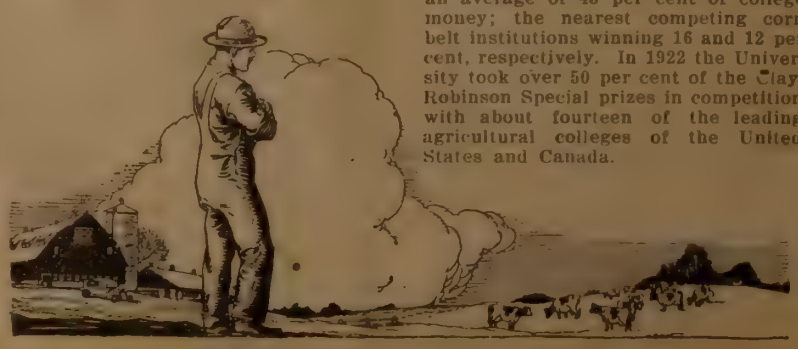
California Wins at Chicago

(Continued from Page 14.)

standpoint of finish, type, quality and uniformity.

CALIFORNIA'S LEADERSHIP

The University of California has led the way for State breeders and feeders in going to the Chicago International with well-bred and well-fed cattle, sheep and hogs. On account of the distance and expense of showing, California's individual breeders have not competed to any extent in the past. The Division of Animal Husbandry has performed a real service to the livestock industry of California in perfecting feeding methods which have made it possible to make the notable show ring records at Chicago. This work has advertised the State as a desirable place for the production of quality beef, pork and mutton. Corn belt breeders and feeders are given food for thought when they behold the prize winners from the University of California and are told that such bloom and even fleshing has been wrought under our conditions and with home grown feeds like alfalfa, barley and corn silage. No corn enters into the grain ration of these finished show animals.



Added to the showing at this year's Chicago International are the records made by the University at four previous exposition there. Twice the University has won the supreme award in the show—that of Grand Champion beef animal. The steer, California Favorite, and the heifer, Lula Mayflower, were awarded these places against the best from United States and Canada. Reserve champions in the beef classes were won twice by California.

In college classes, California has been undefeated in the divisions for older steers and for calves, twice winning first, second and third in the latter class, and three times having the champion college steer. In college classes for fat wethers, California has never been below third place, has only once failed to win first on lambs, once first and second, and once first, second and third; twice she has had champion college wether and twice reserve champion wether of the show.

Twice the highest college award, that for the best collective exhibit of steers, wethers and barrows has been won by the University of California. In the four years California has won an average of 43 per cent of college money; the nearest competing corn belt institutions winning 16 and 12 per cent, respectively. In 1922 the University took over 50 per cent of the Clay-Robinson Special prizes in competition with about fourteen of the leading agricultural colleges of the United States and Canada.

Wanted: 2 Words

By WALTER H. GARDNER

"HOW is a 'plowpan' formed?" asked Robert Killefer the other day. "Not alone by a plow! Alfalfa land gradually packs under the passage of mower, rake and wagon until, at a shallow depth, is formed an almost impervious stratum that is pretty near watertight. Even the growing roots can't loosen it. And the so-called 'plowpan' exists in fields that never felt a plow. Constant irrigation forces down the finer particles of soil until they join together in an impervious mass a few inches beneath the surface.

"'Plowpan' is a misnomer. We should have some word that expresses the conditions more clearly. 'Pan' is not fairly descriptive."

SUGGESTIONS DESIRED

What is the best single short word to describe and identify this subsurface stratum of closely packed soil particles? If you can think of a happy phrase, sent it in to ORCHARD and FARM.

And here's another thought: Up at the State Fair the writer met R. C. Force, of the C. L. Best Tractor Company. "Can't we find some better word than 'subsoiler' or 'subsoil plow'?" he queried. "The present term is awkward and doesn't sufficiently describe the special duties of this particular implement. Any plow is a 'subsoiler'—so is a chisel, for that matter. To start the discussion, I offer the word '*subber*.' It is short, euphonious and not likely to be confused!"

Let us thank Mr. Force for this interesting observation and for his contribution. And the writer threatens to accept "*subber*" if someone doesn't think of a better word! Send your suggestions and the editor will publish them.

History of a Peach Tree—From Seed to Fruit

By George P. Weldon

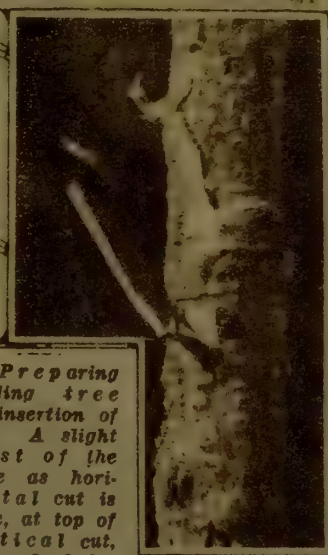
(1) These peach seeds were placed in a pit October 16. If they are kept wet while covered with soil, splitting and germination will take place about February 15, when they are ready for sowing in the nursery rows.

(2) During February the seeds, having split, are ready for sowing in the nursery row. They are covered in shallow trenches.

(3) Seedling peach trees grown from seed planted in February. These were budded in September and the inserted buds now are dormant. Steps in the budding process are shown below.

(5) Twine is wrapped firmly about the trunk of the seedling to hold the bud in place. (Bud on opposite side and does not show in illustration.)

(6) About one month after budding, the twine is cut away with a knife. Fig. 7 shows completed union



(4) Preparing seedling tree for insertion of bud. A slight twist of the blade as horizontal cut is made, at top of vertical cut, loosens bark for placing bud underneath.

(7) Bud after removal of the twine, showing perfect union with stem of seedling. In the spring, the top of the seedling tree is removed to force growth of bud, as shown in Fig. 8.

(8) Cut is made about 2 inches above the bud, care being taken not to split the wood.

(9) One season's growth of peach trees from dormant buds. These are known as yearling trees, and are shown here in nursery row.

(10) One season's growth from dormant bud planted in the orchard. Note wealth of branches the tree has developed, making it possible to select well placed branches in pruning to form the framework.

(11) Two seasons' growth from June bud. A sturdy tree, but rather small because of poor soil.

Hops—Our Most Temperamental Crop

By ROBERT E. JONES

HOP RAISERS have to deal with perhaps our most temperamental crop. The hop grower has so many ups and downs he hardly gets his order in for a "twin-twelve" before his pocketbook flattens to the "rut-hopper" class. For instance, approximately 14,000,000 pounds of hops raised in California in 1921 sold for $3,555,000. In 1921 a little less than 14,000,000 pounds of California hops brought $10,742,000. Both of these tabulations were made after prohibition became effective in the United States; local consumption therefore cannot be said to be the governing factor.

When prohibition threatened, many Pacific Coast hop growers began setting prune and peach trees in their hop yards. But they went through virtually the same experience as did the grape growers. Hops sometimes were more valuable under prohibition than before prohibition. But this has not always been the case. In 1922, for instance, the hop grower was hard hit; some of the crop was not picked.

CALIFORNIA LEADS

It is of interest to note that about 39-40 of the hop crop of the United States is produced here on the Pacific Coast. And nearly three-fourths of the United States crop is grown in California. The Federal Department of Agriculture summary of 1921 reports the distribution of hop acreage in the United States as follows:

State—	Acreage
New York	580
Washington	5,700
Oregon	9,240
California	14,220

British Columbia, also, produces a substantial acreage of hops each year.

Hops require the finest type of river bottom soil. They are grown on trellises, which, even before the coming of the war, cost as high as $100 an acre for construction. California has developed the hop yard to a thing of beauty. Picking hops always means the congregation of large groups of itinerant labor. The crop usually is ready for harvest in late August. The hops, when picked by hand, are stripped off the vines and deposited in large baskets or sacks. Vines are lowered from the trellises so as to be within easy reach of the picker.

E. Clemens Horst, generally recognized as the "biggest" hop grower on the Pacific Coast, is the inventor of a hop picking machine. These machines are vast stationary plants, to which the vines are carried on flat bed wagons. Where such plants are available, hop vines are cut from the trellises and transported to the picking plant and there fed through the picking machine. From the picking machine, hops are carried on an endless belt arrangement to the kiln, where they are dried by steam heat, and sulphur. After this they go into the baler which compresses them into 200-pound bales, encased in burlap. It is not an uncommon sight on the Coast to see a truck loaded with bales of hops go bowling down the highway, obstructing the view in both directions.

Most hop growers are temperamental, like the crop they grow. It is little wonder they are, so great are the ups and downs of the industry. I remember a hop grower, now dead, who spent a good many years of his life trying to prove that breweries had found a chemical substitute for hops, which they used as a means of beating down the price to the American grower.

England always has been a market for American hops, as it has been for Pacific Coast barley, also needed in the making of beer and ale. But the tariff wall of England has been another factor in making the hop game so uncertain.

Today a great many hops are marketed in tiny, convenient packages, which may be carried home in a coat pocket from the drug store or from one of the new type of stores one sees.

Sometimes hop growers have sad experiences. Recently I visited a large storage warehouse in Sacramento and detected the aroma of hops. I remarked to the attendant about them, and he said:

"Yes, this is a sad case. The man who owns them was offered $1.00 a pound two years ago, but he turned down the offer and put them in storage. The price has gone down steadily since that time. Today there is a $2000 storage bill against him and the hops are worth about 5 cents a pound."

No one can tell the future of the hop business any more than he can predict whether this grower will be able to pay his storage bill. But we have some fine hop yards out here on the Pacific Coast and they have been known to gross above $2000 an acre to the grower.

Crew of hop pickers at work. The vines are removed from the high wires to bring them within reach of the workers.

The hops are stripped from the vines and deposited in baskets or sacks.

Large operators haul vines to central plant, where conveyors deliver to automatic picking machines.

Delivering hand-picked hops to the dryer. Note elevator to top of building.

CALIFORNIA STATE LIBRARY

ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

DECEMBER 31, 1922

Rambling With the Camera Man

Above—Showing how fowls at Fontana are marked with leg bands for identification purposes in trap nesting.

This is B. M.—"Slim"—Anderson of Fresno County, showing how a single season's growth of a Sun Maid raisin grape vine exceeds in height even his giant frame. Below—Another triumph for the tractor. Driving grape stakes for Anderson-Routt Improvement Co., near Tipton, Cal.

The advantage of girdling is strikingly illustrated by these two bunches of Zante currants. The one on the left is from an ungirdled vine; right, girdled. Below—This progressive producer is a "truck" farmer in two senses of the word.

Producer and consumer meet at the front door. Mrs. A. E. Eckles, Owensmouth gardener, selling casabas from her porch.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
DECEMBER 31, 1922

The Largest Certified Dairy in the World

It Is in Solano County, California, and Its Success Has Been Attained by Strict Attention to Details—A Study in Farm Management

By WM. REYNOLDS BUTLER

Specialist in Farm Management, Formerly With Purdue University and U. S. Department of Agriculture. Special Staff Correspondent of ORCHARD and FARM.

FROM the windows of trains plying between San Francisco and Sacramento, just outside the town of Dixon, to the north and east, passengers see spream before them, in panorama, an enormous yet well kept dairy.

One who enjoys the study of successful farm management after having caught a glimpse of this establishment will want to know more about it.

The dairy was founded in 1908 by Henry Timm. From a modest beginning with forty-eight cows, it has grown to be the largest in the world producing only certified milk!

At present nearly 1000 head of dairy animals, young and old, make up the herd. The acreage of the farm has grown from 160, at the time Mr. Timm conceived the idea of producing certified milk, to a total of 3280, of which 640 acres is devoted to the production of alfalfa for hay, soiling, ensilage and pasture, and 2640 acres to grain and grazing land.

BIG MILKING STRING

The dairy now averages about 430 cows, milked twice each day. The entire herd is tested for tuberculosis every six months by authorized State and Federal inspectors and testers. The total average daily production is about 5000 quarts of milk. Most of this is bottled as "certified," shipped to the San Francisco Bay region, where it is under inspection twice a month by agents of the Alameda County and San Francisco Medical Societies. The average number of men employed is about sixty.

The dairy has had an interesting history. After the death in February, 1917, of Henry Timm, the founder, his wife had sole charge of the big enterprise for nearly a year and a half and distinguished herself in the discharge of the vast amount of detail work entailed.

Had she not been so thoroughly interested in her husband's work and so well versed in its various phases during the years while the business expanded, she would not have been so ably fitted to carry it on. But Mrs. Timm, though greatly interested in the growth and development of the dairy, was more concerned with the growth and development of her young son. The dairy deprived her of time she wanted to devote to her boy, and therefore was sold to Doyle & Davey, the present proprietors, in July, 1918.

From Mrs. Timm and others one gathers that Henry R. Timm was most thorough in everything he did. He was a splendid organizer, whether it was co-ordinating his forces on the farm and imbuing them with the importance of following out his plans for producing milk free from dirt, or whether it was in the organizing of a bank. At the time of his death he was president of the First National Bank of Dixon, which he had helped organize and which made a most healthful growth under his leadership.

As was characteristic of him in all his undertakings he made an exhaustive study of the certified milk industry, reading and studying all available data on the subject. When in possession of this information and assured of an unfailing market for his product, he set about to construct the best buildings to suit his requirements and to install the most efficient equipment. He possessed a practical vision of his work and from the start labored steadily toward his fixed objective, the largest certified dairy in the world.

The dairy started in a conservative way with inexpensive but sanitary and adequate buildings, employing three barn men and four ranch hands. The first shipment of certified milk on Dec. 18, 1908, of four cases was of such quality that by the following spring the daily shipment grew to sixty cases. Mr. Timm, relying on utmost sanitation in the buildings, lots and bottling rooms and in cleanliness of his milkers and handlers, found that his milk was meeting the critical approval of the inspectors of the medical associations in the Bay cities. Doctors of the cities of Oakland, San Francisco, Berkeley and Alameda specified Timm's Dairy certified milk for babies under their care.

Mrs. Timm tells us the temptation was great to expand their herd rapidly to meet the increasing demand, but Mr. Timm made the dairy show a substantial profit each year, only investing a safe portion of the profits in enlarging the business. The education of the public to the advantages of certified milk for babies had to be left with the medical fraternities. It was a slow process.

However, Mrs. Timm cited cases where mothers who had used this milk asked that they be supplied on their summer vacations. Such requests were met, and although it did not pay the dairy to ship to these various places, it built good will among the patrons.

REMARKABLE KEEPING QUALITIES

Dr. Adelaide Brown of the San Francisco Milk Commission tells of a mother who stored enough certified milk in the ship's refrigerator to last her baby for the trip from San Francisco to Manila. The mother reported the last quart of milk opened was as sweet and wholesome as the first. It is such satisfied patrons that have built the business of the Timm dairy. Strict attention to the minutest detail of keeping dirt out of the milk from disease-free cows so as to insure health to the thousands of babies near the Golden Gate made possible the continued support of the enterprise.

PRESENT OWNER PROGRESSIVE

Where Henry Timm and his wife left off, P. M. Doyle of the present firm, Doyle & Davey, has carried on the good work. Mr. Doyle occupies the beautiful residence which Mr. and Mrs. Timm built on the farm and which is surrounded by an ample lawn and tasteful shrubbery. It is a home to be proud of, for the business built it and it stands for success. With the exception of new bunk houses, the recently constructed calf barn and a few minor improvements, the farm is the same as when sold to the present owners.

Mr. Doyle turned me over to J. A. Molter, whose job of field and feed foreman is a big one. He looks after production of grain, forage and silage, and sees to it that feeds are produced economically and fed scientifically.

Mr. Molter first led his interviewer to the large barn where the cows are milked. This barn affords stanchion room for 240 cows. As 430 cows are milked twice each day, it will be seen the cows are handled in two shifts.

The barn was immaculate. Not a cobweb or particle of dust could be seen on the ceiling, and the floors were freshly scrubbed.

HOW COWS ARE FED

Rolled barley at the rate of five pounds per head forms the daily grain ration for the cows. This is the only feed given in this barn at milking time. Since odors from silage are absorbed by the milk, it is fed only after the cows have been milked. Two large silos of 110 tons capacity—each at the north end of the milking barn—were being filled with green alfalfa. Another barn, used for feeding, is equipped with a 250-ton silo.

In the two large mows, 400 tons of chopped alfalfa hay is stored during the summer for winter feeding.

In addition to the daily grain ration of five pounds of rolled barley, each cow receives about twenty pounds of alfalfa silage and thirty pounds of chopped alfalfa hay. During the summer months, the milk cows consume about eighteen tons of green alfalfa hay per day—which is fed to them in the feed lots. The dry cows are run on pasture.

During the summer the young stock is kept on 1750 acres of foothill pasture located about ten miles west of the main farm. A bunch of yearling heifers had been brought down from the hills the day before, and we went to their new alfalfa pasture to look them over. They were a thrifty, growthy lot *(Continued on Page 14.)*

Built From the Ground Up

(See illustrations in artgravure—pages 8 and 9)

THE wonderful dairy described in this article is, and always has been, a business institution. It was not, like so many certified establishments, "made-to-order." Its steady growth has resulted from reinvestment of profits, year by year. It was founded upon a known basis, and guesswork never has entered into its methods.

—*The Editor.*

Catching Valuable Fur Bearing Animals

A Good Opportunity to Make Money "On the Side"—How to Do It, and When

WITH coyote hides selling for $1.10 to $3.50 and skunk skins bringing 70 cents to $1.50, the thrifty farmer looks to his good steel traps to provide the wherewithal with which to stop up some of the holes made in his income by various misfortunes.

But how can a cowardly coyote be snared? And how can a polecat be caught and the captor continue to move in civilized society?

These questions were put to Walter Brandler, who has spent half a lifetime in trapping fur-bearing animals on the Pacific Coast, from Mexico to Alaska, and in Wisconsin. He is now mounting specimens in Colburn's big fur shops in Los Angeles, where a million dollars' worth of skins have been gathered from all quarters of the globe.

THE TRAPPER'S SECRET

"The way to catch a coyote," explained Brandler, pausing to admire a beautiful buck's head which he had just mounted, "is to set your trap in the kind of a place which these animals choose for a runway, cover the trap well, and place near by some scent which will attract coyotes.

"Coyotes like to run in ravines, old cowpaths, or any depression which will help hide their cowardly forms. The trap should be set in a narrow place, if possible, to make sure of the victim's passing near.

"It sounds woodsy to speak of covering a trap with leaves, but paper is better, preferably oiled paper. The trap should be sunk until its top is about level with the surface of the ground, and covered with paper and enough fine dirt should be sprinkled over to hide it.

"A mound of dirt about eleven inches high should be thrown up beside the trap and a scent sprinkled on the side of the mound nearest the trap. This scent will last three days.

"The trap should be fastened to a triple-pointed grabhook, and not tied to a stake or other stationary object, as the latter method is apt to result in the victim's breaking loose.

"There is just one drawback to this method of trapping coyotes—dogs are very apt to get into the traps.

SAFEST TO DROWN SKUNKS

"Skunk traps should be set near the animal's hole," says Mr. Brandler, "or near a rotten stump, which skunks sometimes visit in search of grubs. The trap should be concealed as for coyotes, and the entrails and feathers of a chicken scattered near by. Refuse meat or animal matter of almost any kind may be substituted, fresh or stale.

"A chicken wing tied to a string and suspended about three feet above the trap makes a good lure, as it will attract attention by moving in the breeze and the skunk will become so engrossed in trying to reach the wing that he is very apt to step into the trap.

POLE FOR POLECATS

"Tie the trap to a light pole about ten feet long. When you come upon the skunk, grab the pole and jerk the polecat up into the air, where he will never let loose his foul-smelling liquid. Wind up the trap chain by turning the pole, and then kill the animal by shooting or any other convenient method.

"The best way to kill a skunk is by drowning, as this obviates malodorous retaliation. The vile-smelling liquid will collect on the surface of the water, appearing as a blue scum.

"Skunks and coyotes are both predatory animals which prey upon the farmer's livestock and therefore should be exterminated."—O. H. B.

ORCHARD and FARM

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.
GEORGE GRANT, Art Director

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS

Luther Burbank, James Dryden, Walter H. Gardner, J. D. Bixby, Helen Temple, George P. Weldon, Robert E. Jones, Herbert A. Shearer, Dr. J. Elliot Coit, W. S. Guilford, Wm. Reynolds Butler

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and enclose stamp for reply.

Pithy Paragraphs

THE NEW TYPE OF FARM ADVISER

Not many years ago a county agent was supposed to be a sort of country doctor, capable of diagnosing and curing the various economic ailments that farms and farmers are heir to. Now his is a much more important and valuable position; he is a leader and consultant, organizing projects in which the farm bureau members cooperate; helping them to help themselves.

HOLD FOR HIGHER PRICES

The Federal Warehouse Act affords the farmer a real opportunity to hold his produce for higher prices. Being forced to sell immediately after harvest, when the price usually is down to bedrock, has always been one of the farmer's greatest handicaps. Most bankers are ready and willing to advance needed funds in exchange for warehouse receipts, thus enabling the producer to carry his crop until sales can be made to the best advantage. The experience of the War Finance Corporation proved the practicability of this plan, which deserves to be more widely used. It should be borne in mind, however, that storage of crops by farmers need not increase the cost to the consumer; if the farmer did not store, some middleman would reap the profit, and the ultimate price might be even higher.

ROADSIDE MARKETS MENACED

One of the pleasantest and most profitable features of the modern paved highway, the roadside market, is being menaced by two factors—overcharging and city interlopers. Near large centers of population, it is becoming common for urban hucksters to buy produce in the city at wholesale and dispose of it by the roadside. This should be prohibited by law and no goods permitted to be sold on country highways save those which the vendor himself produces. Some farmers destroy a profitable roadside business by charging city retail prices. Town folks who drive out into the country in the hope of getting things cheap are both disgusted and disappointed when held up for both producer's and middleman's profits. A good way to solve the price problem is to place the figure midway between what dealers pay and what they charge. Let us not kill the goose that lays the golden egg.

RADIO REPORTS PRICES

Southwest stockmen no longer are at the mercy of local dealers and traveling buyers, thanks to the radiophone and the Los Angeles Union Stockyards. By setting the radio at 485 meters the producer can receive livestock reports from the Southern metropolis for half-hour periods, beginning at 10 o'clock in the morning, noon and 4 and 8 o'clock in the afternoon. The way this works out is well illustrated by the experiences of Martin M. King, Ventura cattleman, who says that 5 or 6 cents was all local buyers would offer for steers before the Los Angeles yards began doing business, but as soon as reports of sales at the new market were received, Ventura dealers agreed to pay 7 cents straight for beef on hoof. J. C. Craig, Owensmouth Duroc Jersey breeder, reports the new stockyards enabled him to get a cent a pound more for his fat hogs than he would otherwise have received.

"What's New?"—Keeping Abreast of Agricultural Progress

Making Candy Money

BUTTE COUNTY honey, of which 400 tons are produced annually, is being used as the basis for a new and exceptionally delicious kind of candy.—M. T. RICE.

Sonoma Will Raise Walnuts

LUTHER BURBANK believes that the prune orchards on the bottomlands of Sonoma County will in time be replaced with walnut groves. A number of large land owners in that section have decided to engage in walnut growing.

Kern County Grows Oranges

REALIZATION of the dreams of those who predicted that Kern County would some day produce oranges in commercial quantities is indicated by the shipment during the present season of about fifty carloads of this fruit from the new citrus packing plant at Richgrove.

Hatching with Electricity

LEO BOURKE has increased the capacity of his electric chick hatchery at Petaluma until 400,000 eggs can now be incubated simultaneously. From 18,000 to 30,000 chicks are to be turned out daily during the busy season. Bourke's is said to be the only electrically heated incubator of this size in the world.—G. B. RODD.

Marketing by Mail

FARMERS on the Newlands irrigation project in Nevada are solving the problem of high freight rates by sending to market by mail huge quantities of potatoes, celery, poultry and other produce, which are transported to distant points more cheaply than by freight, it is claimed. Spud shipments have averaged as high as a ton a day from Fallon. Eight hundred twenty-five crates of cantaloupes were sent out by parcel post.—DONALD ASHTON.

Boys Keep Bees

NINE Antelope Valley boys earned an average net profit of $38 keeping bees the past season. John Ritter, who lives in the hills near Elizabeth Lake, made the best record. These boys are furnished by the county high school with material for making hives and supers at cost and are responsible for the introduction of better bee keeping equipment among the farmers in that region. The youngsters also are breeding better queen bees with which to increase the productivity of their colonies.

Yeast Makes Eggs

WILL yeast raise eggs as well as bread? Fred J. Clark of Cotati, Sonoma County, claims the feeding of yeast increased his egg output 50 per cent. Five hundred White Leghorn hens which were fed on a part-yeast ration from July 1 to October 1 laid 20,612 eggs, while another flock of the same size under similar conditions, except for the yeast feed, produced only 14,378 eggs.

Farm Advisor H. A. Weinland is arranging for a test of yeast as a poultry feed. Such tests are now being conducted by the farm bureau and U. S. Department of Agriculture.—G. B. RODD.

Poison Beats Traps

IN FIFTEEN years an Oregon farmer paid out $2500 in bounties on pocket gophers, at 25 cents a piece, to get 750 acres of land cleared of these pests. His private opinion was that the county men always left a few animals so that they could come back again. A demonstrator of the Biological Survey of the United States Department of Agriculture visited this man's farm and showed him how to use poison. The cost of the first application was $1.50 for poison and $21 for labor for seven days' time. A second application is yet to be made to complete eradication, but after the first application only one fresh gopher mound could be found.

Sugar Cane Grows in California

WILL sugar cane become the next new crop to be profitably produced in California? Algons Gabriel, Fresno farmer, thinks so, basing his belief upon a thousand thrifty stalks of Hawaiian cane which he grew the past season. The crop was produced from 200 canes grown in 1921, which in turn came from a sackful of cane joints shipped from Louisiana.

Those portions of the San Joaquin Valley and other parts of California which are practically frost-free, are ideal for growing sugar cane, in the opinion of Gabriel, who was raised in Louisiana, where sugar is the chief product.

Unlike some canes, the sugar cane is not propagated from seed, but by cuttings, the canes being laid in shallow furrows and covered with four inches of soil. The plants sprout from the joints, their number depending somewhat on the fertility of the soil. As many as eighteen canes have been grown from one six-foot stalk.

The Fresno Farm Bureau and Chamber of Commerce are so favorably impressed with the sugar cane produced in the valley that they have arranged to distribute cuttings among farmers, who will be urged to grow the new crop experimentally.—W. S. TYLER.

Double Cropping Pays

HENRY WICKMAN, Butte County rancher, raised forty-four sacks of Mariout barley to the acre the past season, then irrigated and planted the ground to corn and beans. The corn made fifty bushels to the acre and the beans fourteen sacks. Not only were two crops harvested from the same ground in one season, but the soil is now in better condition for future planting, he asserts—M. T. RICE.

Rufford Reseeds Range

CHARLES A. RUFFORD, Shasta County stockman, has made such a conspicuous success of reseeding his pasture land that thirty Tehama and Shasta County stockmen recently visited his place to learn his method, which is indorsed by Prof. A. W. Sampson, range redemption authority of the State University, and Farm Advisor Parker Talbot.

The pasture land is divided into two fields, one of which is pastured the entire first year and the other until the middle of the season, the grass being allowed to go to seed the latter part of the summer. In the late fall or early winter the stock is turned in and the animals allowed to eat as much of the dry feed as they desire.

The next year this arrangement is reversed, the one which was allowed to lie idle the latter part of the summer being pastured at that time and stock being kept off of it in the spring and early summer, while the other field is treated in the opposite manner. This system or rotation gives each pasture a chance to rest half of each season and so reseed itself.—H. F. BAKER.

Late Moulters Best Layers

EXTENSIVE records kept by the Missouri Experiment Station indicate that late moulting hens are the heaviest layers, the number of eggs produced in a year increasing from 122 laid by hens moulting July 1, to 195 laid by hens moulting November 1.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

II—GEORGE P. WELDON

RECOGNIZED as one of the leading Western authorities on deciduous fruits and a horticulturist of wide experience and popularity, George P. Weldon long has been a contributing editor of ORCHARD and FARM.

In addition to writing regularly articles of great interest and practical value, Mr. Weldon, like other staff members, answers questions of subscribers.

Mr. Weldon's preparation for his life work was very thorough. Born and raised on a Colorado farm, he completed his education in that State, graduating from Colorado Agricultural College with degrees of B. S. and M. S. From 1906 to 1908 he served as Assistant State Entomologist of the Maryland Agricultural College and Experiment Station.

GEORGE P. WELDON

Returning to Colorado in 1908 he was until 1911 Chief of Field Investigations, later joining the Department of Zoology and Entomology of the Colorado College of Agriculture.

California claimed Weldon in 1913; he served with conspicuous success and ability as chief deputy of the State Horticultural Commission, leaving after more than five years with a record equalled by few public officials to accept an offer from the Chaffey Junior College of Agriculture, Ontario, Cal.

Weldon's contributions to agricultural literature include special bulletins on peach insects, the San Jose scale, apple tree leafroller and red spider. He is the author of "Pear Growing in California" and "Apple growing in California."

Only in ORCHARD and FARM will you find articles by George P. Weldon. He writes for no other agricultural journal.

NEXT WEEK—JAMES DRYDEN.

Treating Trees With Dynamite

What We Have Learned About Orchard Blasting—Remarkable Results Secured in Sacramento Valley—Pointers on "Shooting" Between Trees

By LEWIS Y. LEONARD

Farm Adviser, Sacramento County

THE blasting of soil before planting orchards is a well-established practice in many localities, and the use of powder as a rejuvenator for established orchards is becoming almost as general.

In many communities, orchardists blast for each tree before planting. This operation consists of boring a hole to a depth of 4½ to 5½ feet in which are placed 2, 2½ or 3 sticks of 20 per cent dynamite. This loosens the soil well, permitting not only greater ramification of roots, but also increased downward percolation of moisture. This last is of special significance when dealing with soursap of the roots, and "drowning."

Proper method of boring beneath a tree for blasting.

The factors which make for efficient blasting are dry soil, the placing of the powder beneath the hardpan or clay strata, using sufficient powder (not too much) and thorough understanding of soil conditions. It often happens that the trees are planted with no thought to the possible need for blasting. In such cases it is necessary to blast with trees in place, where they are found to be suffering from a compact soil condition.

During a series of blasting demonstrations held in Sacramento County in 1921, in the orchard of C. L. Longstreth, some of the peach trees were found to be suffering from sour sap. The trunks of the trees were covered with gum (which indicates an unhealthy condition) and up to the last of July had made no growth. The death of the tree was certain unless heroic methods were employed. At this time a single stick of 20 per cent dynamite was placed 4½ feet deep immediately beneath each of the trees. The explosion moved the trees slightly but they soon settled back.

Even though the major portion of the growing season had elapsed, from this time on the trees made from 6 inches to 12 inches of new growth. The results for this year have been most gratifying. These same sickly, stunted trees of a year ago put out a growth measuring from four to five feet. The trunks are no longer a mass of gum, but have taken on the healthy appearance of their neighbors.

A banker who owns an orchard not far distant, although cautioned to blast for each tree, was persuaded on the plea of economy to omit blasting on the back portion of the orchard because of the excessive depth of the soil. A survey of the orchard a few months later gave a surprise. The two portions were distinctly different. Those that had been blasted were two to four feet higher (and consequently larger) than those not blasted. While an initial saving was made, considerable loss resulted from retarded growth, and the blasting now must be continued through the back portion of the orchard with less degree of efficiency and greater expense.

"If it's worth doing at all, it's worth doing well," is applicable to tree planting. This is most pertinent to those soils which possess the inclination to run together, resulting in the condition commonly called "hardpan." The excessive moisture must be permitted to get away by percolation and the roots allowed a chance to spread out. Do not expect the trees to do well in a soil so hard an iron bar could not penetrate it; give them a chance and they will repay you well for your efforts.

One stick of 20 per cent powder was placed four and one-half feet beneath a soursap peach tree which had made no growth up to that time of the year. Photographed July 21. From that time until the end of the growing season, this tree made more than 12 inches growth.

Warning!

DON'T be afraid to use blasting powder or dynamite, but handle it with reasonable care. There is no reason why any farmer, who is willing to observe ordinary precautions, should not do his own blasting. Manufacturers of farm powder issue valuable booklets of advice and instruction. It is well to study these. The caps are considered by many more dangerous than the powder—they should be treated with respect. Never use metal tools in handling powder. A small, pointed, hardwood rod is good for punching holes in the stick to insert cap and fuse. If electrical exploding apparatus is not available, use a fuse of reasonable length, and stay away from unexploded charges for a long time. Don't conclude that the methods used by professional blasters are necessarily the best; sometimes these men grow careless. Proceed without fear, but with sensible caution.—The Editor.

The same peach tree one year later. No gum present and more than five feet new growth.

Mill Men Want Figs

F. M. BOLAND, educational director of the Peach and Fig Growers, has a fine young forty-acre fig orchard six miles north of Fresno, near the new sugar pine sawmill which is being built. The latter will be one of the largest factories of the kind in the world and will employ thousands of men.

Mr. Boland is of the opinion that many of the mill men will buy small fig orchards, which furnish a first-class investment for those who will give the trees proper attention. Fresh figs at 6 cents a pound, the price paid the past season, make one of the best paying crops which can be raised anywhere.

APRICOTS SUPPLANT ALFALFA

W. N. Hubbard and Louis Fromwelt, San Joaquin farmers, are plowing up thirty and twenty acres of alfalfa, respectively, to plant apricots.

Briquets Heat Orchards

MANY citrus orchardists in the Pomona districts are equipping their groves with carbon briquet heaters for frost protection, following a successful test made by Victor Young, assistant manager of the San Antonio Exchange, and others interested. The heater used was designed by a joint committee of Exchange officials and was adopted by the Citrus Institute at Pomona last summer. The heater is of the short stack type, has large fuel capacity, burns economically and makes little smoke.—R. L. DRISCOLL.

NUTS RICHER THAN MEAT

A pound of English walnuts contains as much nutrition as four pounds of sirloin beef, ten pounds of chicken or twenty-five pounds of red bass, according to Dr. J. K. Kellogg, superintendent of the Battle Creek (Mich.) Sanitarium.

Good Long Pruning Records

CHARLES M'FARLAN, a Gridley grower who has followed the long pruning system on his young orchard since the trees were one year old, secured the past season six tons per acre of No. 1 Tuscans from four-year-old trees.

Four long-pruned apricot trees on J. A. Craven's place in Alameda County yielded 338 pounds of fruit, compared to 107 pounds for four short pruned trees of the same age and under similar conditions.

F. E. Sawyer, Marin County rancher, reports 103 tons of pears from trees which were long pruned, compared to sixty tons from the same trees the preceding year, when they were short pruned. It should be noted, however, that the short pruning followed a particularly heavy crop.

Home Farm Happenings

By One of Us

EARLY RAINS WELCOMED

The early rains were fine for the fruit trees—and started the stock feed—but were very bad for the rice men.

The soil in the orchards was well wet down and it seems as though you can see the buds swell.

But unless we get more rain while the ground is warm, it doesn't help the stockmen much.

On many of the hill ranges there hasn't been much winter feed for three or four years. It's about time the stockman's turn came again.

PRUNING PEARS AND PRUNES

We are busy with the pruning now.

On the pears we are simply cutting out the blight and broken limbs.

There has been more blight this season than ever before, and we have been through the orchard cutting it six or eight times.

This time we are having to cut out a few whole trees. We left some limbs when we cut blight in August in order to get the fruit—but it was a mistake—we should have cut the blight and sacrificed the pears.

These trees are eight years old; we planted alfalfa between the rows when the trees were set out. We have rich river bottom soil. Our neighbors, who have had a terrible fight with pear blight, have marveled that we have not had more trouble. We don't know how to account for it. Trees have made rank, vigorous growth in spite of the alfalfa and very little pruning. By all the rules they should have been much more badly infested with blight than they are. The experts cannot tell us anything about it. When we first got out of agricultural college undoubtedly we could have explained the phenomenon clearly and in great detail, but that's a good while ago, and we know so much less that it is painful to contemplate the enormous loss of wisdom.

As for the prunes, we are just taking out broken limbs, and here and there one that is in the way of cultivation. The trees bore a heavy crop and made lots of good growth. They are eight years old. We figure that if we cut out much wood we are simply sacrificing fruit and in its place will get sucker growth.

WE BURN A COW

A cow died a few days ago. We couldn't figure out what was the matter with her, and the "vet" didn't seem to know. She just sort of "got down on her back," couldn't get up—and died; good, young cow, too.

We used to worry a good deal when an animal died that way. Now we figure it is a part of the game for one to drop off once in a while without any apparent reason—same as people die—so we let it go at that and forget it.

But getting rid of the carcass is a chore; in fact, a nuisance if you don't do it right. Now it gives us little bother.

We put some good-sized logs—old piles or a cribbed up section of old posts—alongside the carcass, roll the carcass on to this platform, pile a lot of old boards, trash, brush and anything that will burn around and on the carcass and set fire to it. Another thing—it's a good way to get rid of trash that is bound to accumulate. Generally takes a couple of days completely to finish the job.

PIGEONS PROVE A PEST

Ever been "pestered" with a lot of pigeons littering up the hay, eating grain or what-not?

Well, we have; and last week the boys made war on them.

At first it was easy. They shot them off the barn and in the yards with a 410 gauge shotgun, but after they had shot 25 or 30 they became "gun shy" and we have had no further trouble.

And they made fine potpies, too.

Sentimentally, I suppose we should not have bothered them, but they had become a real nuisance.

Frost Protection for Young Citrus Trees

By J. ELLIOT COIT

Author of "Citrus Fruits." Formerly Professor of Citriculture, University of California. Contributing Editor of ORCHARD and FARM.

YOUNG citrus trees should not be forgotten or neglected when it comes to providing frost protection. While it is gratifying to note the thousands of new heaters which have been installed in bearing groves as a result of the lesson of last winter's freeze, it is a fact that many young trees have been left without protection although they need it more than old trees. Young trees cost a lot of good money last spring and are well worth caring for, especially as the best method of protection is simple, inexpensive and effective.

DR. COIT

The bark of young trees is thin, and very frequently splits and comes away from the cambium as the result of a light freeze which may not injure the foliage.

HOW TREES SUFFER

Sometimes the trees are girdled just above the bud union and killed. In other cases the bark is killed only on one side side and the tree is set back in its growth seriously. The best method of protection is to wrap the trunk of the trees with old newspapers or corn stalks. The princple involved is that on cold, clear, calm nights the heat of the earth flows upward through the trunk of the tree by conduction and is lost partly by convection but for the most part by radiation. The leaves and branches provide a very large number of points of radiation, and by this means heat is lost into space much faster than it can be replaced by the slower process of conduction. This is especially true in the case of a young tree whose trunk has a small diameter which on account of its sappy condition is a very poor conductor of heat.

The problem, therefore, is to provide some kind of covering which will reduce the rate of radiation and at the same time furnish a greater body of material through which conduction of the earth's heat can take place.

It is well known that dead air spaces are the best check to radiation. If dead air spaces are provided around the tree, radiation will be checked and the tree will be kept warm by the upward flow of the earth's heat.

Various materials may be used for this purpose. Where the trees are already provided with sun protectors, old newspapers are excellent. A number of thicknesses should be used in addition to the sun protectors and slightly crumpled during wrapping so as to increase the dead air spaces. Other good materials are cornstalks, sorphums stacks, or tulles.

Proper method of using cornstalks to protect young trees from cold.

At least two or three layers should be used. The lower ends of the cornstalks should be pushed down rather firmly into the loose soil and spread very slightly, for the double purpose of furnishing support against the wind and making a good contact with the earth for conduction purposes. They should be held firmly in place by two or three ties. All of the stalks should be long enough to extend a little above the main forks, but it is well to allow some longer ones to extend up through the foliage. Enough of the foliage should be left exposed to keep up the vital functions of the tree. If the ends of the twigs should be frosted, the injury will be slight, as new foliage will grow out quickly if the trunk is sound.

IN SOUTHERN STATES

In Texas and Florida it has been the practice to mound the trees with earth to a point above the bud union. This should never be done in California because the soil here is infected with the fungus which causes gum disease. As winter is the rainy season in California, mounding the trees almost certainly would result in serious loss of trees from gum disease. It is risky even to pull the soil up against the cornstalk protection.

The writer has seen young lemon trees which had entirely lost their bark from the bud union to the forks and which had been killed by a frost which was so mild that not a blossom was injured. This emphasizes the fact that young trees are far more susceptible to cold than bearing trees, and it is well worth while to give them some protection even in comparatively frost free locations. This is particularly true in a season of heavy fall rains, when growth is active and the bark and cambium are in a "sappy" condition.

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No Over-Production of Deciduous Fruits

THE peak of production of apples, pears, peaches and plums throughout the country east of the Rocky Mountains was reached in the year 1900. Since then there has been a steady decline. At the same time there has been a steady increase on the Pacific Coast. During the last ten years the fruit industry of the entire United States has fallen off more than 25 per cent in spite of 14,000,000 increase in population. At the same time, the fruit industry of California has increased about 25 per cent.

E. L. Overholser gives as the reasons for the decline of fruit growing in the East the spread of insect pests and the absence of the Curculio in California; the difficulty and expense of controlling fungus diseases during the summer rainy season; severe winter temperatures and too frequent late spring frosts and the lack of fruit standardization and co-operative marketing.

The conditions for fruit production are so much better in California than in the East that the disadvantage of the long haul to market is more than counterbalanced. As long as California maintains high standards there is unlikely to be any overproduction.—J. E. COIT.

Vacuum Fumigation for Red Scale

IN order to admit citrus nursery stock into Ventura County and at the same time effectually prevent the introduction of red scale, the County Horticultural Commissioner has installed a vacuum fumigating outfit and made fumigation a requirement of admission. This rule became effective in March of this year and between March 20 and July 14 forty-six lots, totaling 14,647 citrus trees, were fumigated. Many of the lots came through in good condition but more than half the lots received some injury and some serious injury, particularly toward the end of the season.

Some shippers hold the opinion that the dosage used was needlessly severe and have brought pressure to bear for a reduction in dosage for next season. But D. B. Mackie of the State Department of Agriculture, has made an investigation of the matter and his conclusions are that the injury was not due to the dosage, but rather to the fact that many trees had been weakened by the freeze and on that account planting was too long delayed. His decision is that there will be no reduction in dosage, but that much better results may be expected next year barring any serious frost injury this winter.—J. ELLIOT COIT.

Planting Many Prune Trees

THE Packer Bend Orchard Company, which has 600 acres of river silt land near Butte City, in Glenn and Colusa Counties, is planning to plant 100 acres of prune trees each year until the entire tract is in orchard. One hundred acres already is in bearing.—M. L. WILSON.

TOUT'S MALAGAS YIELD HEAVILY

Elias Tout has three-quarters of an acre of Malaga grape vines which last season produced 455 crates of fruit, which sold for $512. There are 319 three-year-old staked and wired vines, which are branched at 30 inches from the ground.

PEACHES YIELD 20 TONS

N. W. Winter of Hughson, Modesto County, won the peach-production contest with six-year-old Lovells, which yielded 20 tons of No. 1 fruit per acre the past season. The average yield of Hughson peaches is six tons.

SELLING RICE STRAW

Rice straw is being sold for $10 a ton and used for packing porcelain and crockery dishes.

Beware the Woodpile—Borers Breed in Neglected Prunings

By GEORGE P. WELDON

THERE is a startling and interesting relationship between the familiar wood pile, made up of uprooted trees and prunings, and insect damage to nearby orchards.

Frequently fruit growers allow large woodpiles to lie about the premises from one season to another. If the wood is examined after a few months it is probable holes about one-thirty-second of an inch in diameter will be seen. These are the result of attacks by shot-hole borers.

Among the borers which breed almost exclusively in dead or decaying wood are two of common occurrence; these insects are the shot-hole and flat-head borers. Both, when in the larval stage, prefer dead to living wood; in other words, the adult beetles seek dead and dying branches in which to lay their eggs. The larvae feed for a time in the decaying wood and later orchard trees are found to be damaged.

WOOD HARBORS BORERS

Recently the writer was asked to examine some peach trees in a young orchard, which the owner said were injured by some pest. It only needed a glance to tell that the shot-hole borer had attacked the trees.

Here's the Evidence!
The twigs in the top of this large plum tree have been injured by the shot-hole borer. Below—A wood pile of prunings is always a menace. These were found to be filled with larvae of dangerous borers.

The first question asked the owner was: "Have you any dead trees in the orchard or is there a pile of prunings near by?"

The reply brought out the fact that there was no dead wood in the orchard but that an old apricot planting recently had been uprooted and the trees sawed into cord and stove wood.

ENORMOUS NUMBERS PRESENT

Examination of the cord wood and stove length pieces revealed the presence of myriads of the shot-hole borers in both the larval and adult stages. Sticks of wood appeared as though a charge of shot from a gun had been fired into them and the woodpile was harboring countless numbers of a pest which in one of its stages attacks perfectly healthy trees.

LIVE TREES ATTACKED

In this there were some two-year-old peach trees which showed serious injury. The owner had noticed the injury for some time but had not associated it with the prunings in the woodpile. This injury consisted of weakening and sometimes death of the tender new growth.

The adult beetles of the shot-hole borer are unlike the larvae, in that they prefer live tissues for their food. Where the adults have attacked a tree their injury may be recognized by the presence of little masses of gum at the bases of buds and spurs.

A close examination will show the shallow burrows where the beetles have eaten into the tender twig. When abundant, this pest may not only cause the profuse gumming of twigs, but also their death.

DEFOLIATE PLUM TREES

In the case of one large plum tree examined, the twigs toward the top of the tree were devoid of leaves, death having taken place as a result of the attack of the shot-hole borer, adults of which migrated from the near by woodpile of apricot prunings.

Not a charge of buckshot, but borers, caused this damage. Right—Arrows indicate burrows. Larvae may be found beneath the bark.

Many other trees nearby had suffered in a similar manner. In fact, the new growth of young peach trees was so badly injured that many branches were covered with dead leaves, and buds which should continue the growth another season were destroyed so that serious stunting of the trees may take place.

LIFE HISTORY OF BORER

The interesting life history of the shot-hole borer is as follows: The tiny black beetles, which are not more than one-tenth of an inch in length, lay their eggs just beneath the bark of dead wood in the woodpile, dead wood in orchard trees, or sometimes wood that is weak, as in the case of a tree that has been injured by sunscald.

The little white grub-like larvae which hatch from the eggs feed mostly just beneath the bark, although they may also eat into the solid wood. In a few months' time these larvae become full grown and change to the pupal stage.

From this stage the beetles emerge. Unlike the larvae, which prefer dead or dying wood, the beetles have a liking for living wood and therefore immediately search for growing trees upon their emergence.

Tree damage may be done in the early spring or late in the fall.

REMOVE OR DESTROY DEAD WOOD

The simple way to get rid of the pest is to remove or burn all dead wood in or near the orchard. All dead wood should be cut from orchard trees as soon as possible after it dies. Dead branches or dead trees should never be left in an orchard from one season to another, for they only serve as breeding places for shot-hole borers and possibly may harbor other borers which have somewhat similar habits.

Throughout Southern California both shot-hole and flat-headed borers are exceedingly common. Their attack frequently follows sun-scald of young trees. Older trees which have been heavily pruned may be entered through wounds left by the removal of large branches.

California Has the Largest Certi

FACTS ABOUT CALIFORNIA'S GREATEST DAIRY ENTERPRISE

An average of 430 animals, milked twice daily, produce about 5000 quarts of milk.

Total acreage—3280. Acreage in alfalfa—640.

Average number of employes—60.

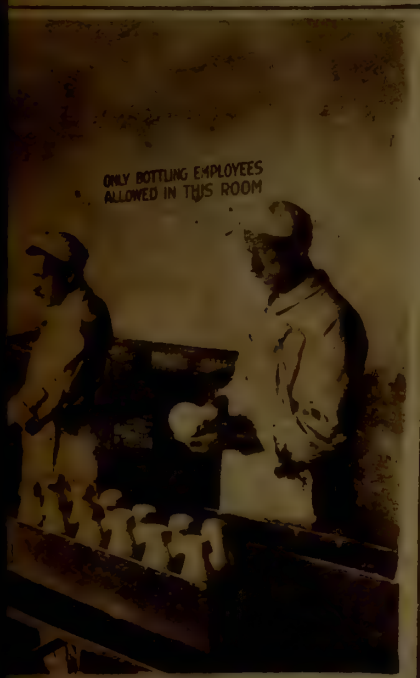
Entire herd is tested for tuberculosis every six months.

Left—Interior view of one of the spotless milking barns.
Right—The bottling room.

—All Photographs by McCurry

Dairy in the World—

See Article Elsewhere in This Issue



MODERN, COMPLETE EQUIPMENT BUT NO UNNECESSARY FRILLS

Milking machines have reduced the number of milkers from 18 to 10 men.

Silage is fed only after cows are milked, in order to prevent absorption by the milk of the silage odor.

In muddy weather the cows are driven through a concrete trough filled with clean water, and thus compelled to take a foot bath before entering the milking barn.

Right—A modern home with every city convenience attests the joy and comfort of country life.

Tractors on a Poultry Farm

Up-to-Date Methods Used Here

THE Long Brothers—Roy, Sam and Boyd—viewed the San Fernando Valley from afar. It looked good to them, and they decided to come up out of Chihuahua, Mexico, where they had lived all their lives, and develop a 10,000-hen ranch near Chatsworth. Here, from a rocky promontory, they have a long view of the valley. They named their farm "Longview" and are developing a model plant with the help of modern power equipment, including a garden tractor. —*The Editor.*

WHY employ two Mexicans an entire day to dig up a poultry yard, when a garden tractor, which costs no more than a horse, will do the work in three-quarters of an hour on one cent's worth of gas and oil?

The above question is one of those which prompted the Long Brothers to buy a little power plant for their poultry ranch near Chatsworth. They found, upon trial, that the tiny tractor would pull a plow closer to the corners of the yard than any horse and that the expense stopped when the wheels quit turning.

A gallon of gas will pull the little tractor two days of ten hours each. The oil expense is negligible. The machine is easy to guide and pulls all sorts of tools—plow, disk, shovels, seeder, etc.,—at a comfortable pace and without stepping on the plants or skinning trees with a singletree, the brothers state. They have experienced no mechanical troubles.

LARGE AND SMALL TRACTORS

A larger tractor does the heavy hauling and field work on the thirty-two-acre ranch in a very efficient and satisfactory manner. In December it was being used to transport droppings from the laying houses to the field, where the ground gratefully received the fertilizing manure, being especially lacking in humus and nitrogen. Vetch and sour clover also are being employed to restore the soil to its pristine fertility.

Twelve acres are being planted to apricots and thirteen to peaches. Fig trees are being set in the poultry yards to furnish shade for the fowls during the summer months.

GLASS SHUTTERS UNIQUE

When the Long brothers bought their present property a year ago there were no buildings on the place except a house and barn. They have built two more comfortable residences, floored the barn with cement, and erected four modern poultry houses. Three of the latter are of the most approved construction, being 20 by 140 feet in size and costing $1800 each. They have cement floors and are equipped *(Continued on Next Page.)*

Above—This panorama explains the name "Longview," chosen by the Long brothers for their poultry farm near Chatsworth Park, Los Angeles County. Note cement floor at right, laid for new poultry house now under construction.

Right—The "baby" tractor which has displaced man labor on this modern egg ranch. It is used for plowing poultry yards and for other "odd jobs."

Above—Flock of layers and one of the poultry houses. Left—Interior view of laying house, showing glass shutters described in article, and electric lights.

Brooding Better Baby Chicks

Novel and Successful Method of Raising Pullets at the Owensmouth Poultry Colony

By CHARLES WEEKS

AFTER 18 years of experimenting I have learned that the best way to brood chicks is to keep not over 125 together in one room, where there is plenty of sunshine both forenoon and afternoon. This is accomplished by having the poultry house divided into rooms 24 feet square, each containing two pens 12 feet square, which are open on both the east and west sides. These rooms afterwards are used as laying houses by the pullets which are brooded therein, each comfortably housing 100 layers.

Not only are the female fowls never moved from the time they are young chicks until they become unproductive old hens, but they never leave their covered quarters. This confinement may seem unnatural, but it has been possible to keep hens happy and productive in this manner. Plenty of room, sunshine, fresh air and green feed are essential to success with this method.

Feed hopper in Weeks' poultry house is raised above floor and has platform on which hens stand, this feature reducing waste.

BEWARE PULLET CHICKS

Chicks should be from heavy-laying hens not less than two years old, mated to males whose ancestors have been bred for vigor and egg production. Too often baby chicks from pullets are cast upon beginners, which frequently means disaster.

A common mistake is to brood 500 or 1000 chicks together, which is going against nature. One hundred is enough in one place, and 125 should be the limit.

Each brood of chicks is hovered on a dropping platform 4 by 12 feet, which is 30 inches above the floor. The latter is covered with 8 or 10 inches of clean, sharp sand. Putting the chicks in this position makes them easy to care for and familiarizes them with their future roosting place.

THE ELECTRIC HOVER

The hover is a round, cone-shaped, electric-heated affair of my own invention. It is suspended by a cord from the ceiling and lowered to within two inches of the dropping board in the beginning, being raised as the chicks increase in size.

In order to keep the chicks under the hover until they get used to it, it is encircled with a cylinder of heavy roofing paper about nine inches high, this being expanded as the chicks increase in size. This paper fence also shuts off any draft which might disturb the tender little chicks.

In three or four days the barrier of building paper is lifted and the chicks given free run of the dropping board, which has an eight-inch board set vertically along the edge to keep the tiny chirpers from falling off. The circular fence, however, is always replaced at night.

GREEN FEED ESSENTIAL

The chicks are kept on the dropping board until they are able to fly over the eight-inch board onto the sand floor below. A runway leads back to the brooder, so that the chicks can find their own way back. The space underneath the dropping board is temporarily fenced off with burlap until the chicks get used to the runway.

Feed and water is always kept on the dropping board in order that the chicks will get in the habit of running up there, where they eventually roost. This saves the trouble of teaching them to get onto the poles at night.

Automatic drinking fountain rests on low shelf between adjoining pens, and is accessible from either side. Crock may be removed readily for cleaning.

The feed is put in little troughs three inches wide and of the same depth, with a roller on top. In addition to dry chick mash, the youngsters are given all the green feed they will consume, such as kale, beet tops, chard, alfalfa and barley. This latter feed is absolutely essential to success in raising young chicks. Absolute cleanliness also is important.

(EDITOR'S NOTE—So revolutionary and successful are some of Charles Weeks' theories that many experienced poultrymen are visiting the new colony at Owensmouth, Los Angeles County to observe the operation of the model plant. This embraces many features of the famous Palo Alto colony, with a number of additional devices never before used in commercial production.)

Hatching Rules

MASON COUNTY (Wash.) poultrymen have adopted the following rules for accredited chick hatcheries:

Fowls used for breeding shall be in good healthy condition as judged by the inspector and shall be culled according to standards recommended and demonstrated by the extension service.

Females are to be at least 18 months old and eggs for hatching must average 24 ounces per dozen or more, with a minimum weight of 23 ounces per dozen.

Males are to approved by the inspector as to vigor and shall be not less than eight months old. In addition they shall have a trapnest pedigree on the side of the dam of 240 or more. The breeding ratio shall be six cockerels to 100 hens.

No artificial lighting shall be permitted three months prior to the breeding season and none shall be permitted during the breeding season prior to 6 o'clock in the morning nor later than 6 o'clock at night.

Breeders shall have the privilege of runs from November 1 to the end of the breeding season. Eggs are to be delivered within seven days and precautions taken to prevent chilling or overheating. No washed eggs shall be used. They must be uniform in size, color, shape and shell texture.

An ample supply of greens must be fed breeding stock and grain must constitute at least 50 per cent of the total amount of grain and mash fed, and where fed in houses, litter must be reasonably clean, dry and loose.

How They Dry Chinese Eggs

HERE is the way Chinese eggs are dried and frozen in a Shanghai plant as described by the U. S. Department of Agriculture:

The eggs are obtained from five different provinces of China, the majority coming by rail and boat from the lower Yangtze Valley. As there are no poultry farms in China, the eggs come from small farmers who have from five to ten hens. The eggs are concentrated in thirty-two stations throughout this area and in from five to seven days from the time the egg is laid it is used in the factory.

The eggs are first cooled and the ones with broken shells discarded. After a candling process, the eggs are taken to a floor above and broken. As in candling, this is done entirely by women, each egg being handled separately and the work done with remarkable rapidity. If an egg that has spoiled has slipped by the candle women it is caught here.

From this point the eggs are either frozen or dried. If frozen, they are placed in tins varying in capacity from thirty-one to thirty-five pounds and removed to the cold storage room and frozen to about zero, Fahrenheit. If the eggs are to be dried, they are placed on a long circular belt in the drying room where all moisture is extracted, after which the powdered egg is placed in cans and sealed.

About 1000 people are employed at this factory and American ideas of sanitary toilet facilities, rest rooms, lunch rooms, etc., are maintained. Many of the employes carry their own lunch of rice, and before noon the factory attendants heat this up so that the workers are provided with hot food. Tea is provided free. Lectures are given to the female workers by the Chinese Y. W. C. A. on tuberculosis, danger from flies, rearing of better babies, etc.

MISS RISK DIVERSIFIES

Miss Mattie Risk of Petaluma is a successful grower of both sheep and turkeys, giving them her personal attention and making sales at top prices.
—MRS G. B. RODD.

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Tractors on a Poultry Farm

(Continued from Page 10)

with automatic electric lights, which are turned off and on by a central clock.

Glass shutters constitute a unique feature of one of the laying houses. These are made of strips of glass 5 by 22 inches in size, set three and one-half inches apart in windows 22 by 40 inches. The glass slants upward and inward at an angle of 45 degrees. This arrangement is not altogether satisfactory, because the shutters soon get dusty and shut off the light, tending to darken the rooms within.

WILL HAVE 10,000 HENS

Three more laying houses are being built, the intention being to provide ample quarters for 10,000 hens, the number which it is planned to have on the job by the end of 1923. There are now 2000 layers from eight months to a year old and 6000 September pullets. This stock was purchased from Richardson, the San Gabriel poultryman, and shows good breeding and exceptional care.

The Longs were mighty glad to get out of Mexico where their father had been engaged in the mining business. Recognition by the United States would improve conditions below the border 100 per cent, they believe. But poultry raising under the protection of the Stars and Stripes appeals to them as better than any proposition below the border.

Rice Feeds Turkeys

PARTLY owing to the introduction of rice as one of the main crops of Butte County, turkeys are now a leading product of that region. The Oroville district alone produced 20,000 birds for the Thanksgiving trade this year, one-fourth of them coming from the Honcut section. The rice stubble-fields make first class, cheap turkey pasture.—M. T. RICE.

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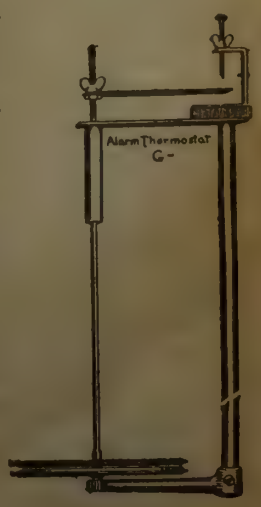

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GIANT ARGENTIEUL Asparagus Roots. Strong, clean, one year, equal in size to average two year roots. Free samples. Per thousand $6.75; 10 M up, $6.50; 50 M up, $6; 100 M up, at $5.50, f. o. b. Terms, one-fourth with order, rest on delivery. CLAUSSEN NURSERIES, Brawley, Cal.

CORY'S Thornless Blackberries. Large, early, delicious flavor, few seeds; a good seller, better eating. One year. Strong transplants from heavy producing vines, 12 for $12, postpaid. Wm. Mortenson, R. 4, Box 20, Lodi, Calif.

NURSERY STOCK—The right kind at right prices. Get in touch with our MONEY-SAVING SYSTEM. A general line of hardy stock. 32 years in business. Send for prices, etc. CARLTON NURSERY CO., Carlton, Ore.

WONDERFUL POMEGRANATE TREES are hardy, ornamental and profitable. Offer good 2-year-old trees reasonable. For prices write J. W. IRWIN, Lindsay, Cal.

HACHIYA PERSIMMONS. Extra fine trees. Pomegranates. Circular. SHERWOOD PERSIMMON NURSERY, Fullerton, Calif.

FOR SALE—Millions of cabbage plants of different varieties. L. C. Johnson, Pomona, California.

FIELD AND GARDEN SEEDS

HAIRY PERUVIAN ALFALFA SEED. Recommended by the U. S. Department of Agriculture and successful farmers. Apply for samples and prices. E. F. SANGUINETTI, Yuma, Ariz. The Home of Hairy Peruvian.

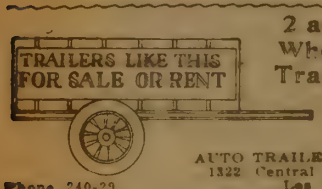
HUBAM clover-certified seed. Booking orders for future delivery. Get our prices. Order early. W. A. HOLMBERG, Denair, Stanislaus County, Calif.

STRAWBERRY PLANTS

CHOICE STRAWBERRY plants, logan berry, gooseberry and raspberry. Lowest prices. Send for complete list. Ward K. Richardson, 198 Hickory, Salem, Oregon.

INSPECTED STRAWBERRY PLANTS. G. H. MITCHELL, CANBY, ORE.

AUTO TRAILERS



2 and 4 Wheeled Trailers

AUTO TRAILER CO., 1322 Central Ave. Los Angeles

Phone 240-29

WANTED—Agents, Salesmen

FOLLOW THE DOLLARS

$50 to $100 per week, the money yours; something new, not an old, wornout proposition; field untouched; experience unnecessary; takes everybody by storm; money rolls in; show 50, sell 40; demonstrated in one minute; sells on demonstration; the new Inkless Fountain Pen, the twentieth Century Wonder; never leaks or spills; with this pen no more use for the ink bottle; sample pen 50c; this proposition is 18 karat; money back if not as represented; agent's profit 200 per cent; exclusive territory. Send for agency today. Inkless Fountain Pen Co., Dept. H, 1522 Eighth St., Des Moines, Ia.

HELP WANTED—Female

WANTED—WOMEN-GIRLS. Learn dress designing—making at home, $35 week. Spring (Easter) demand. Sewing experience unnecessary. Samples lessons free. Franklin Institute, Dept. M539, Rochester, N. Y.

SITUATIONS WANTED

POULTRYMAN, married, wants position. Life experience. P. O. Box 71, San Gabriel, Cal.

KODAKS, CAMERAS, SUPPLIES

FREE

EASTMAN CAMERA

Have your Kodak finishing done by experts.

Winstead Photo Finishing Co.
Box 116, Los Angeles, Cal.

"We put the snap in snapshots."
Write for our new price list and how to get the free camera.

TOBACCO FOR SALE

NATURAL LEAF TOBACCO. Chewing, 5 pounds, $1.75; 10 pounds, $3.00; 20 pounds, $5.00. Smoking, 5 pounds, $1.25; 10 pounds, $2.00. Pay when received. TOBACCO GROWERS UNION, Paducah, Ky.

DOGS

DOG OWNERS' TEXT-BOOK FREE. Expert advice on proper care, training and feeding. Free with 3 months' trial subscription to America's popular dog and hunting magazine. Send 25c today (coin or stamps). Sportsman's Digest, 606 Butler Bldg., Cincinnati, Ohio.

AUTOMOTIVE INSTRUCTION

AUTOMOBILE Mechanics, Owners, Garagemen, Repairmen, send for free copy American's Popular Motor Magazine. Contains helpful, instructive information on overhauling, ignition, wiring, carburetors, batteries, etc. Automobile Digest, 606 Butler Bldg., Cincinnati, Ohio.

FARMS FOR SALE

The Charles Weeks System of Intensive Poultry and Berry Farms

ONE ACRE AND INDEPENDENCE, OR
The Fine Art of Earning a Comfortable Living on One Acre in California

For those who desire to dwell in sunny California without living up hard-earned capital.

Charles Weeks, for 18 years proprietor of the most intensive Egg Farm in the world and founder of the famous CHARLES WEEKS POULTRY COLONY at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles.

Write for literature.

OWENSMOUTH,
Los Angeles, California.

INCOME RANCH for sale near Modesto, surrounded by some of the highest improved fruit orchards in State. 100 acres, partly planted to bearing orchard and the rest easily put into fruit as irrigation system is complete. River bottom soil free from hardpan and alkali. Bank appraisal $90,000, will sell for $75,000 with very easy terms to responsible parties or will subdivide to suit. Good income now assured while you improve the rest. $100,000 profit could be made in four years. M. R. R., 1664 M st., Sacramento.

ORCHARD homes in Paradise. Deep, fertile irrigated fruit, nut, berry land; delightful, healthful climate, fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

SMALL YOUNG ORCHARD, walnuts interset apricots, highly improved, plenty water, fine soil, well located. Ventura County. Will bear searching investigation. Priced for quick sale, terms. P. O. Box 734, Oxnard, Cal.

FARMS WANTED

WANTED—To hear from owner of land for sale. O. K. Hawley, Baldwin, Wisconsin.

LIVESTOCK

REGISTERED HOLSTEINS—If you intend to buy, the California Holstein Breeders' Annual for 1922 will give you information on many of the leading herds in the State. Write for free copy to CALIFORNIA HOLSTEIN-FRIESIAN ASSOCIATION, 210 Ochsner Bldg., Sacramento, Calif.

IF YOU WANT TO BUY OR SELL registered or grade cattle of the dairy breeds, or registered cattle of the beef breeds, write to the largest and strongest livestock sale service in the West—CALIFORNIA BREEDERS SALES AND PEDIGREE CO., 211 Ochsner Bldg., Sacramento, Calif.

TYPEWRITERS

TYPEWRITERS—All makes, $20 up. Payments. Free trial. PAYNE CO., Rosedale, Kans.

POULTRY

CERTIFIED WHITE LEGHORN baby chicks hatched in the world's largest Electric Hatchery, for spring, 1923, delivery. January prices $4 per 25; $8 per 50; $15 per 100. Special prices 500 and 1000 lots. Order early chicks now and realize big broiler profits. Choice free range, high egg-producing breeding flocks, inspected by Sonoma County Farm Bureau. Safe arrival guaranteed. Must Hatch Incubator Co., 432 7th St., Petaluma, Cal.

WHITE Leghorn Baby Chix for May and June DELIVERY AT $12.00 PER 100; $115.00 PER 1000; FROM FLOCKS INSPECTED AND ACCREDITED BY Sonoma County Farm Bureau. SAFE ARRIVAL OF FULL COUNT LIVE. STRONG CHIX GUARANTEED. The Pioneer Hatchery, 418 Sixth St., PETALUMA, CALIFORNIA.

SANTA CRUZ chicks from our heavy laying flock of two-year-old W. L. hens. Hollywood Farm, Wash., strain. They are hatched right and prices are right. Have been breeding and hatching for twelve years and guarantee strong, vigorous chicks. T. E. Blake, Oak Knoll Poultry Ranch, Santa Cruz, Calif.

FREE—1923 Daily Egg Record; ready for mailing in December. Most up-to-date method of recording daily egg yield. We want you to have a copy. Send a postal today. Golden Eagle Milling Co., Petaluma, Calif.

WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

BABY CHIX—R. I. Reds, Barred Rocks, Buff Orpingtons, Anconas, Black Minorcas, Golden Buff, White and Brown Leghorns, SANTA CRUZ BEST and Turkeys. Enoch Crews, Seabright, Calif.

THE SANTA CLARA VALLEY HATCHERY, Lincoln ave. San Jose, Calif., for trapnested White Leghorns, R. I. Red and Barred Rock baby chicks. Shipping days Tuesdays of every week.

BABY CHICKS—Thoroughbred White Leghorns, Hoganized. No dead or weak ones charged for. Schellville Hatchery, Schellville, Sonoma County, Calif.

BABY CHICKS (all varieties), ducks, turkeys. Best stock. Lowest prices. Ship anywhere. Write us. FRASER'S HATCHERY, Box 371, Hawthorne, Calif.

BUFF ORPINGTON COCKERELS—Famous Sunswick and Owen Farms Strains. Pure bred Bourbon Red toms. THE FERRIS RANCH, Grand Ave., Pomona, Calif.

POULTRY

THE Schlotthauer Single Comb White Leghorns have been bred since 1908 and all breeding stock has been carefully hoganized to insure heavy laying and strong, hardy chicks. Safe delivery and full count guaranteed. For more information write for free booklet. White Plumage Poultry Farm & Hatchery, Exeter, Calif.

PROFITABLE POULTRY NEWS—Capacity 200,000 chicks. Off every week of the year. This fall we've quadrupled our fall and winter capacity, yet can't supply demand for chicks from our 200-290-egg strain, nor from our large, mature hens for rapid growth for market. People are learning that every fall and winter month chicks grow into profitable layers and meat. Booking for December to April delivery. Reduced booked ahead. White, Brown, Buff Leghorns, Reds, Rocks, Minorcas, Wyandottes, Anconas, Andalusians, Brahmas, Orpingtons, ducks, turkeys. For quarter century imported, trapnested, selected for vigor, growth, beauty, eggs. Mail address: PROFITABLE POULTRY, Box O, 13 North Fair Oaks, Pasadena.

White Leghorn Baby Chicks and Hatching Eggs

From TRAPNESTED STOCK
Our 1922 annual illustrated mating list now ready, send for a copy. WE GUARANTEE SATISFACTION.

INWOOD LEGHORN FARM

C. E. ARMSTRONG,
CORVALLIS, OREGON.

OFFICIALLY Certified White Leghorn baby chicks, hatched in the world's largest electric hatchery. Choice free range, high egg producing breeding flocks inspected and accredited by the Sonoma County Farm Bureau. Write for prices, literature and booking dates for Spring delivery. Safe arrival guaranteed. Established in 1898. A quarter of a century of constructive and efficient service to the poultry industry.
MUST HATCH INCUBATOR CO.,
432 Seventh st. Petaluma, Calif.

BABY CHICKS—12th year specializing on properly incubated chicks — the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, Blue Andalusians. Now booking orders for January and later delivery. Safe arrival guaranteed. Free circular. Order early and get the date wanted. McDonald Poultry Ranch and Hatchery, Route 1, Box 246, King Road, San Jose, Cal.

BABY CHICKS of best quality, hatched by experts from healthy, vigorous hens that have been BRED to lay—not forced to lay. Wh. Leghorns, 14c each; Barred Rocks and Reds, 20c. Strong, vigorous chicks. The kind that live and thrive. Order today! ELECCHIC HATCHERIES, Dept. L, Rescue (via Burbank), Calif.

TURKEYS

TURKEYS—PURE-BRED GIANT BRONZE. CHOICE YOUNG GOLDBANK-COPPER KING STOCK, from our original matings with such imported sires as GOLDBANK VIII, first cock Madison Square Garden Show (New York) '21, GOLDBANK BOY (his son), first cockerel same show, GOLDBANK KING (his grandson), first cockerel same show, '22, COPPER KING'S BOY, 3rd cockerel same show, '22; COPPER KING JR., first cock California State Poultry Association Show, Oakland. SECURE THE BEST BLOOD FROM PRIZE WINNERS OF AMERICA'S PREMIER POULTRY SHOW. Reasonable prices. Send for circular. Bronze King Farm, Merced, Calif.

WILD TURKEYS

Producers this year show unequaled records for large profits and productivity from WILD BLOOD, many hatching and raising over 95 per cent.

1922 SHOW RECORD

Shows sweepstakes, special award best display, and silver cup and cash special award, and 13 regular cash awards out of 18 entries, Los Angeles County Fair.

M. A. STUTSMAN, Sales Mgr.,
All ranches, 333 Bryson Bldg., Los Angeles.

RUSSIAN ORLOFF TURKENS—The royal bird of the Czar's table. Imported from Russia. THE ORIGINAL AND ONLY THOROUGHBRED STOCK IN AMERICA, and the progenitors of all the crosses passing as special breeds of Turkens. Send for circular history of this wonderful bird. Now booking orders for hatching eggs to be delivered in rotation received. Output all sold to Jan. 14th. Geo. Schaefer, 518 Santa Inez Ave., San Mateo, California.

MAMMOTH BRONZE toms and hens, also eggs in season. Our stock are California State Fair winners and graded from the best Eastern stock procurable. Twenty years of practical experience with turkeys. We offer good opportunity for turkey raising on this 30,000-acre range. JOHN G. MEE, breeder of turkeys and herding Collie dogs, San Miguel, Calif.

AMERICAN and MEXICAN wild strain breeding gobblers and hens, 350 to choose from, $10 to $25 each. We also have eggs and poults in season, starting January 1. Jenkins, Dundee Crossing and San Fernando Road, R. F. D. 3, Box 148, Burbank, Calif.

HART'S MAMMOTH BRONZE TURKEYS. Oldest strain on the Pacific Coast. A fine lot of year-old hens to select from; also will have some fine young stock suitable for breeders this spring. Eggs in season.
ALBERT M. HART, Clements, Cal.

GEESE

GEESE—PURE-BRED TOULOUSE. Two young ganders and two young geese, 1st and 2nd prize winners at recent Oakland Auditorium Show, $12.50 each. Bronze King Farm, Merced, Cal.

Emperors Yield Four Tons

TWENTY-TWO acres of two-year-old Red Emperor grape vines near Terra Bella yielded practically four tons to the acre the past season. Paul R. Jones of Porterville and Lester Small of Visalia own the vineyard.—FRED BYRNES.

Working Up Waste Fruit

SANTA ANA orchardists are adding materially to their incomes by working up waste fruit into orange vinegar, candied orange peel, grape fruit juice, citrate of lime, marmalade, jellies and butters, according to H. E. Wahlberg, farm adviser, who says that such products sell readily.

Plant Vetch Late

PURPLE vetch can be planted later in the season than melilotus indica and will catch easier on porous, sandy soils, according to Farm Adviser R. W. Hodgson. These advantages tend to offset the higher price of vetch seed and the larger quantity required per acre.

Plant 40 Tons of Pits

FORTY tons of peach pits were planted by Silva & Bergdiholdt on their Ord ranch near Gridley recently. The seedlings will be budded and used to plant 160 acres to orchard. Other plantings contemplated in the Gridley district will bring the total new orchard area to about 750 acres, mostly peaches.—M. T. RICE.

One Crop Half Pays Land

A YEAR ago R. Boletto paid $14,000 for a 20-acre fruit and alfalfa ranch in San Joaquin County. The past season he sold $3500 worth of grapes from five acres and received an equal sum from the sale of almonds, peaches, alfalfa and cream produced on the remaining fifteen acres, making the total gross receipts half the purchase price. Only $300 was spent for hired help.—MATTHEW HAMILTON.

Farthest North Dates

EXTRA fine dates growing and ripening under natural conditions as far north as Denver and Philadelphia is cited as a possibility by A. L. Chaffin, Thermalito, Butte County, Cal. The tree, which suggested the idea, is an old one, but has never borne commercially valuable fruit until the past season, because of lack of pollination. Mr. Chaffin is planning to plant additional date trees.—M. T. RICE.

Packing Bret Harte Apples

TAKING advantage of the fact that Bret Harte, famous writer, once lived there, Tuolumne County orchardists are using his name as a trademark for their apples, which for the first time are being packed according to Northwestern grading rules and marketed by a strong co-operative growers' organization. The entire crop of 35,000 boxes has been contracted and is expected to bring prices commensurate with the fine quality for which Tuolumne apples are noted.—MATTHEW HAMILTON.

Fig Men Pay Fines

SOME of the experiences of the Peach and Fig Growers' Association the past season well illustrate the troubles of an agricultural co-operative concern, says one of their field men. Price fixing was postponed as late as possible, in order to name the proper figure. When a price of 10 cents a pound was put on Calmyrnas, private dealers raised a mighty roar, declaring the figure was far too high and meant confiscation of their profits. After the Turks went on the rampage in Smyrna these same dealers kited fig prices to a place where growers were willing to sell to them and pay the association a fine of two and one-half cents a pound.

PATENT ATTORNEYS

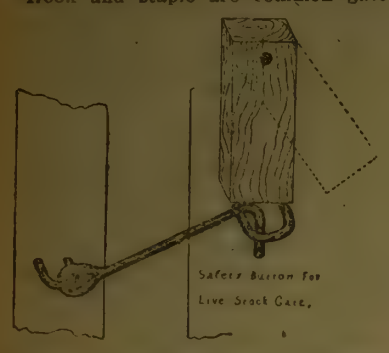
PATENTS—Prompt, personal, efficient service by an attorney-at-law skilled in all branches of Patent Practice. Over 15 years' actual experience. Full information upon request. E. F. Fishburne, 539 McGill Bldg., Washington, D. C.

PATENT and TRADE MARK information free. Attorney fees reduced. Prompt, personal service. Martin P. Smith, 221 Consolidated Bldg., Los Angeles, Cal.

Safety Button for Gate

THERE are "nosey" cows and mischievous colts on every well appointed live stock farm. Some of them are self-educated in the matter of opening gates.

Hook and staple are common gate



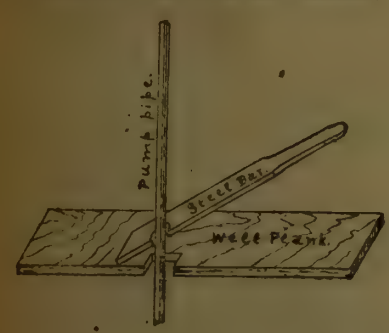
holders. This combination is cheap and conveniently operated, but is not a safety lock in the case of mischievous animals that have lived long enough on the same farm to learn tricks.

The drawing shows a simple hook retainer that will foil the best-educated filly, yet is easily operated by the human hand. The dotted lines show the button swung to one side to release the hook. The button will swing back into place of its own weight but the hook will push it out of the way when entering the staple. —HERBERT A. SHEARER.

Pump Pipe Lifter

WHEN it becomes necessary to take the deep well pump apart and to lift the pipe out of the well, some kind of "toggle" is needed.

If block and tackle is used, some one must hold the pipe from slipping while the snatch block is being readjusted for a fresh lift. Again when lowering the pipe back into the well an escument lever becomes necessary.



The drawing shows a simple lever grip that will hold the pipe at any point without straining a muscle or causing an accident.

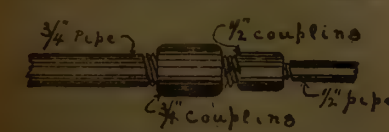
The grip is made by sawing a notch in the side of a three-foot length of flat bar steel. The bar should be three or four inches wide by about three eighths of an inch thick. The size of the bar should correspond with the size of the pipe to be lifted.

A short piece of steel may be used by bolting it to an extra piece of plank.

It is better to file the notch in the steel a little rounding to fit the round of the pipe; it will grip better and will not dent the pipe. The gripping edges of the steel should be filed sharp.—HERBERT A. SHEARER.

Home Made Reducer

WHEN we connected our garden spray system with the pressure pipe from the tank we lacked a reducer to step down from three-quarter pipe to half inch pipe. To save delay and a trip to town, we screwed a straight coupling firmly to the end of



a length of half-inch pipe, put the pipe in the pipe vise and worked a ¾-inch thread on the coupling. The improvised reducer was then screwed into the ¾-inch coupling on the supply pipe and it is there on the job now. The illustration shows how the work was done.—HERBERT A. SHEARER.

Agricultural Leaders of the Pacific West

IV—George A. Mansfield

President, Oregon State Farm Bureau Federation

BEING instrumental in persuading the Portland Chamber of Commerce to appropriate $150,000 a year for two years to help make co-operative marketing in Oregon a success is one of the latest achievements of George A. Mansfield, who recently was unanimously elected president of his State Farm Bureau Federation. Additional funds are being raised by agricultural organizations, and it is hoped by the combined efforts of the farmers and business men to solve the difficult problem of collective selling of soil products. Mr. Mansfield first became interested in farm bureau work in buying sulphur with which to fertilize alfalfa on his farm near Medford. The fact that the Farm Bureau Exchange was selling this material for about half what local dealers charged impressed Mansfield with the possibilities of collective purchasing and other activities of organized agriculture.

GEO. A. MANSFIELD

BOOSTS LOCAL BUREAU

He got busy helping boost the local association, the membership of which was increased from 200 to 900 in 18 months.

A State federation of local bureaus was formed and Mansfield was elected president, an office which he has since held. For the past two or three years most of Mansfield's time has been devoted to farm bureau work, of which he is a recognized leader, not only in Oregon but throughout the entire Pacific Northwest. He has been sent to Washington to plead the farmer's cause before the Federal Government, where he proved a powerful factor in putting over the program of the "farmer bloc" in Congress.

The Oregon Farm Bureau leader is a big, clean, upstanding man of powerful physique and commanding intellect, firmly convinced of the righteousness of his cause and determined to employ every honorable effort and influence for the advancement of agriculture. He has been especially successful in obtaining the co-operation of other classes—merchants, bankers, manufacturers, laborers, clerks and professional men—who are shown that it is their advantage to encourage the production of food and clothing by giving the farmer a square deal.

As a farmer, Mansfield has made a success of raising pure-bred Shorthorns and Jerseys on his ranch 38 miles above Medford, on the banks of the beautiful Rogue River. About 100 acres is carefully cultivated, alfalfa being the principal crop grown.

WINS INDIAN CASE

Before coming to Oregon, Mansfield was an attorney in Oklahoma, where he won a $60,000,000 suit for the Choctaw and Chickasaw Indians, one of the biggest legal cases ever tried. For eleven years Mansfield and his assistants worked on this suit, which finally was carried to the United States Supreme Court, which many years previously had rendered a decision adverse to the aboriginal claimants, who had been cheated out of their birthright by unscrupulous whites. Only ten minutes were required by Mansfield to state his side of the case.

"You're right!" exclaimed Chief Justice Taney, impulsively pounding his desk. "I'm with you."

"I felt sure of a favorable decision," remarked Mansfield in relating the incident, "because of the way in which Justice Taney had decided a similar case, which involved the constitutionality of a certain statute. Sweeping aside all legal technicalities, he stated his position something like this:

"'I don't care if the Constitution doesn't say anything about this particular case. It authorizes everything necessary for the safety and preservation of the Nation, and that covers the statute under consideration.'

COMPARES FARMERS' CAUSE

"You see," explained Mansfield, "Taney went right over the heads of those lawyers and politicians and arrived at his decision by a process of reasoning to which they were unaccustomed. I am confident the Supreme Court will always render similar decisions whenever the constitutionality of farmers' organizations is questioned.

"A farmer's work is different from all others, being the necessary foundation upon which every other industry and human activity is builded. For this reason, and also because the farmer labors under many natural disadvantages not found in other occupations, agriculture is and should be exempt from many of the restrictive regulations which are needed in other lines of business."—O. H. BARNHILL.

ALFALFA AVERAGES FOUR TONS

The average yield of California's 950,000 acres of alfalfa is a little less than four tons, the total crop being estimated at 3,600,000 tons.

Growing Dates at Selma

A DATE tree 25 years old growing on the farm of C. J. A. Peterson, near Selma, bore nearly 200 pounds of dates the past season. During the latter part of the ripening season the tree was covered at night with a tent and warmed with four lanterns placed underneath the canvas.

Mr. Peterson has sixty varieties of dates growing on his Fresno County ranch and is convinced that this fruit can be grown profitably in the San Joaquin Valley. His farm is a veritable experiment station, where trees and shrubs from all parts of the world are being tested without cost to the community.

There are nectarines from New Zealand, cherries from Spain, candy plant from China, and from India a cross between the plum and apricot. In the greenhouse there are hundreds of ornamental plants growing in great profusion. A red lima bean is one of the curiosities being tested.

A Faster Log Saw!
The new 1923 Model OTTAWA is the World's fastest Log Saw—350 strokes a minute! Better built, lighter, easier to move. Burns kerosene. Less than Wholesale Prices now in effect.
Mechanically Operated Valves
OTTAWA
One Man Log Saw
FREE BOOK! Send for "Wood Sawing Encyclopedia," illustrated; also Big Special Offer.
Ottawa Mfg. Co., 2351-0 Wood St., Ottawa, Kans., Pittsburgh, Pa.
30 Days' Trial

Berries—Rhubarb
DECIDUOUS and CITRUS FRUITS
Send for our 30th Anniversary Catalog, describing Trees, Plants and Seeds—just off the press.
WAGNER NURSERIES
(J. B. Wagner & Son)
"Originators of Giant Winter and Panama Rhubarb"
2491 E. Colorado St., Dept. O, Pasadena, Calif.

Just how *does* Kow Kare increase the milk yield?

Maybe you have been a regular user of Kow-Kare in treating cow diseases, but you may have never fully realized that this famous cow medicine is being used regularly in thousands of dairies to increase the winter milk yield.

Both uses are equally logical. Cow Diseases—nearly all of them—arise from a lowered vitality of the genital and digestive organs. Kow-Kare removes the cause by reaching these very organs and restoring vigor. The milk yield is controlled by the same set of organs. Dry winter feeds put a greater strain on their functions and produce a lowered vitality and yield.

Kow-Kare, fed moderately and regularly, gives to the milk-making organs the added strength they need to offset winter feeding conditions. A greater milk yield cannot fail to result

The expense of this Kow-Kare treatment is decidedly small. Most dairymen give a tablespoonful morning and evening in the feed, one week out of each month. The increased milk-profit pays for this a hundred-fold.

No cow medicine can equal Kow-Kare for the treatment of actual disease. For twenty-five years it has been the standard remedy for *Barrenness, Abortion, Retained Afterbirth, Scours, Bunches, Milk Fever, Lost Appetite.*

Sold in two sizes—large package $1.25; medium 65c, at feed dealers, general stores, druggists. If your dealer is not supplied, we send postpaid.

FREE Cow Book
We publish a very valuable book on cow diseases called, "The Home Cow Doctor". We will gladly send you a copy free if you give us your dealer's name

DAIRY ASSOCIATION CO., Inc.
Lyndonville, Vt.

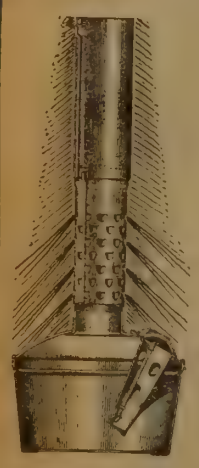
Wholesale Distributors of Kow-Kare and Bag Balm for California,
GERMAIN SEED CO., Los Angeles, Calif.

Bee Hives and Supplies

Headquarters for everything needed in the care of bees.
Send for late price list and free booklet.
The A. I. ROOT COMPANY, Dept. B,
1824 E. 15th St., Los Angeles, Cal.
PACKERS OF AIRLINE HONEY.

Berry Plants

Our Specialty. Also
FRUIT TREES
Send for Price List.
M. J. MONIZ
Sebastopol, P. O. Box 261, California.



Shows how the DUNN radiates heat to the side and to the ground—with more intense heat waves coming from bottom of the improved stack with perforations depressed to INSIDE. Also shows permanent asbestos lighting wick.

The DUNN Orchard Heater

Over 600,000 in Use
In Southern California

NO SMOKE!
EASY TO LIGHT!
and to regulate

Will burn over twenty hours at one filling.

Write for our Special Booklet on
ORCHARD HEATING

Geuder, Paeschke & Frey Co.,
Manufacturers Dunn Orchard Heaters.
1541 St. Paul Ave. (Established 1881), Milwaukee, Wis.
F. H. Hansen, General Sales Agent,
215 Kerckhoff Bldg., Los Angeles.

We Guarantee 100% Fertility in All Hatching Eggs

By Replacement of Infertile Eggs

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Our heavy commercial egg-laying hens are mated up to males from Emerson, Martin, Tancred, Hanson of Oregon, Hollywood Farms of Washington, Barron, Ferriss and Hillview Farms of Illinois. Why don't you arrange for some of each? Let us toe-punch the chicks and see which produces the type of hen you like best.

HATCHING EGGS—15 for $2; in 100 lots, 12c each; in 500 lots, 11c each; in 1000 lots, 10c each.

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The Charles Weeks System

Of Intensive Poultry
and Berry Farms

One Acre and Independence
or
The Fine Art of Earning a Comfortable Living on
ONE ACRE IN CALIFORNIA

For those who desire to dwell in sunny California without living up hard-earned capital.

For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 25 miles from Los Angeles.

Write for Literature

CHARLES WEEKS

Owensmouth California

World's Largest Certified Dairy

(Continued from Page 3.)

all the way through. As soon as they are sent to the hills they are vaccinated with "Aggressin," against blackleg. This dread disease has been eliminated and the heifers immunized for life by this treatment.

HEAVY GRAIN YIELD

Mr. Molter said that an effort was made to produce on the farm all the barley needed for winter feeding. Last season the average yield of 150 acres in barley (on old alfalfa soil), was thirty-eight sacks to the acre. Manure and alfalfa spell big grain yields.

Leading from the feeding barn and feed lots to the milking barn is a wide concrete lane. About half way to the barn the lane makes a dip to form a shallow trough. In the muddy season this trough is filled with clean water each day and all the cows compelled to take a foot bath before going to the barn to be milked. Inside the barn each cow is subjected to a shower bath from a hose.

Milking machines have been in use for two years now and have given good satisfaction. The machines have cut the number of hand milkers from eighteen to ten men.

Next I met P. Tsitsilios, who is in charge of breeding, veterinary and bacteriological work so essential to the certified milk business. No one tries to pronounce this man's name; therefore he asks all to call him "Pete." Pete Tsitsilios is a native of Smyrna. He had some work in Cornell, and later, upon coming to California, entered the University at Berkeley and graduated after having combined college work with practical dairy experience in some of the leading dairies of the State.

BOTTLING BY MACHINERY

Leaving the milking barn, we entered an adjoining room where the bottling and capping is done by machines. Pete explained that two men act as milk carriers and also see to the sterilizing of the milking machines. One man operates the bottling machine and two men act as inspectors, keeping a sharp lookout for any dirty bottles.

Near by is the washing and sterilizing room. Bottles and buckets are thoroughly washed, placed in big wire baskets on trucks and run into the sterilizing chamber.

Adjoining is the icing and cooling department. The dairy makes its own ice. Three tons are used daily. The milk comes direct from the bottling machine to the cooling room, where one man puts on the certified caps and another puts the bottles in cases and ices them. Five minutes after the milk leaves the cow, one may drink it ice cold from the bottle. Pete explained that keeping out the bacteria and cooling suddenly was the secret of the long keeping quality of their milk.

THE TESTING LABORATORIES

Next we visited the testing laboratories, where the milk is tested each day from bottles taken at random. The butter fat averages around 3.8 per cent. Samples are taken from both stripping and milking machine buckets for sediment tests.

The sediment tester is an interesting device. It fits over the mouth of a pint bottle. The sample is poured from the bottle and the milk passes over a small cotton disk. This disk is removed for inspection.

In this way Pete detects dirty utensils, milkers or cows, or any irregularity that could make for high bacterial count. The maximum number allowed by the milk commissions is 10,000 per cubic centimeter. Whenever the count at the dairy shows over 8000 per c. c., Pete investigates. The average count at the dairy runs around 3600. Pete's culture glasses revealed mostly mold spore formations which probably came from minute dust or feed particles.

Last time the officials made the tuberculin test on the herd, they isolated twenty-four doubtful reacters. These were sent to the butcher, but autopsies in every individual case failed to reveal any characteristic tubercular lesions. The authorities said this large herd was one of the cleanest in the State.

MODERN CALF BARN

One of the most interesting features of the dairy is the new calf barn, which was planned by Pete and which is the best the writer has ever seen. The building is 38 by 60 feet, well lighted and ventilated and free from draughts. The floor is of concrete. There are forty-six pens. The partitions are removable and each day the pens are taken down, the floor washed and disinfected and clean straw bedding supplied. Each pen is equipped with a stanchion and box for a bucket. The pens are 3 by 6 feet, with manure gutter at the rear. A winter corral runs the length of the east side.

An outside corral was occupied by some forty calves ranging from three days to a week old. Pete said they sterilized the buckets and fed regularly at 8 a. m. and 4 p. m. Due to strictest sanitation, very little trouble is experienced with scours. The calves are fed separately in pens until two months old, each getting milk in accordance with size, health and vitality. The bull calves are all sold for veal and the heifers kept to replenish the herd.

In the spring, the young stuff is taken to the hills, where shade, good water, good pasture and rustling develop the heifers. In the fall they are brought to the dairy and bred. One bull is turned in each week. Fourteen registered bulls are kept.

BOARDERS CULLED OUT

The cows are all purebred and grade Holsteins. Before a heifer or cow is put into the milking barn after freshening, she is tested for quantity and butter fat production. Ten days or more must be allowed after freshening before milkers are put in the herd. A record is kept during the six lactation periods of each cow so as continually to weed out the poor performers.

Cows which do not measure up to production requirements are sold to the butcher. About fifty animals annually are butchered for beef for the large force of men employed in the dairy and upon the ranches.

A thorough survey of the operations of this institution convinces one that here is a case where skillful business management and science have been harnessed together and where details are raised to the nth power to insure the production of the highest quality of milk for a specialized market.

What Good Cows Can Do

HUMBOLDT County farmers could add nearly three-quarters of a million dollars to their annual income by breeding their 14,000 poorest cows up to the standard of their 14,000 best ones, according to estimates made by the Agricultural Extension Service. The best cows produce an average of 340 pounds of butterfat each year, a total of 4,755,800 pounds, worth $3,138,878; while the poor ones yield only 269 pounds of butterfat each, totaling 3,693,200 pounds, valued at $2,437,512, a difference in favor of the high grades and purebreds of $701,306. These figures constitute an unanswerable argument in favor of better blood in dairy cows.

Bull Kills Man

THE recent death of an employe of the U. S. Department of Agriculture at the horns of a bull, supposedly gentle, emphasizes the importance of never trusting such an animal, no matter how good natured he may seem to be. This particular animal had been taken out to be photographed and was turned loose. Without warning, the animal knocked down his owner and then gored to death the man who rushed to his companion's assistance. Had the bull been led by a staff attached to a ring this tragedy would not have happened.

How Ingle Makes Mixed Farming Pay

This Farmer Enlisted the Aid of Agricultural College Specialists

CORN, clover and cattle are the cornerstones on which Calvin Ingle is building a successful system of mixed farming on an Oregon ranch in the Willamette Valley. A small herd of pure-bred Shorthorn cattle is being increased until the sale of breeding stock will become the main source of revenue. How he is solving some common agricultural problems with the help of trained scientists is told in the accompanying article, based on personal observation.

By O. H. BARNHALL

WHEN Calvin Ingle came into possession of a 250-acre farm in the Willamette Valley eight years ago he found that too much tenant treatment had left the soil in an impoverished condition, while fences, buildings and machinery had gone to rack and ruin. Part of the land was covered with brush and timber, and one large field was too poorly drained to produce profitable crops. A small but diminishing income was derived from grain and pasturage. Because this describes many western Oregon farms fairly accurately, the methods employed to bring this place into profitable productivity are of special interest.

The run-down condition of the farm was not the only handicap under which the new owner labored, since he was inexperienced in agriculture, being by profession a druggist and school teacher, but having a college education. The latter proved the entering wedge to success, for while young Ingle was attending the O. A. C. he acquired a wholesome respect for the work being done by experiment station experts. He invited some of them to make a study of his farm, and to recommend methods for the solution of the problems encountered.

EXPERTS GIVE HELP

A thirty-five acre hill pasture first was improved by sowing rye grass and orchard grass, which were recommended by Professor Hyslop. The Corvallis Country Club offered $100 an acre for the pasture, but because of its high and dry location it furnishes the first green feed in the spring, while later on the native oak trees supply grateful shade, and the excellent offer was rejected. Since the rest of the pasture land lies low, stock find the dry hill a fine place to spend part of their time during the wet winter months.

Professor Powers surveyed the wet land and mapped out a system of tile drainage. About 10,000 feet of tile were laid, using six-inch for mains and four-inch for laterals. These drains were put in between the soil and subsoil and so well was the work done that where formerly months were required for the surface water to sink out of sight, it now runs off in a few hours. One of the beauties of tile drainage, more of which is greatly needed in the Willamette Valley, is that if it is properly done it never needs repairing or replacing, but constantly increases in efficiency as channels form for the passage of underground water.

Professor Lunn superintended the construction of a poultry house, which is 85 by 20 feet. The structure is not one that would appeal to a professional poultryman, being without a floor and lacking costly fixtures, but it admirably meets the requirements of an ordinary farm flock. The nests are located under the front edge of the dropping board and are so arranged that the hens enter them from the rear. A hinged cover facilitates the removal of the eggs. Another good feature of the nests is that they are so large—two feet long—that hens do not "pile up."

Eight hundred day-old chicks were brooded so successfully that only two dozen were lost. About 300 laying hens earn a profit of $100 a month during the winter, when there is little income from other sources.

BUILDING ON PURE-BRED SHORTHORNS

George Kable, county agent, worked out a system of crop rotation and farm management which is based upon the chief product—pure-bred Shorthorn breeding stock, for which the farm is admirably suited. The considerations which led Mr. Ingle to decide upon this particular money crop are of special interest.

"Shorthorn bulls and heifers are in great demand by eastern Oregon stockmen," affirms Mr. Ingle. "Southern Oregon and the coast counties also take many animals of this kind, which bring good prices if they are of the right type and have been properly raised.

"The work of caring for beef cattle is light compared to most other kinds of farming. Since labor is the chief expense of agriculture, this becomes a point of paramount importance. Boarding and sleeping a hired man tends to break up the home life, which means a great deal to us, as we have four children, two of them quite small. Where separate living quarters are provided for a married man the latter's wife is apt to feel the inferiority of her position and in many ways make things unpleasant. The dairyman is forced to take one or the other horns of this dilemma, as is the farmer who followed most any other line of agriculture.

"The system of farming we are following enables us to dispense with hired help ten months in the year. Furthermore, by having running water in the pasture and water piped to the barn and chicken house, we are not tied down to the farm as closely as is the man who has a string of cows to milk or similar daily duties to perform. Profit is not the only thing to consider when deciding what kind of farming to follow."

CORN AND CLOVER SILAGE

With mild winters and cool summers, plenty of shade, sunny hillsides and groves of timber, little more is needed in the way of stock shelter. Summer and winter pasturage provide provender most of the year, hay and silage supplying the balance of what is needed along this line. Only about fifteen tons of the former and thirty of the latter were fed last winter.

The silo holds seventy-five tons and is filled with common clover. The construction is of half-inch cedar siding, put on "hoop fashion" inside of perpendicular two-by-fours.

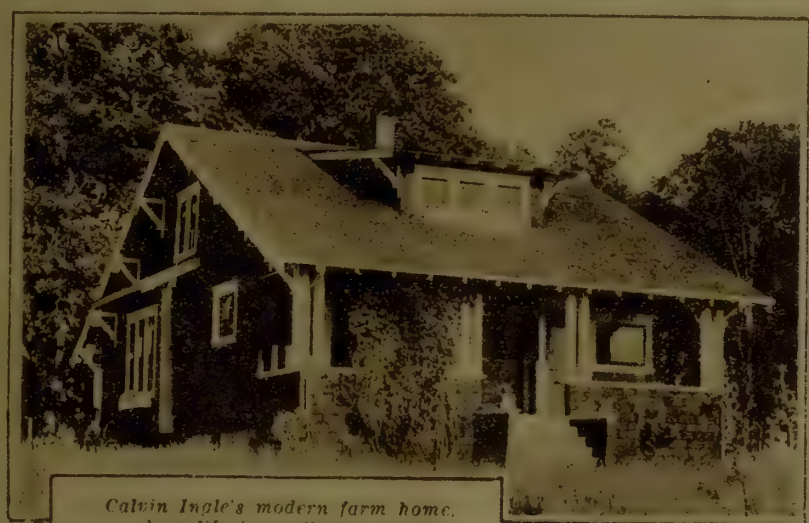
The general crop plan is to drill in fall wheat after corn and potatoes, sow clover in February and leave the latter two years, taking off a crop of seed and hay each year. This makes a four-year rotation with only one plowing, requiring a minimum amount of labor. If the cultivated crop were omitted, an additional saving of labor would be effected, although the ground would lose the benefit of the stirring up.

Plowing, harrowing, discing, drilling and harvesting are all done with a tractor. Six horses are kept to assist in these operations and perform many other kinds of farm work.

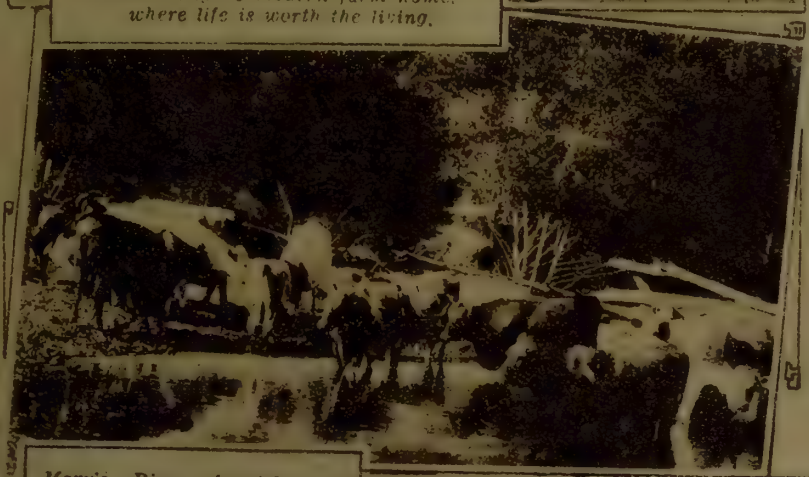
Sixty Cotswold sheep and forty head of Angora goats constitute two profitable side lines. Five grade Jersey cows help make the place a real farm.

Fourteen registered Shorthorns form the basis of the purebred herd of livestock. There are three bulls, two heifers and nine cows.

Mr. Ingle takes an active part in organized agriculture, being one of the officers of the Benton County Farm Bureau and former State organizer. He has a capable wife and Jean, the eldest child, won a gold medal for writing the best essay of any third-grade Oregon pupil on, "How I bought my liberty bond." She drives a tractor and grain binder and rides a pony bareback in driving the cattle down from the hill pasture to water at Mary's River, which forms the eastern boundary of the farm.



Calvin Ingle's modern farm home, where life is worth the living.



Mary's River furnishes a plentiful supply of pure, cold water.

Type of Ingle's line-back Shorthorn breeding stock.

Mr. Ingle inspecting a job of wheat shocking.

Jean Ingle with her dog and pony.

Sorghums Supplement Alfalfa—Imperial Valley's New System

Solving Feed and Fertility Problems

IMPERIAL VALLEY dairymen, who heretofore have solved the problem by pasturing their cows on alfalfa the year around, are being forced by the scarcity of feed to supplement alfalfa with sorghums, which yield enormous quantities of nutritious grain and roughage. Silos are necessary to feed sorghums to advantage, however, and half the dairy herds of Imperial are operated on rented farms, the owners of which are slow about providing needed permanent equipment. How these and other obstacles are being overcome is told in the accompanying article. —*The Editor.*

Top—Cement silos on Stanton ranch, near El Centro. Capacity 440 tons of honey sorghum. Large view shows typical Imperial Valley open air dairy barn.

THE Imperial Valley has long been known as a dairyman's paradise. While milk producers in colder countries must provide expensive barns for their herds, no artificial shelter is needed here, where the weather is seldom uncomfortably cold, even during the winter season. Cows are milked in the open every day in the year, rain and other storms being practically unknown.

As for feed, all that is necessary is to seed three acres to alfalfa for every pair of cows milked and turn 'em loose, withdrawing the lacteal fluid night and morning, when the animals come in for liquid refreshment.

Anyhow, that's the way many Imperial dairymen had the situation sized up, and until feed became scarce and high and butter cheap and plentiful they were not far from right. But with the slump in butterfat prices came the petering out of pasturage, due partly to the wearing out of alfalfa meadows and partly to a large acreage being plowed up to make room for the ever-increasing area planted to cantaloupes and other vegetables.

It has been the custom on many dairy farms to cut alfalfa for hay only when it grew faster than the cows could eat it down. There was no need of worrying about winter feed, because—in addition to pasture—hay was always plentiful and comparatively cheap. Grain and hay, however, have both about doubled in price, while butter is much cheaper than it was a few years ago. Pasture is scarce and poor and all other kinds of feed are high and hard to get.

Dairymen have been caught short. They neglected to provide for the present situation and hence have to hustle to make both ends meet. Of course work is the average dairyman's middle name, but it goes against the grain to labor from early morn till dewy eve under adverse circumstances.

COWS IMPROVE CREDIT

In spite of present unfavorable conditions, however, the dairyman's situation is more favorable than that of the crop plunger. A former Imperial Valley merchant said that he used to instruct his clerks to observe closely every farmer who asked for credit. "If his clothes are flecked with cotton, turn him down, was my order. But if the farmer looks greasy and smells of cows, give him credit," related the merchant.

"One reason why there are so few high-grade dairy cows in the Imperial Valley is because many were sold during the recent financial depression to help provide funds for conducting the business of the valley," explained V. W. De Tar, dairy extension specialist, who is organizing cow testing associations in this locality. "The banks had to have money and the dairymen possessed something which could be converted into cash, so they took the cows, naturally choosing the best ones, which found ready sale at outside points."

These two incidents illustrate the fact that while dairymen may suffer temporary setbacks, their financial position is fundamentally sound. They do not make spectacular profits like the cotton and cantaloupe plungers, but their gains are sure, taking one year with another.

But how are we to feed those hungry cows, which have been patiently waiting while we digressed? The dairyman is interested in getting as much feed as possible from each acre and at the lowest expense, whether he be renter or owner. Alfalfa is the standard cow feed of the Imperial Valley, the best and cheapest, everything considered. But it needs to be supplemented with succulent silage sorghums and the nutritious grain varieties.

"Sorghums produce a greater tonnage of feed per acre than alfalfa and help make a balanced ration," De Tar points out. "Honey sorghum yields 30 to 40 tons per acre under favorable conditions and sometimes 50 tons. It makes splendid silage, which may with great advantage be fed to cows, together with alfalfa and a little ground barley. This constitutes an ideal dairy ration, one which is being adopted by many progressive Imperial milk producers."

Charles Stanton's fine farm home. The rose hedge hides the well-kept lawn.

Pure-bred bulls are being used to improve Imperial dairy herds. This Southern darkey came West to pick cotton and remained to milk cows.

The chief obstacle in the way of using sorghums as dairy feed is the great initial cost of the silos. William Stanton, El Centro auctioneer, has on his 92-acre farm near Meloland two cement silos 18 feet in diameter and 38 feet high, which hold 440 tons of silage and cost $2200. It required only 14 acres of honey sorghum the past season to fill both silos. The latter are placed close together, supporting a 1,100-gallon water tank, which is filled by a gas engine forcing up water from a cistern 11 feet deep.

Mr. Stanton's son Charles runs the former's ranch in a most efficient manner, milking two "stringe" of cows —58. A new electric separator recently has displaced one operated by "armstrong" power, much to the owner's satisfaction. Watermelons, cucumbers, lettuce and other vegetables are grown in the crop rotation, which includes alfalfa and sorghums. The Stanton farm home is one of the nicest in the valley, with grassy lawn flanked on either side with red rose hedges. Here Mrs. Stanton and the kiddies find life very agreeable in the sunny Southland.

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

Freckles gets the mail

JANUARY 7, 1923

"More small farm flocks" are suggested for orchard districts of California.

SNAP-SHOTS

Novel irrigating equipment on Wagner ranch, Placentia. The lengths of hose may be extended to different furrows, resulting in more even distribution of water.

Manure hauling made easy on the Longview poultry ranch, San Fernando Valley. Droppings from laying houses are used to enrich fields where grain is grown for feeding the hens.

The jujube (Ziziphus Jujuba) — a promising, new, date-like fruit.—Photo by Geo. P. Weldon.

Members of the recently-organized California Shropshire Breeders' Assn.;

Back row, left to right: John Freitus, Diablo Stock Farm, Danville, Cal.; Robt. Allan, Silverton, Ore.; F. T. Fox, Silverton, Ore.; Robt. F. Miller, Davis, Cal., secretary; Jack Corathwaite, Hollister, Cal. Front row, left to right: Geo. Phillips, Davis; W. S. Guilford, president, Butte City, Cal.; F. J. Ratto, San Francisco; W. C. Priddy, Hollister, Cal.; O. K. Swingle, Davis; T. S. Glide, Davis

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JANUARY 7, 1923

Long Pruning Needs Standardization

How Many Systems of Long Pruning Have We?—What System Is Most Satisfactory?—Conclusions From Personal Observations

By GEORGE P. WELDON

Pomologist, Chaffey Junior College of Agriculture; Contributing Editor of ORCHARD and FARM.

PROBABLY at no time during the history of California fruit growing has pruning been made a subject of such careful study as during the past five or six years.

We may attribute this interest very largely to the great activity of that splendid character, the late or J. H. Whitten, who traveled widely over the State, demonstrating an improved method of pruning which the fruit growers have chosen to call the "Whitten system."

GEORGE P. WELDON

Doctor Whitten made friends wherever he went and there are hundreds of orchardists in California today who can attribute their success to his suggestions.

However, it is not strange that everyone who has attempted to practice long pruning has not been successful. Some have thought long pruning meant little pruning and have failed; some have adopted a system which resulted in the production of much fruit toward the tops of numerous long-pruned branches and little near the ground where it could be conveniently picked.

Others have attempted to make their trees bear such a heavy increase that size has been sacrificed. These two have failed. But where common sense has been used there have been more successes than failures, and many cases of failure charged to long pruning in reality were due to other things.

WHAT LONG PRUNING SHOULD DO

The fruit grower is desirous of developing trees that will be large and thrifty and that will produce an abundance of high grade fruit.

Quality is essential, but it must not be attained by too much sacrifice in size. Quality is an essential element if the orchard is to bring maximum returns. That long pruning will increase the tonnage from an orchard is a fact that is now very generally recognized and as far as production is concerned, there are few who would question its value. Likewise, no one who has carefully observed the behavior of short and long pruned trees would express any doubt as to the effect of long pruning in adding growth to the trees. No doubt opinions will differ more regarding its effect upon quality. If there is close agreement in opinion as to the value of long pruning in causing greater production of fruit and increased growth of the tree, the opposition to the system must come from observations which have indicated a decrease in size or a lessening of quality.

SIZE AND QUALITY

One does not need to spend much time in the orchards of a community to discover that ideas regarding long pruning differ so greatly that we may find two long systems which present extremes as great as those occurring between a short and a long pruned tree. One system of long pruning results in the growth of "high fruit," overloaded branches which need propping and bend to the breaking point, and in all probability fruit of inferior size. Another system results in the production of "low fruit," which can be picked from the ground or from short ladders, upright main branches which need no propping and good-sized fruit.

Trees pruned under the first system usually have too many main branches which are weak and flexible. In the second place there may be very little fruit wood within three or four feet of the ground. The excuse for trimming the trees high in this manner, is the factor of cultivation, which cannot be conveniently done with low hanging branches in the orchard. Under the second, or Whitten system, the plan is to have not more than six main, upright branches for the framework. These are allowed to grow as high as they will without any topping. As there are but five or six, instead of a dozen or more, each one will possess great strength.

In pruning each year, competing upright branches which would interfere with the growth of those originally selected, are removed. This means heavy thinning of branches in the tops of the trees.

On the other hand lighter pruning is done below and plenty of hanging branches for fruit are left on the lower parts of these main branches. If some of them do touch the ground where the load of heavy fruit is attached, no harm is done, and picking is much easier than from a tall ladder. From time to time it is necessary to shorten the low, fruiting branches to keep them from interfering too seriously with cultivation.

CAUSE OF RUINED TREES

It is my firm belief, however, that the "bug-bear" of cultivation has caused many an orchardist to ruin his trees.

It is time that we were getting away from the fear that a few branches low down on the tree will cause our ruination because of interference with cultivation close to the tree.

We need a lesson from the citrus grower, who because of the way his trees naturally grow, has been forced to use special tools that will permit cultivation where branches overhang. If, by allowing the fruiting branches to develop low, heavier production can be secured and picking costs can be very materially reduced, perhaps we can afford to pay out a little more for cultivation.

One of the splendid things about long pruning of the kind being discussed, is the almost total absence of props in *(Continued on Page 18.)*

How Shall We Market Our Increasing Raisin Crop?

Leader of Co-operatives Gives Views on Possible Overproduction

F. A. SEYMOUR, manager of the Sun Maid Raisin Growers, gives some interesting ideas upon the possible overproduction of raisins and how best to meet the situation. Should raisin growers produce anything else? Are they good co-operatives, or are they inclined to kick over the traces? How do dealers like to have their activities limited or themselves eliminated? Read what Seymour has to say upon these subjects.

—*The Editor.*

"HOW can we take care of production which is expected to increase at the rate of 40,000 tons a year for the next five years?"

F. A. Seymour, manager of the Sun Maid Raisin Growers, looked up from the desk where he was directing the activities of 5000 people engaged in the task of preparing for market and disposing of the present record-breaking crop of raisins.

F. A. SEYMOUR
—Photo by Hartsook

"Why, in very much the same manner as during the past decade we have marketed a crop which has grown from 70,000 tons to 225,000 tons—by developing old markets and find new ones. It's a big job, but what we have done is an indication of what we are able to accomplish. Never yet have we been confronted by a situation which we were unable successfully to meet. We believe that no organization has a more loyal or efficient sales force than ours.

"Why don't we advise people to stop planting grape vines? Well, the courts have decided that would be an illegal act in restraint of trade, and all we can do is to trust to natural causes to limit production to a point where it can be handled profitably.

"During the past few years thousands of acres of land unsuited to raisin growing has been planted to vines. It is likely that many of these vineyards never will come into bearing.

EXCESSIVE PLANTING

"Unusually high prices the past few years resulted in excessive plantings of raisin grapes. Now that normal conditions have returned, new plantings are expected to assume reasonable proportions, which will not create any serious marketing problems."

Mr. Seymour is aware of the disadvantages of a one-crop system of agriculture.

"Grapes do not exhaust our naturally rich soil as does grain, yet the need of nitrogen and humus already is beginning to be felt," he admitted, while claiming that "soil exhaustion has been more than offset by improved cultural methods. In the past ten years the per acre yield of Muscats has increased anywhere from 50 to 100 per cent, due to more efficient methods, for which our organization is largely responsible.

"Good tillage, irrigation, pruning and pest control, however, do not supply soil fertility and organic matter. Cover crops and chemical fertilizers will meet this need to some extent, yet stable and barnyard manures are required to furnish a balanced ration for the soil. Manure cannot profitably be imported from other localities, which need all of this material they can produce."

The upper San Joaquin Valley, natural home of the raisin, needs more livestock, cows, sheep, pigs and poultry, Mr. Seymour asserts. Chicken manure is the richest of all natural fertilizers and a valuable by-product of the egg industry, which could profitably be very largely expanded in the raisin country, he asserted.

"We do not even grow all the vegetables we need, which is certainly a mistake. It may be argued that vegetables, eggs and other farm products can be bought cheaper than grown. If only the first cost is considered, that may be true. There are, however, other considerations equally important, such as soil enrichment, having fresh food from one's own farm, providing employment out of the crop season and helping tide over years of depressed prices."

GOOD CO-OPERATORS

"Yes, raisin growers are good co-operators," Mr. Seymour agreed, adding, however, that they sometimes showed a disposition to "kick over the traces." The fixing of what seemed to produce a low price last August resulted in considerable complaint and criticism of the Sun Maid management. Mr. Seymour and his associates for several weeks had their hands full keeping the growers in line. The latter questioned the cost of preparing their product for market and getting it into the hands of dealers; some thought that the salaries paid were too high, while others believed there were too many employes. When, however, the situation was fully explained it was accepted as satisfactory by the rank and file.

"The hardest thing for the average grower to understand," declared Mr. Seymour, "is that he should faithfully abide by all the rules of a co-operative organization. Many of them request—or demand—that we make an exception in their case. If we complied with even a small portion of such requests, our association would soon go to pieces."

In order to keep ahead of competition raisin growers and packers must improve the quality of their product, believes the Sun Maid Manager. Growers are shown how to raise big bunches of first class raisins and the packing department constantly is improving the cleanliness and uniformity of the finished product.

One of the first steps of the Sun Maid people was to eliminate raisin brokers and build up a sales force which takes the product direct to dealers. This, it is pointed out, affords personal contact with wholesalers and retailers and enables growers' representatives to establish a better understanding with the trade.

"One of our hardest fights was with men who wanted to buy large quantities of raisins and then manipulate and take advantage of the market for their own benefit, at the expense of the consumer," related Mr. Seymour. "Our policy has been to stabilize prices, giving dealers a chance to make at all times a fair profit, but no more.

"Another struggle was with dealers who insisted that we pack our product under their own label. Threats were freely made that under no other condition would our raisins be handled. We stood firm, however, for the packing of all our raisins under our own label.

"The independent packer still is with us, though in constantly diminishing numbers and power," he concluded.

"Eighty-eight per cent of the California raisin acreage is marketed through our association. Private packers constantly are trying to undermine our organization by tempting our members to break their contract, but each year their efforts meet with less success. The principle of co-operation is constantly becoming more firmly established among raisin growers, as they compare present conditions with those which obtained before they organized."—O. H. B.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor
GEORGE GRANT, Art Director

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS

Luther Burbank, James Dryden, Walter H. Gardner, J. D. Bixby, Helen Temple, George P. Weldon, Robert E. Jones, Herbert A. Shearer, Dr. J. Elliot Coit, W. S. Guilford, Wm. Reynolds Butler

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and enclose stamp for reply.

Pithy Paragraphs

CHANGED ATTITUDE TOWARDS AGRICULTURAL STUDENTS—One of the most encouraging factors in connection with agricultural colleges, is the new attitude of farmers towards students. The young fellows are in demand for ranch work. Hundreds every summer are given vacation employment at good wages in preference to itinerant laborers of more mature practical experience. Another thing—the graduating classes are absorbed within a few weeks after they have completed their courses. Of more than 200 graduates from Berkeley and Davis in 1922, practically every one was at work in some branch of agriculture six weeks after the term had ended. Where is the o. f. farmer who was wont to sneer at "book learning"?

STUDENTS, ALSO, HAVE A DIFFERENT OUTLOOK—According to Professor Edwin C. Voorhies, a new attitude is evident among the students. "It is a very hopeful sign," he says, "that graduates now are far less particular about what they do when they first get out of college than they formerly were. I also find the same thing true in the summer time. Students go out on the first job that opens up. I do not know what has occasioned this change, but it certainly augurs well for the future." Professor Voorhies' observations are both interesting and important. Let every boy who likes agriculture and prefers to follow it as a vocation, attend agricultural college, even if he has to work his way through the entire course! Probably no years of his life will be spent to better advantage. For, other things being equal, the college man will always get more out of life—and climb more easily the ladder of success.

HERE'S A GOOD RESOLUTION TO MAKE This is inventory season, and a good time to make a resolution to keep books. Stopping little leaks often means the difference between loss and profit. But how is one to discover the leaks without cost accounts? There is no better time than the first of the year to take an inventory. And the inventory is the starting point for most bookkeeping systems. How the raisin association is encouraging and helping its members to keep accounts is related in this number. And the article contains helpful suggestions for other producers!

Suggestion Contest Ends

SO many letters were received from ORCHARD and FARM readers offering suggestions for articles that two or three weeks' time will be required to judge the entries. A committee has been appointed for this important task. Watch for announcement of winners in an early issue. —*The Editor.*

"What's New?"—Keeping Abreast of Agricultural Progress

Save on Spray

SUTTER COUNTY farmers believe they can reduce the cost of the 25,000 gallons of spray "dope" which they expect to use next spring from 11 cents a gallon to 4 or 5 cents by building and operating their own manufacturing plant.—DONALD ASHTON.

Add Phosphate to Manure

IT IS estimated a ton of average barnyard manure contains ten pounds of nitrogen, two pounds of phosphorus and eight pounds of potassium. A standard fertilizer contains two, twelve and two pounds, respectively, of the ingredients named. This indicates that manure lacks phosphorus, which may be added to the rate of forty-five pounds of 16 per cent acid phosphate to each load of manure, greatly increasing the value of the latter, according to recent investigations.

Preserves Lemon Juice

R. W. COLBURN of Burbank, Cal., has perfected a process for preserving lemon juice which may prove the means of profitably marketing cull lemons, which are said to constitute 40 per cent of the crop. These include fruit which is over- or under-size, tree-ripe or defective in any other way. It is believed this new process makes possible the delivering of lemon juice to consumers at such a low price that the market for the product will be greatly enlarged, as it can be used very advantageously for toilet and laundry purposes, as well as medicinally and as a beverage.

The icing charge, which amounts to about $100 for each car that goes East, would be saved, also the freight on rinds and seeds. It is estimated that a ton of lemons will yield forty gallons of juice and essential oil, the former being extracted from the pulp and the latter from the rind.

Fertilize with Alfalfa

WHY not fertilize with alfalfa? Dr. P. A. Bancquet, Tulare County plant pathologist, declares the "King of forage crops" is the cheapest and best fertilizer for California farmers.

"A ton of alfalfa," asserts this authority, "contains 50 pounds of nitrogen, whereas a ton of ordinary manure has only eight pounds. Ten tons of alfalfa contains, in addition to 500 pounds of nitrogen, 25 pounds of potassium, four pounds of phosphorus and nearly 2000 pounds of fine organic matter in the form of humus.

"I predict that growing alfalfa for fertilizer some day will become an enterprise of great commercial importance in California."—FLOYD BYRNES.

(Editor's note: Fred Gunterman, an extensive and successful Imperial Valley farmer, plants alfalfa in the fall and plows it up early the following summer, after taking off two or three hay crops, maintaining in this way the fertility of his soil. Honey sorghum and milo maize are grown after the alfalfa, the same year.)

Dusts Grain With Machine

A MACHINE for applying copper carbonate dust to seed grain infested with bunt, or stinking smut, at the rate of 300 bushels per hour, has been invented by Frederick Steigmeyer, of the Boston Land Company, near Hanford. The machine is patented, but the right to use it is freely granted to the public. The device is described as cheap, simple, effective and automatic.

The Washington Experiment Station has perfected a machine which operates on the principle of a barrel churn and treats a bushel of grain in five minutes. These machines should be of material aid in solving the problem of how to dust grain quickly and thoroughly. One great advantage of the dry treatment over using a wet solution is that the former does not injure the grain, as does the latter frequently. Another point in favor of dust is that it can be applied in advance of the busy seeding season.

How Hogs Equalize Prices

OUR hog crop serves as a shock absorber for the variation in grain production, year by year, thus ironing out the inequalities of grain prices," says Henry Wallace, who declares that "no great meat-eating nation ever suffered famine from crop failure.

"Our livestock furnishes a great storage plant for grains and grasses. Our hog crop represents an immense national plant for refining many foods not suitable for human consumption; a condensing factory which concentrates more than one-third of our corn crop—together with a large amount of grasses—into a highly palatable, compact food product.

"The hog is a great national storage reservoir in which huge quantities of grains and grasses are stored up for future use, creating food reserves the importance of which few people realize. It is in this manner that famines are avoided in meat eating countries."

"During the past year and a half our hogs have paid for the corn they ate about twice as much as the grain could have been sold for on the open market at current prices per bushel.'

"Inside" Orange Crop Surprises

THE quantity and quality of fruit borne on the inside branches of Tulare County orange trees proved an agreeable surprise at picking time, helping materially to swell the total production of navels to about 2,500,000 boxes, which is expected to bring the growers $2.50 a box, a very satisfactory figure. The crop is estimated at 80 per cent of last year's, which totaled 3800 cars.

It has been found profitable to pay special attention to "inside oranges," for they are less liable to frost injury and often the very finest fruit is produced on this portion of the tree. Such fruit is less likely to split than that which grows on the outer branches.

As usual, the Naranjo district shipped the first fruit this season, followed closely by the Lindsay and the Glove sections, where picking started November 5, for Australian export. The Tulare County orange harvest was at its height the week preceding Thanksgiving, with dozens of cars moving out daily. Four more packing houses are in operation this year than last, the present total being 58.—FLOYD BYRNES.

Potatoes Grafted on Eggplants

L. DANIEL, a noted French botanist, has succeeded in grafting potaoes on various other plants of the same family. In the case of potatoes grafted on tomatoes, the tomato roots refused to form potatoes, but numerous aerial tubers were formed above ground. These, when gathered and planted, produced potato vines typical of the variety; but aerial potatoes grown on eggplant roots were so affected that they were much later in developing and retained their green leaves more than a month after the leaves had fallen from normal plants of the same variety.

While such experiments may not have an immediate practical bearing, they represent an attempt to discover the principles of the influences between stock and scion, so that these may be interpreted in the light of fruit trees and vines which are commonly grafted or budded on different kinds of root stocks.—J. ELLIOT COIT.

Protecting Stock from Lightning

GEORGE E. BROWN, Texas stockman, protects his animals from lightning by putting his wire fences on a ridge. Before the posts are set, a double back-furrow is thrown up where the fence is to go and with a little shovel work a symmetrical two-foot ridge is formed. This is protected from washing by seeding to grass, which forms a sod.

Less wire is required when posts are set atop of a ridge. Brown finds that a 28-inch strip of woven wire, with a barbed wire two inches above, is all that is necessary.

Furthermore, the ridge keeps stock from getting close to the fence during a storm, thus eliminating danger of destruction by lightning.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

III—JAMES DRYDEN

IN MR. DRYDEN, ORCHARD and FARM has poultry writer and authority of International repute. He has spent some 25 years in poultry investigation and commercial work.

The first 300-egg hen ever known was developed by James Dryden while in charge of the poultry department of Oregon Agricultural College. Few persons at the time would believe a hen was capable of such production.

The strains of leghorns and barred rocks he developed have won more honors in egg-laying contests than those of any other breeder. Mr. Dryden's three pens at the Panama Pacific Exposition won first, second and third prizes. In recent years other breeders have won consistently with his stock.

Prof. Dryden is a firm believed in better bred fowls. His experiments have demonstrated conclusively that high egg production is inherited and that there are great possibilities in the improvement of laying stock by proper breeding.

He has traveled over the entire United States and much of Canada in search of good poultry farms and practical information, and is personally acquainted with more successful poultrymen than perhaps any other authority in America.

Mr. Dryden is the author of Poultry Breeding and Management, a standard text book on commercial production, and at present is engaged in developing a model breeding farm at Concord, California.

NEXT WEEK—DR. COIT

Keeping Grape Production Costs

How Sun Maid Raisin Growers Are Laying the Basis for Profitable Prices by a Comprehensive System of Cost Accounting

I'D rather take a licking any day than write a letter.

That's the way a great many farmers feel about doing office work. They know they ought to keep books and every now and then make a desperate attempt to keep track their expenses and receipts. But too en these efforts end in failure, her because the results are so incplete as to be of little practical lue or because in attempting to keep complicated set of books the farmer ts discouraged and quits.

The result is when marketing organtions go before dealers, legislators, ilroads or working people and envor to make favorable terms for the rmer they have little in the way of cumentary evidence with which to pport their statements regarding oduction costs. This has been found very serious handicap in determing wages, prices and other conditions fecting farm products.

ADOPT SIMPLIFIED SYSTEM

The Sun Maid Raisin Growers apar to have solved this difficult probn. They first worked out a system farm bookkeeping so complete that l necessary information is provided r, yet so simple that only an elentary education is necessary for its eration. Next—and perhaps this is e most important—they supply the eded human element by showing owers just how accounts are to be pt. This personal service was folwed up by occasional calls at the rm-home to explain any knotty point d to encourage the grower to keep with the good work.

The success of the first season's eration of this method has been most atifying. Widespread interest has en aroused, and F. S. Stewart, who has direct charge of the work, is kept busy superintending the keeping of numerous growers' accounts. While growers are urged to adopt the system recommended by the Sun Maid people, the latter do not insist that any particular form be followed, but only that clear and complete accounts be kept.

FORM BOOKKEEPING CLASSES

Monthly night classes have been formed for the purpose of instructing interested growers. Teachers of agriculture in several high schools have asked for assistance in making Sun Maid bookkeeping a prominent project for their pupils.

"In farm accounting," explains Mr. Stewart, "three sources of information must be maintained: First, labor distribution (number of hours each day), where, by whom and for what purpose; second, farm receipts; third, farm expenditures.

"For keeping track of labor we have adopted the time card idea. Each permanent employe is supplied with a pad of time reports—enough for two months—and required to fill out one of these forms each day and deposit it in some convenient receptacle, similar to a mail box. Supervisors of gang labor, such as is used in pruning and picking, make out a single daily report to cover such operations.

PLAN IS VERY FLEXIBLE

"The daily labor reports are classified and transferred to the monthly sheets, as are the receipts and expenditures.

"The column headings of these sheets are left blank to be filled out to meet individual requirements. The leaves are loose, so that additional sheets may be added if needed. The idea is to make the system so flexible that it can be adapted to any farm, regardless of size or character. As an illustration of how this idea is being carried out, one of our books is being used to keep the accounts on an estate of 200 acres, which includes four separate ranches and fifteen different plantings of vines.

"Suitable forms are provided for inventory, stock record, crop record, accounts, notes payable and notes receivable, statement of net worth, map of farm, final report, etc. Everything is arranged in direct and simple form, so as to require the minimum expenditure of time and effort on the part of the grower."

Many features of this system may be applied to any type of farm, and growers in other lines are following the project with greatest interest.

Taking the Gamble Out of Farming

FARM bookkeeping at last is becoming a reality in the San Joaquin Valley, due to the efforts of the Sun Maid Raisin Growers. The latter found itself forced to solve the problem of how to get the farmer to keep books, in order to make favorable terms with dealers, railroad companies, laborers and legislators for the handling of the crop after it left the producer's hands. How the system works is told in the accompanying article.

The Athel—A Valuable New Desert Tree

By J. ELLIOT COIT

ONE of the most interesting and valuable of the recent plant introductions is the athel tree *(Tamarix articulata)* from Western sia.

This is a beautiful evergreen tree ith feathery foliage and pink flower rowing to a height of 30 to 40 feet.

It is most useful on account of its bility to thrive under desert condiions.

The athel grows thriftily under the most adverse conditions, such as intense summer heat, cold weather as low as 12 to 15 degrees, alkali and drouth.

In the Coachella and Imperial Valleys and in much of Southern Arizona it will be widely used for shade, hedges and windbreaks. In rapidity of growth it surpasses the eucalyptus.

EASILY PROPAGATED

Athel trees are propagated very cheaply from cuttings about one-half inch in diameter and a foot long, which are planted late in spring after the soil is well warmed up. The young plants should be irrigated the first year or two to give them a good start, after which they will shift for themselves.

The athel is well worthy of trial in Antelope Valley and similar interior sections, where a vigorous, drouth-resistant windbreak plant is badly needed.

THRIVES IN SAND

The athel does best in sandy soil although it will grow in a wide range of soils. There are areas in the San Joaquin Valley where the sandy soils are blown or drifted by the winds thus interfering with agriculture. In such localities the athel should prove of great value as a windbreak.

Superintendent L. G. Gore and Athel trees at Meloland Experiment Station, Imperial Valley. Photographed November, 1922, eight months after small "shoots" were planted.

Ship Oranges November 12

BUTTE COUNTY maintained her reputation as a premier place for growing early oranges by shipping the first car of 1922 fruit November 12. The oranges went to Ontario, Canada. The shipment was delayed by trouble in getting a car, picking having begun the last of October. The Vin-Mar grove produced the first fruit shipped.—M. T. RICE.

GROWS MANY VARIETIES

Richard Stansbury is growing 43 varieties of grapes on his 10-acre ranch near Shafter, Kern County. He also produces apricots, plums, berries and chickens, grows a good garden, and has many old-fashioned flowers and ornamental shrubs to beautify his farm home. This system of farming may not bring in the greatest number of dollars, but it yields much more pleasure and satisfaction than the one-crop method, Stansbury says.

SHAFTER MAY GROW DATES

It is reported that the Government contemplates the establishment of a date experiment station at Shafter. Growers are required to first get rid of scale, which they are expected to accomplish in the near future.

Home Farm Happenings

by One of Us

SPRAYING ACTIVITIES

We are getting the spraying machine overhauled — putting in new plates in the spray gun ends, taping weak spots on the hose and looking over the engine—preparatory to winter spraying.

Every fruit tree on the place gets a good dose of oil emulsion just as soon as the pruning is done and the leaves are all off.

When the weather is good, the trees dry and the ground firm, we would as lief do it with some of the leaves on if it did not take so much more spray.

We use 14 gallons of dormant soluble oil to the 200-gallon tank, and to this we will add 32 pounds of Bordeaux paste and one and one-half pounds of Kayseen spreader.

We are using the oil to get rid of spider eggs, scale, moss, blister mite and thrip eggs—and to soften the bark and invigorate the trees in that more or less mysterious way of oil spray.

The Bordeaux is for all the fungous diseases—peach blight, apricot brown rot, and the "kayseen" is a spreader—a dairy by-product consisting largely of casein.

There is a little of the gummy stuff called apricot brown rot on our prunes—the infection apparently goes in at joints and where bruises occur. Much of this infection could make several tons difference in a crop.

Then brown apricot scale is getting some headway and we want to head it off.

On one of our neighbor's orchards there is so much scale that many twigs and small limbs are fairly covered. He must have lost ten tons of prunes because of it, to say nothing of the effect on new growth.

John and I were talking about the spraying:

"Now you know how hard it is to get every tip of every twig wet, John, and how we have always found things — like blister mite particularly — in spots that are missed. Let's be sure to wet every spot this time, even if we use more spray and take a day or two longer. This extra time and material don't amount to anything compared with what the job costs anyway."

"Right you are," said John. "No dry spots this time."

GOOD ACORN YEAR

We have turned nearly all of the hogs in the woods—the brood sows, boar and a lot of barrows.

Ours are "by-product" hogs. We keep them to make money for us from waste things—not entirely for their society.

During fruit season we have to keep them shut up for awhile, for they are very clever — some of our old sows especially—and remarkably keen about opening gates and prying up fences. And they will almost climb a tree for pears, breaking limbs and doing lots of damage. They are very fond of prunes, too.

Now they have the run of the place—are picking up such fruit as is missed, rooting for roots, eating charcoal from brush pile burning, getting berries and literally feasting on acorns.

The hogs do love to get out—and on our place they are out most of the year. It seems the natural thing for a hog to do—to get all kinds of feed, make a bed in the leaves under a bunch of brush, and keep clean, as a hog always will when it has a chance.

Many butchers, particularly San Francisco packers, object seriously to acorn-fed hogs. They say the fat is oily. Maybe that is true when they have nothing else, but our local butcher killed one the other day and said it was as fine a piece of meat as he ever cut.

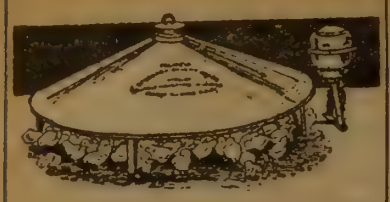
ALWAYS FIXING FENCES

Wonder if every one has the same fence troubles that we do? Seems as though we are always fixing fences.

This time we are just putting in some new posts, straightening up the wire, adding a little more barbed wire in some places and patching up gates.

No doubt it would have been better if we had put in steel or redwood posts, cement or steel corner posts and all such things, but we used lots of green posts cut on the place and "got by" as cheaply as we could.

Reliable Brooder



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Dairymen Planning Expansion

Big Opportunities Cited—Development of Asiatic Markets Under Way—Future Bright

"THE dairy industry of the Pacific slope is slated for great expansion," declares Robert E. Jones, of the California Dairy Council, contributing editor of ORCHARD and FARM. "It is bound to increase rapidly until it becomes the world's greatest dairy district. The heaviest producing cows—Jerseys and Holsteins—are here now, while the Guernseys, Ayershires and milking Shorthorns are rapidly forging ahead to first place.

"Dairy conditions most nearly approach the ideal in this favored region. The mild climate makes winter pasturage an accomplished fact over a large share of the State and renders expensive shelter unnecessary. Cows here do not consume a great amount of feed in order to keep warm, while equable temperatures and the absence of severe storms enable them to do good work every month in the year. Alfalfa, grain and other feeds grow here to perfection and in great abundance, furnishing cheap fuel for the milk factory.

"The great Pacific population centers—Puget Sound, San Francisco and Los Angeles—afford splendid home markets for dairy products. Already, however, these cities are over-supplied and outside markets must be sought for our surplus butter, cheese and milk. The Eastern States have ample quantities of these articles. Our future markets lie on the borders of the great Pacific Ocean—Alaska, Siberia, Japan, China, the Phillipines, the western part of South America, Mexico and Hawaii.

"Our trade in these countries will grow by leaps and bounds as soon as the people there learn of the superior food value of dairy products. Exports of sweetened milk from San Francisco doubled last year. Orientals are fast waking up to the fact that there is something essentially lacking in the diet of their fathers, which for ages they have faithfully followed. Rice and fish eaters are never large and robust, as these foods lack the life-giving, stimulating vitimines found in milk and some other foods. The wandering herds of the steppes of Siberia and the Manchurian plains furnish the milk and butter which helps make splendid physical specimens of the inhabitants of these regions.

"The science of biology and the most advanced system of dietetics support us in our claim that by increasing the use of dairy products people are made stronger and healthier, better able to do life's work and enjoy the fruits of their labor. We are especially interested in extending the use of dairy foods among children. Milk missionaries are needed as badly as some other kinds. Dairies and creameries are the factories which furnish the material for building better babies and healthier children. Educators are beginning to realize the value of milk in the diet of school children and are affording every facility for extending the use of this basic food among boys and girls.

"The Pacific Dairy Show can be made a powerful instrument for developing the dairy business on the Pacific slope and extending markets for our products at home and abroad. It should become a common meeting place for the leaders in this industry, where they can learn from each other the best methods of production, manufacture and sale of their products and how to solve the many problems by which they are continually confronted.

"The two shows already held are but the beginning of what we hope and confidently expect will within a few years rival the National Dairy Show, just as the Pacific International Stock Show at Portland equals the Chicago show. At the Fresno exhibit, a half hundred public spirited citizens took out $100 life memberships. This furnishes a fund which will be used as a nucleus for building a bigger and better dairy show here on the Western coast.

Oregon, Washington and other Pacific slope States are asking for an opportunity to co-operate in the movement and will be given a chance to do so. Live stock is to be added next year and a permanent home for the show secured.

"West coast dairymen must wake up to the fact that they need to advertise their business if they would get their share of the trade in cows and cow products. Recently a Minnesota breeder shipped four Holstein cows to Japan. Buyers from the Orient pass right over California and go East to purchase dairy stock and equipment, not knowing what we have for sale in those lines."—O. H. B.

The Oldest Dairyman on the Coast

N. D. PAGE of Hollister, San Benito County, won $50 at the Pacific Slope Dairy Products Show at Fresno, because he proved to be the "oldest dairyman on the Coast" in point of service. Now that Page has the money, it is probable a number of other claimants will appear to press their suits, but Page was a go-getter. He drove his little car all the way from Hollister over the narrow and steep road of the Pacheco Pass through the Coast Range Mountains to get there in time for the award. "Ma" Page came with "Pa," who, as may be seen by the picture, has whiskers, as the oldest dairyman, to be orthodox, would have.

"How long ago did you milk a cow?" asked Dr. C. L. Roadhouse, manager of the show, when Page came into the office, all excited over the things he had seen in the Fresno Auditorium.

"About 24 hours ago," he answered, looking at his horny hands, reflectively. Then he went out to see cows milked by machine, for that was a feature of the show. Page is 72 years of age and had spent 58 years in the dairy business, always as a producer. He arrived in California from New Hampshire by way of the Isthmus of Panama and settled at Pt. Reyes, Marin County, in 1864. He acquired a few "Durham" cows and began to milk them. He made butter at home and shipped it to San Francisco by schooner from Pt. Reyes, for there were no railroads or motor trucks in those days.

Page has moved three times since then, but he has always stuck by the Coast counties. His dairies have been in Marin, San Mateo, Monterey and San Benito counties. Now he has Holsteins, having abandoned the old brown cow.

Left to right: Dr. Roadhouse, Mr. and Mrs. Page, Sam Greene

The J. B. Ford Company of Wyandotte, Mich., gave the prize, and Harry Hofius of San Francisco, Coast representative, was on hand to deliver the money.—BOB JONES.

Building Milk Condensery

A $30,000 MILK condensery is being built near Tracy. Local dairymen are helping finance the plant, the capacity of which is expected to be doubled within a few years.—MATTHEW HAMILTON.

Compton Cow Wins Record

LADY VREEMAN HAPPY THOUGHT, a 3-year-old Holstein owned by Earl Graham of Compton, Los Angeles County, has finished 305 days' production of 17,492 pounds of milk, which contained enough fat to make 828 pounds of butter. This makes her a State record holder for both milk and butterfat.

New Root Crop for Hogs

MANDIOCA is the name of a Brazilian root crop which yields without cultivation an abundance of fattening feed for hogs, according to E. Z. Russell of the U. S. Bureau of Animal Industry. Other interesting items about the livestock industry in South America are given in Circular No. 228, recently issued and available upon application to the Division of Publications, U. S. D. A., Washington, D. C.

Purebred Hogs Fatten Faster

J. F. HARRINGER, a Butte County farmer of the Gridley district, found by experimenting that a litter of pigs from a pure-bred boar gained 75 pounds more than a litter from a scrub sire, in the same time. As a result, Harringer decided that the scrubs had to go. He now has ten pure-bred Poland China hogs and one boar of the same breed. In nine months he has sold $1650 worth of pork on foot.—M. T. RICE.

From Horticulture to Hogs

WHEN fruit prices began to decline from inflated war time values, many California ranchers turned their attention to pork production, the price of pigs at that time being less affected by the depression than almost any other farm product. The combination of horticulture and hogs has been especially noticeable in the San Joaquin Valley, where many large herds are being built up. The Tagus ranch, six miles north of Tulare, expects to increase its hog holdings to about 2000 sows. The Boston Land Company, southwest of Hanford, already has 400 sows and thousands of pigs. While hogs do not show such large per-acre returns as are sometimes obtained from fruit, they produce a good, steady income from year to year, helping tide over the lean years when fruit crops fail or prices fall. And while pure-bred hog prices have taken a decided tumble during the past two years, market stuff has continued to command a good figure.

Imperial Starts Testing

V. W. DE TAR, dairy extension specialist, recently started to interest Imperial Valley dairymen in having their cows tested for butterfat. His avowed intention was to get 1000 cows lined up, so that one tester could be kept busy all the time. So successful were his efforts, however, that soon nearly 3000 cows were on the testing books and the listing was discontinued until sufficient men could be located to take care of the work.

"We occasionally encounter a man who thinks the only way to make money is to save it," relates De Tar, whose energy and enthusiasm enable him to succeed so well as a dairy missionary. "When such a man is told that it will cost 18 or 20 cents to test a cow's milk, he counts his money over again and concludes that it will pay better to invest it in feed, forgetting that provender may be wasted on unprofitable animals. Of course anybody can see how much milk a cow gives, but only the Babcock test will determine exactly how much butterfat the milk contains.

"Not only will testing enable farmers to weed out their unprofitable cows, but also it will make it possible for him to replace them with animals which have been officially tested and their producing power definitely determined.'

Are California Purebreds Unknown?

JOHNSON BROTHERS, San Diego Poland China hog breeders, say the reason why the quality of California purebred livestock is practically unknown outside the State is because it costs so much to exhibit at Eastern shows, the result being that few are seen at other fairs.

"The fame of California fruit is nation-wide," says Mr. Johnson, "and we produce domestic animals of equal quality, but few Easterners have seen them. It costs nothing to ship our stock to the State fair, no matter how far away we live, and if some similar arrangement could be made for transporting our animals to Eastern shows people there would wake up to the wonderful advantages of California as a place for producing purebred livestock of supreme quality."

Mr. Johnson suggests the way to make sure that hogs will never have the cholera is to give them an overdose of serum, his experience bearing out this belief. The Johnson hog ranch is located in the Mission Valley, which is included in the city limits, the latter extending from Chula Vista to La Jolla, which are 22 miles apart. The Johnson herd boar weighs 900 pounds and stands 43 inches high, being a half-brother to the grand champion at the National Swine Show. A Johnson sow which is 39 inches tall weighs 855 pounds.

Smaller Hogs Wanted

THE size of the hogs which bring the biggest price continues to shrink. Heavy lard hogs weighing 300 to 400 pounds long ago had their day, owing to the competition of cottonseed, cocoanut and other vegetable oils, and now the 200-pound hog, which for so long has topped the market, is giving way to the 175-pound kind. Quick-growing, prolific pigs pay best.

275 Pounds at Six Months

A SUNMAID WONDER, a Duroc Jersey hog raised by John Suglian on his 125-acre farm a few miles south of Fresno, is said to be the heaviest six-months-old hog ever produced in Fresno County, tipping the beam at 275 pounds at that age. This prize porker was exhibited at the Fresno fair and was sired by June Acre Wonder, his dam being Yellow Diamond.

Mr. Suglain for thirty-two years conducted a barber shop in Fresno, but ten years ago was forced by failing health to seek outdoor work. He chose livestock farming, making good money raising draft horses for a few years. He also embarked in the dairy business, buying fourteen high-grade Guernsey cows.

Pure-bred Duroc Jersey hogs are now a prominent source of profit at the Suglain ranch. Two dozen of them recently were transported to Fresno by truck, half of them weighing a ton and a half and the other dozen 2995 pounds. The former tonsorial artist finds farming profitable and no longer misses the shave and haircut tariffs he formerly collected.—W. S. TYLER.

Charlie Marker Knows Pigs

CALIFORNIA pure-bred swine breeders say Charlie Marker, eastern porcine expert, is the one man in the United States who is capable of judging all breeds and placing the ribbons where they belong. Alfred Buckland, the Fresno breeder, once had Marker select for him an Iowa sow. When the latter arrived, her new owner was disappointed with his pig purchase, which had cost him $400. The animal developed wonderfully, however, and the next year raked in all the ribbons at the fairs where exhibited, justifying the easterner's judgment. Mr. Buckland believes the farm bureau auction hog sales at Fresno have been a great help to the industry in that section, assuring producers of fair prices for their pork product.

Best Shoats Hogging Corn

SHOATS weighing about 100 pounds are considered the best size for "hogging off" corn. They may be turned into the field as soon as the grain begins to glaze or dent and left in until the crop is cleaned up. They should not be allowed to range over more corn than they can dispose of in about three weeks.

Hogs develop stronger constitutions and keep in better health when given the free range of a cornfield than when fed grain in a pen. The expense of husking, cribbing, reloading and feeding also is saved by the former method.

Porkers Prove Profitable

FOURTEEN Berkshire pigs, six weeks old, yielded G. A. Grant, near Stockton, a profit of $56 in 110 days, after deducting their original value—$56, and the cost of their feed—$87. The pigs were kept in a lot and given plenty of skim milk, together with green alfalfa and rolled barley from a self-feeder. The feeding was directed by E. D. Schlaman, assistant farm advisor, who carefully checked the cost and receipts—MATTHEW HAMILTON.

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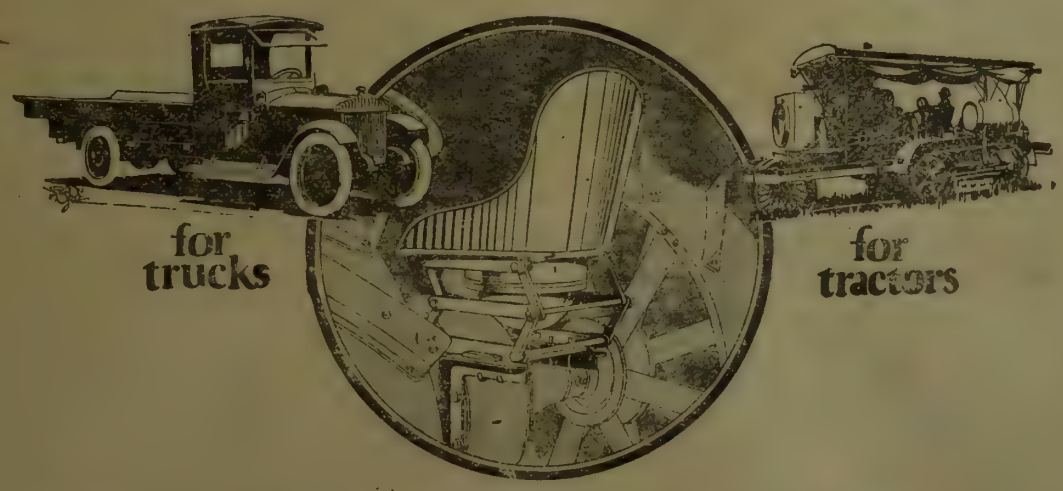

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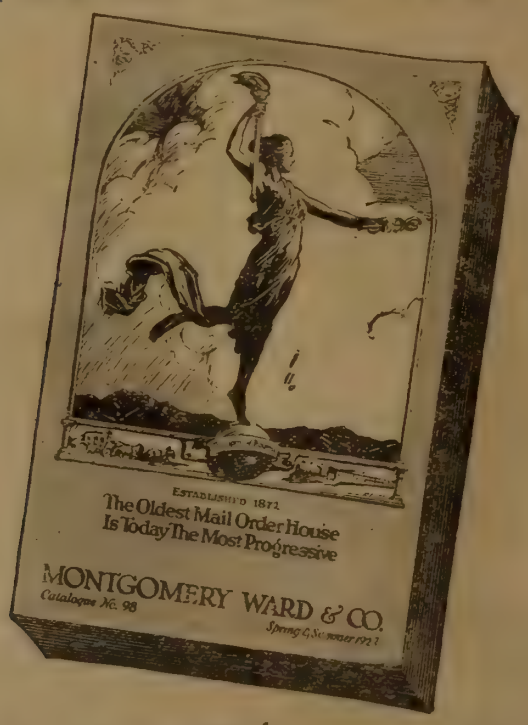

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The Beekeeper in January

By J. D. BIXBY SR.

The Commercial Apiary

BLUE-GUM and willows will begin to yield pollen early this month, and brood rearing will start in the hives as soon as this new pollen comes in liberally. Pollen, not nectar, is the great spring stimulant.

It is a good plan to look into the extra heavy colonies and see that the queen has two or three empty combs in which to start brood-rearing. Often when there is a late fall flow of nectar, the combs will be so completely filled that the queen's space for the spring brood-nest is greatly circumscribed.

J. D. BIXBY

Take out two or three frames of honey and place empty combs in the center of the hive—not at the side where the full combs may have been removed. Do not remove frames filled with pollen, as this is too valuable for spring use.

Do not delay getting supplies ready for next season. Unless you have an abundance of drawn combs, do not fail to provide more than you think you will need of full sheets of foundation. This is the one factor of success.

The Ranch Bees

Farm bees will need little attention this month. See that the hives tip forward slightly, so that all moisture may run out the entrance.

"Heft" the hives; any that seem too light may be fed with sugar syrup, either inside the cap (super) or at the entrance just before nightfall.

Now is the time to prepare hives to house the spring swarms. Don't wait until the swarm is hanging on the tree and you are called in from the "back forty" to hive it.

PREPARE FOR SWARMS

Prepare at least half as many hives as you have colonies now, for while not all colonies will swarm, some will cast two or three. It will pay to save these second swarms as they will all have young queens.

Any kind of hive will do, as long as it has movable frames. "Box hives" are illegal. Didn't know that, did you? Well, it's a fact, and the law was made in the interest of controlling bee diseases.

All things considered, it will pay to buy factory made hives. Every bee supply store sells them. When made up give them two coats of paint, SURE! then they will last you for twenty years. If not painted, they soon warp, get out of shape and leak bees if you need to move them.

If you haven't a bee smoker get one the first time you go to town. It is the one indispensable tool of the beekeeper. Never NEVER attempt to handle bees without one, no matter if your grandfather did use to pick them up by handfuls, put them inside his shirt or wear them festooned from his chin like a beard; you can't do it! Plenty of good prospective beekeepers are going to be spoiled by disregarding this advice.

A "ONE MAN JOB"

There ought to be at least one member of the family on the farm who will take an especial interest in the bees. Sufficient knowledge of the common habits of bees should be acquired to enable this person to put on and take off supers, hive swarms, and to know when there is anything radically wrong with a colony so as to arrest disease.

Do not set the farm bees on the south side of a building or tight fence; it is too hot. The partial shade of a deciduous tree, that loses its leaves in winter, is to be preferred. Set them on a good firm foundation, such as bricks or cement blocks. If you use a wooden bench, make it very firm, as even the slightest jar when handling one colony is transmitted to all the rest on the same bench. Nothing makes bees more cross. I have known more than one farm apiary to be abandoned because of alleged crossness, when nothing was the matter except that they sat on a long bench that shook at the least jar.

SOME TIMELY DON'TS

Don't fasten the buttons on your hives until it is desired to move them; then you can smoke the entrance, tip the hive up, drive the bees up among the combs with a few puffs of smoke and examine the combs for swarming or disease indications, much easier than to get in from the top.

One of the greatest mistakes made by farmers and the uninitiated is they think they must handle bees only at night. No wonder their experiments are always disastrous! The best time to handle bees for any purpose is in the middle of a bright, sunny day, when all the worker bees are afield; then if you are careful to avoid pinching bees and do not smoke them too much, you can go ahead as if there were so many flies.

Bee Notes—Combed or Extracted

PROF. GEO. A. COLEMAN, known to every apiarist in California as the head of apiary instruction in this State for many many years, recently was bereft of his mother at her home in Los Angeles. She had reached the advanced age of 85 years.

"Bees and Honey," published at Oakland for several years past in the interests of the Sacramento Valley beekeepers and the State Beekeepers' Association, has been transferred to George W. York of Spokane, Wash., and will be published in that city. Mr. York was for many years editor and publisher of the American Bee Journal and a dealer in honey in Chicago. His new publication, which will be called "York's Bees and Honey," is modeled closely after the old American and will be issued monthly, giving the upper Pacific Coast a journal devoted to a rapidly expanding industry in that northern territory.

The bankruptcy and dissolution of the State Honey Exchange was a misfortune for not only its members but for all beekeepers. The organization had a laboratory where a series of valuable and promising experiments with honey were being carried on, some of which gave great promise of success. Notably was this the case with the experiments in the bleaching of dark honey by filtration and in the development of non-granulating properties. Honey was lightened several shades and relieved of the cloudiness due to an admixture of pollen, with every promise of commercial adaptation of the process. It is believed the increased price obtainable on filtered (lightened) honey would have paid all costs of preparation, as the flavor was, if anything, improved by the process.

The Riverside County Beekeepers' Association, the largest county organization in the State, is taking steps to form a corporation to control the indiscriminate sales of honey in its territory. Many smaller producers sell at practically any price that is offered, to make a cash sale, thereby demoralizing the market for the larger producers. The new corporation probably will take the form of a stock company.

The Fraternal Beekeepers, a Southern California organization, at its recent Los Angeles meeting also appointed a committee to forward the formation of a co-operative organization to control sales and purchase supplies.—J. D. B.

Bee Man Makes Cleanup

J. K. WHITTEN, Riverside apiarist, sold fifty tons of honey the past season. He started with only 330 colonies, but increased his holdings to about 500 during the summer. When asked where he found such good bee pasture, the successful bee herder closed one eye and remarked:

"When a fisherman finds a hole where trout are plentiful, he doesn't go around and tell all his friends where to find the place." Very little good bee territory in Southern California remains unoccupied. There are 40,000 colonies in Riverside County alone, valued at 1300,000 and giving employment to 500 people.—O. H. B.

Farmers Pay High Wages

BERT BOUGHER, manager of the Pasadena city farm, who pays out an average of $3000 a month for hired help, estimates the average wage of farm hands in Southern California at $45 a month and board. This is 50% higher than the average for the United States, $29. The Pasadena farm pays a flat rate of $2 a day and board.

Honey Helps for Sixty Years

BEGINNING to "fool with bees" 62 years ago, F. O. Andrews, the Corona honey king, has made a fortune producing sweet stuff. He and his son now own 1200 stands of bees, which still have his personal attention, and 60 acres of valuable land just outside of Corona. He is vice president of the Citizens' Bank and full of pep and the joy of living. "Success with bees," says the veteran apiarist, "consists in keeping your dish right side up when it rains soup."

By O. H. BARNHILL.

Left—F. O. Andrews, veteran bee keeper. Above—Typical hill bee-pasture near Corona

AWAY back in 1860 F. O. Andrews, a leading apiarist of Southern California, had his first experience with bees. He was at that time an apprentice in an Ontario (Canada) woolen mill and was granted the special privilege of remaining home from church one Sabbath in order to take care of the bees, which were expected to swarm.

The young mill worker made a rude box hive and fixed up a raft to row out in the river under the limb of a tree on which the bees had settled. How to get down the cluster of buzzing insects, which were beyond reach, into the hive was a problem. Finally Mary Jane, one of the three Weaver girls who lived near by, and who had been an interested spectator, offered to come to the rescue.

"Tom, you little rascal, if you'll promise not to look up, I'll climb the tree and saw off the limb," she cried.

Young Andrews promised and succeeded in hiving his first swarm of bees. The next year he moved to Michigan and enlisted in the First Michigan Cavalry, fighting in the Civil War under General Custer, who was the idol of his men. After the war Andrews moved to northwest Missouri, where he kept five stands of bees. In 1873 he came to Ashland, Oregon, and for years managed the woolen mill at that place. On a homestead which he took up, back of Grizzly Peak, at the head of Antelope Valley, a bee tree five feet through was cut. When the giant fir struck the ground it split open, disclosing a cavity eighteen inches in diameter filled with honey.

One of the combs was seven feet long. Several five-gallon buckets were filled with honey, on which the pioneer and neighbors feasted all winter.

Twenty-five stands of bees were kept very profitably on a 280-acre ranch near Dead Indian Creek. The ranch afterwards was rented to a man who gave the owner a share of the honey the first year, but the following year made off with both bees and honey. Coming to Santa Ana in 1893, Mr. Andrews purchased a half interest in an apiary of 320 hives.

The next year Mr. Andrews' son arrived and began helping "herd" the bees, which produced no surplus honey that season. The following year, however, 27 tons were sold, yielding a good profit. The apiary afterwards was moved near Corona, Riverside County, which has since been the headquarters of the Andrews apiary.

CONSTANT VIGILANCE NECESSARY

"Always keep your dish right side up when it rains soup," answered Mr. Andrews, when asked to give the secret of success in bee keeping. "Carelessness and neglect of important details is the cause of most of the failures with bees. There is always danger of foul brood or some other disease destroying the colonies, which are often weakened by being left with insufficient supplies to carry them through the winter season. It is very important to have plenty of supers on hand to take care of the largest possible flow of honey and always to have the bees where there is the best available pasture."

A California apiary nestled in the foothills. The Andrews hives are moved several times each year, following the blossoming of the various nectar plants.

Like all California apiarists who are in the honey business in a big way, the Andrews move their hives several times during the season, following the blossoming of the various plants. The first honey is gathered from willows and wild flowers along the river, usually some time in February. Orange blossoms come in March, followed by black or button sage, which overlaps the orange blossom season.

Wild buckwheat blossoms the last of June and lasts until August or September. Most of the alfalfa in this region is cut for cows before it blossoms, and therefore yields no honey. There is some sweet clover along the Santa Ana River, which makes fine fall bee pasture. Blue curl or camphor weed is another good honey plant. Lemon trees yield a little honey at all times. *(Continued on Page 16.)*

Are Your Pullets Early Layers?

Simple Tests That Tell the Story

(Photographs posed for ORCHARD and FARM by the famous poultry authority, James Dryden.)

IF the poultryman can separate the laying from the non-laying pullets, he can at the same time separate the ultimate heavy producers from those which later will be poor layers—provided all of the pullets are of the same age and have had the same care through the growing period.

The photograph at the left shows a non-laying pullet, as indicated by the narrow space between the pelvic bones.

At the right is shown a "three-finger" pullet; that is, measuring three fingers between the points of the pelvic bones, and in good laying condition. As the egg organs develop and the pullet begins to lay the pelvic bones spread apart as shown.

At the right is shown another non-layer. The abdomen is hard and drawn together, and it is only two fingers deep. Almost as important as a knowledge of type and form to the successful poultryman, is the ability to judge quickly by touch and to cull with accuracy through a process of elimination.

In the laying pullet, the abdomen is soft to the touch and deep between the points of the pelvic bone and the keel bone. A pullet that is flexible and deep, like the one at left, is in good laying condition and likely to remain a heavy producer. The high average flock is not grown by chance.

Other things being equal, the pullet that begins to lay first is the best layer. She can be picked out by the size of her comb and wattles. The one at the right is in good condition.

The pullet at the left is not laying. Lack of development of comb and wattles proves it. She is of the same age as the one opposite and has had the same opportunities, but has not made good because it wasn't in her.

Trades Hammer for Hens—Former Mechanic Succeeds in Chicken Business

Back-to-Nature Methods Win Quick Success for Oregon Producer

"A BORN MECHANIC," is what the neighbors said about Charlie Armstrong. He agreed with them and took a course in mechanical engineering at the O. A. C. Shortly after graduating, however, he became interested in the poultry industry through reading farm journals and decided to discard mechanics and grow—not go—into the chicken business. Starting with neither capital nor experience, in eleven years young Armstrong has made a living and accumulated about $20,000 worth of property. His annual turnover now amounts to about the same sum. How did he do it? Thereby hangs this feathered tale. —*The Editor.*

IN the first place, you will be interested in knowing why a young man who naturally liked mechanical work abandoned an engineering career for poultry farming. "It was because a chicken farmer is his own boss, always has a job and can settle down at one place and always work at home," explained Mr. Armstrong. "People told me I was throwing away my education, which cost me several years of hard work. They also said I was forordained to failure, the sure fate of all who follow feathers without capital, previous poultry experience or any particular liking for the work. I knew I was tackling a tough proposition, but I've found lots of satisfaction in overcoming obstacles and achieving some measure of success."

A dozen acres of cheap stump land 6 miles west of Corvallis was bought "on jawbone" and a small shack built. Fortunately, perhaps, no one would loan the young college graduate money for his chicken experiment, so he was forced to start on a very small scale, meanwhile doing carpentering and other mechanical work to earn a living. A second-hand 120-egg incubator was purchased at an auction sale and enough first-class eggs secured to fill it to capacity.

All sorts of mistakes were made the first few years, but they were on such a small scale that the resultant loss was immaterial. The neighbors soon noticed that the young poultryman was producing unusually good stock and expressed a desire to get in on his game. The first chick order was for ten little balls of down, to which Charlie added one for good measure. Last spring 75,000 were sold.

Very early in his poultry operations Armstrong decided that he needed a partner and helpmate, so took unto himself a wife, who has proved a valuable business assistant as well as a competent housekeeper. Four charming little children of the stand. ard Armstrong quality now grace the poultry plantation.

The real estate holdings gradually were increased to 54 acres and a handsome residence erected as soon as the necessary funds were available. The site selected is three-fourths of a mile from the main highway. This stretch of private road recently was gravelled at an expense of $1600. Timber west and south of the farm protects the feathered inhabitants from injurious winds.

SECRETS OF ACHIEVEMENTS

What are the secrets of Armstrong's success? Being content to start in a small way and learn by experience—it was 4 years before his poultry business was self-supporting—a conscientious following of all the general principles of poultrying and consideration of customers' interests.

Within a very few years the sale of eggs and stock to other breeders absorbed most of the output. The first year Armstrong raised 50 pullets; the next year, 125; the third, 300; gradually increasing until now there are 2000 laying birds.

The outstanding characteristic of Inwood poultry farm is the back-to-nature method of raising fowls. Plenty of pure spring water is piped to all the buildings and yards and the young stock ranged over many acres of land, a portion of which is still in the wild state.

The young pullets are kept in 26 small colony houses, each of which accommodates 75 birds. These houses are moved once a month onto fresh pasture, with an ease and quickness that is characteristic of Armstrong's methods. At night the birds are shut up in their small houses, which are built on runners, and in the morning four of the buildings are tied together and attached to a tractor, which soon transports them—including the feathered inhabitants—to a new location. As many as 1600 pullets have been moved a quarter of a mile in a single forenoon. Keeping the young birds on fresh, clean ground is given as one of the reasons why they are free from disease.

BIRDS ROOST IN TREES

The pullets and cockerels are early encouraged to roost in trees, as their ancestors did. This affords plenty of fresh air at night and keeps the birds away from all vermin and filth. It is an interesting sight to see the branches of big maple trees bending with the weight of snowy birds, which are strikingly silhouetted against the blackness of the night.

As many as 1500 chicks are brooded in a single room and so successful is the operation that 715 pullets have been raised from that number of chicks. This year 9000 pullets and 500 cockerels were grown. A specialty is made of furnishing other poultrymen with young birds. Orders for as many *(Continued on Page 17.)*

Inwood type of laying house. The "winter garden" beneath provides shade in summer and protection in winter. A feed and litter carrier runs from the large feed shed at one end out over a driveway at the other.

Large shipment of breeding stock crated for a long rail and ocean voyage to the Hawaiian Islands. Right—Pullets in colony house.

California State Land Settlement *Delhi*

A few State farms remain to be sold. It is possible there will never be more in California. See article elsewhere in this issue.

Above is shown farm allotment No. 235, on the Delhi Colony, near Turlock. Typical of the type of farmstead being developed on the tract.

Left — Irrigating 1-year-old Thompson seedless grapevines on allotment of E. E. Wayman.

The exhibit at the left was shown by Robert Dodger, a farm laborer who took part in a recent community fair. All these fine vegetables were grown upon his small, laborer's home allotment which he is buying out of his wages.

Above—The modern barn on the farm of David C. Peters. The State makes loans to settlers for building purposes.

Below is shown another farm laborer's allotment with beans and sweet potatoes thriving in the garden. Home owning and community life are keynotes of Dr. Mead's plan.

E. M. Hocker's poultry house. Settlers are encouraged to diversify in their production, and are advised by experts. Note castor beans planted for shade in Mr. Hocker's poultry yard.

State Farms for Sale

By WALTER PACKARD

WHAT probably will be the last chance—at least for several years—to get a California farm in a colony supervised by the State is offered by the opening of the last unit of the Delhi project. Seventy-five small farms are ready for settlement and will be sold on extremely liberal terms at an average price of about $225 an acre.

When this price and the many advantages of the project are considered, it will be seen that a real opportunity is offered homeseekers. Two hundred eighty-five families now are living in the Durham and Delhi colonies. Most of them are making good and are well content with their farms and surroundings.

In order to make the financial burden as light as possible and still have the State's interests protected, only 5 per cent is required as a first payment. The balance of the installments on deferred principal are met by the payment of 3 per cent every six months, which includes both interest and principal.

LIBERAL LOANS MADE

The State is in position to loan as much as $3000 to a settler where it is necessary to enable him to make the improvement which he needs in order to put his farm on a paying basis. This is only done where the settler's capital does not permit him to carry through his development without this aid. Where loans are made, they do not exceed 60 per cent of the cost of the improvements, the settler paying the 40 per cent.

Five per cent interest is charged on the money advanced on these loans, and payment can run over a period of twenty years, repayment being made semi-annually on the amortized payment plan. The interest charged by the State is lower than the interest rate now charged by the Federal Land Bank, and is comparable to the interest rates charged in other countries of the world on agricultural securities.

The advantages which the settler receives through State aid is well illustrated at Delhi, where 250 allotments have been purchased. The settlement is located in Merced County, six miles south of Turlock.

LAND IS WELL WATERED

The soil is classified as Oakley sand and is suited to the production of alfalfa, truck crops, almonds and various kinds of fruit, such as peaches, plums and grapes. It is included in the Turlock irrigation district, one of the oldest and most stable in the State. Allotments vary from five-acre poultry farms to sixty-acre fruit farms. The average comprises twenty to thirty acres.

Before this land was purchased, the question of soil adaptability, irrigation rights and water supply were investigated thoroughly by authorities from the University of California, the U. S. Department of Agriculture, and the State Engineering Department.

A distributing irrigation system was necessary to carry water from the main canal of the Turlock irrigation district to the various allotments provided in the subdivision of the property.

The land is rolling and not suited to ditch irrigation. Concrete pipe had to be used. A large pipe factory was established in Delhi by the State and pipe manufactured through the labor of those who had bought farm labor allotments.

Over one hundred miles of concrete pipe has been laid. This pipe has furnished water for the irrigation of the first, second and third units of the settlement. At the present time the work of laying the pipe for the fourth unit is in full swing, some sixty-eight miles being included in the laying contract for the winter's work. When the piping is finished it will form one of the most complete irrigation systems of its kind in the State.

SOLVE DRAINAGE PROBLEM

Drainage, which is a problem faced in all irrigation sections, is being met at Delhi by the location of wells along the pipe lines where there is any danger of the accumulation of ground water. The pipe line, of course, prevents seepage and at once cuts off all danger of accumulation of ground water through the usual seepage loss from canals. Refinement of irrigation practice on the part of the settler will minimize the accumulation of ground water. The wells will make further drainage efforts unnecessary. The water secured from the wells is pumped into the pipe lines and serves as a supplementary water supply which can be used in case there is any interruption in gravity water.

PROVIDE FOR GARDENS

The cost of the main pipe line is included in the price of the land. A major portion of the cost of the distributing pipe can be carried by the State on a twenty-year loan at 5 per cent interest. The fact that water is furnished through concrete pipe, enables the settler to handle his water more efficiently than could be done under any ditch system.

The settlement is divided into various irrigation zones and although all water must be handled in rotation within each zone, crops which need more frequent irrigation during a portion of the season can be irrigated without following the usual rotation. Garden heads are provided twice a week, so that garden truck can be irrigated as frequently as necessary.

The first thing a settler needs on an undeveloped farm is a house in which to live. The cost of putting up farm buildings often takes quite a portion of the settler's resources and if he is not able to secure the services of an architect, or the advantages of competitive bidding, the design of the building may not be economical and the cost of construction may be excessive.

FREE BUILDING HELP

The State employs an architect who not only designs the buildings to meet the requirements and financial resources of settlers, but also draws up specifications, supervises construction and renders necessary aid in making the original farmstead layout.

In many cases a settler may decide to live in a building that will ultimately be a garage, or in a building which will ultimately be a part of a larger structure to be built as funds permit. The first year the settler may put up a wing of a barn and not finish construction until the first hay crop is ready to be harvested, thus saving the interest on an investment in a barn during a period when the barn would be of no value to him.

Where the cost of building, even on the most economical progress, cuts into the settler's resources to such an extent that he does not have enough money left for operating expenses, the State can loan 60 per cent of the cost of the building, this money to be used by the settler in any way that seems best. The State, however, will not loan on an expensive building, the theory being that if a settler has money enough to meet 40 per cent of the cost of an expensive house he can build an inexpensive and satisfactory house without State aid.

GROW ALFALFA FOR CROPS

Dairying is the foundation of Delhi agriculture, both because a dairy cow brings in an immediate and sure return and because livestock is neces-

Last Unit of State Land Settlement Now Available

THE Delhi State Land Colony near Turlock is duplicating the splendid success of the Durham settlement at Chico. The last unit of the Delhi project, comprising 75 farms, now is available for settlers. As this probably will be the last chance to get a California State farm, the accompanying description of the conditions at Delhi is of special interest. —*Editor.*

luscious *fruits*

why not from your own garden

If you have available space—and most of you have—why not raise your delicious, health-giving fruits?

One or several of the best variety Armstrong Pear, Peach, Apple, Fig, Orange, Plum, Avocado, Grape—planted NOW will in a surprisingly short while bountifully supply your table. Ask your neighboring fruit grower how he likes Armstrong Trees.

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Why is it that there are approximately as many De Lavals in use today as all other makes of separators combined? For just one reason, which is based on the actual experience of several millions of users over a period of forty years, who have found it the *most satisfactory*, in that it skims cleaner, lasts longer and is easier to operate and clean than any other.

98% Of the best creameries use De Laval Separators

The creameryman knows the best cream separator. Practically all of them use De Lavals. Why? Because they have found by testing the skim-milk, and by experience, that the De Laval is the most profitable. They know that a poor separator can soon waste all their profit and that a De Laval soon pays for itself. The De Laval you use is built on the same principle as the creameryman's.

86% Of the exhibitors at the National Dairy Show use De Laval Separators

At the 1922 National Dairy Exposition an investigation among the exhibitors of purebred dairy cattle disclosed the fact that 86% of them use De Laval Separators. These exhibitors of purebred dairy cattle are the cream of the world's best dairymen—they know the best separator and use it. Butter made from De Laval cream also won first place in *every class.*

64% Of the Separators in the leading butter state are De Lavals

More butter is made and more cream separators are used in Minnesota than in any other state. According to an investigation by a prominent farm paper, 64% of the cream separators in Minnesota are De Lavals—almost two out of every three. A remarkable record—which simply drives home the fact that the more people know about separators, the more they appreciate De Laval.

51% Of all cream Separators are De Lavals

—according to an investigation by a group of prominent farm papers of wide circulation. There are, still, many inefficient and worn-out separators in use today which are wasting enough butter-fat to pay for new De Lavals. Get the most out of your butter-fat with a new De Laval. See your De Laval Agent or write us.

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FREE WRIST WATCH

Handsome, guaranteed time keeper, given for selling only 40 packs of vegetable or flower seeds (mention which) at 10c per large pack. Easily sold—EARN BIG MONEY OR PREMIUMS. Get sample lot today. Send no money. We trust you till seeds are sold.

AMERICAN SEED CO., Box A-128, Lancaster, Pa.

Big Money Boring Wells

One Man One Team

Have water on your own farm. In spare time make wells for your neighbors. It means $1000 extra in ordinary years, double that in dry years. No risk—no experience needed.

Outfits for Getting Water Anywhere

Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*

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Bee Hives and Supplies

Headquarters for everything needed in the care of bees.

Send for late price list and free booklet.

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$67.00 Farm With Your Ford

The Ford-A-Tractor makes your Ford car or any old Ford chassis into a powerful tractor. Plows discs, harrows and all tractor jobs. Dependable and guaranteed. More powerful than three horses. Write today.

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of Intensive Poultry and Berry Farms

One Acre and Independence, or
The Fine Art of Earning a Comfortable Living on
ONE ACRE IN CALIFORNIA

For those who desire to dwell in sunny California without living up hard-earned capital.

For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 25 miles from Los Angeles.

Write for Literature

CHARLES WEEKS

Owensmouth California

Expansion

A million new subscribers were linked to the Bell System during the past two years—putting into operation a million new routes of talk, and a corresponding increase in all intervening facilities such as switchboards, cable and long distance lines.

No other country is so well equipped as the United States for telephone communication. Yet, because of this—because the telephone is so useful—the demand for service keeps growing greater.

The growth of telephone demand in the United States is greater than the growth of population. It is an intensive growth. An increasing percentage of the population is seeking telephone service.

The Bell System is providing for more investment, further technical achievement, more wires, switchboards and stations—and more subscribers. The American people require the best service. The best service means the most comprehensive service, not only for the necessities of to-day, but for the necessities of the future.

"BELL SYSTEM"

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy, One System, Universal Service, and all directed toward Better Service

sary for any system of permanent agriculture. The soil in Delhi is particularly suited to the production of alfalfa, which is the basis of the dairy industry. The U. S. Department of Agriculture has placed a man in the settlement to direct the dairy development along lines advocated by the government. The services of this man are available for the settlers at all times.

Early in the development of the project the dairymen decided to eliminate tuberculosis from their herds by testing the animals to be purchased, before they were brought into the settlement, and to test all cows in all herds every six months, in order to eliminate any reactors that might develop. As soon as the herds are brought to their full size and no more cows need to be brought in from the outside, the settlement herds will be free from tuberculosis.

Not only are all animals free from disease, but only high-producing cows are purchased. During the last year the Delhi Cow Testing Association stood the highest in production per cow among the associations of the State.

Community bulls have been purchased through the organization of a bull association. Members of the association organized "blocks" and each bull is under the care of members of a block. This co-operative ownership of sires has enabled the settlers to get very much better blood in their herds than would have been possible if each dairyman had been required to purchase as an individual.

Interest in fruit had been growing rapidly. Four hundred acres now are planted to trees and about three hundred and fifty acres to grapes. This year the acreage in trees will be increased by about 1000 acres. Peaches predominate in the fruit plantings, as University authorities say the soil is particularly adapted to this fruit, which is amply borne out by the fact that Delhi is in the center of an important peach growing area.

SELL PRODUCTS CO-OPERATIVELY

The settlers have not neglected the social side of the colony life. A model community hall was completed last year and has served as a meeting place for all activities of the settlement. The social and business meetings of the settlers' co-operative association are held once a month. Sunday school meets at the hall on Sunday morning. Parties, socials, farm bureau meetings and the like are all held in the community hall.

The Delhi Co-operative Association serves as a community business organization. Co-operative marketing is carried on through the various existing marketing associations of the State. No important crop is grown which cannot be marketed through some well-organized association.

The settlers are all Americans, as no alien can buy land from the State. Settlers come from widely scattered areas, but they soon find their interests are common and new friends and new surroundings take the place of the associations left behind.

(Address inquiries to State Land Settlement Board, Berkeley, Cal.)

YOUR GARDEN of FLOWERS

by Helen Temple

"I HAVE heard we may plant any time of the year out here in California," writes a Placerville subscriber. "Can we plant petunias in January?" Another writes, "Can we follow the planting calendars in the catalogs with safety?"

Were I to answer both inquirers verbally, I would look to the celebrated Bud Fisher for an appropriate reply and say, "For the love of Make, use discretion."

However, a written answer requires more discretion and therefore I dwell upon our fifty-seven varieties of climate and the impossibility of formulating a planting calendar for all sections of the State. Still, one may follow a simple planting calendar with "discretion" and feel certain of results.

The most certain method for success in planting is that of "doing as the Romans do." Experience and a careful account of the experiences of your neighbors will be of great assistance during the succeeding years. I advise each reader of "Your Garden of Flowers" to resolve to keep a diary of their methods, planting dates and results during 1923.

PLANT PETUNIAS IN MARCH

Returning to Placerville and petunias: Petunias are a tender annual and must not be started too early or they will have to be set out and the frost will get them. Early March is the best time to start them in hot beds or indoors; then when the leaves are well out in late April, set them out in the open ground. This is the safest schedule to follow in Placer County.

When following the catalog calendar for planting one must remember that local climatic conditions and the various soils must be reckoned with. I have known tender plants to succeed in a valley where the general climatic conditions were almost Eastern in their extremities, their success being due to the protection of large windbreaks and buildings. Soils of all kinds, climate of all kinds—you may have your choice in California.

An ideal garden soil is one that is light and easily worked, yet rich in humus. Were I to have my soil made to order I would go out into the hills and find a fine old oak tree. Here we would find ideal leaf mold. Then I would go to the river for clean, sharp sand. These two, well mixed with the heavy soil in our yard, would grow anything. With a soil of this type and adequate local protection, one could safely follow the planting calendars furnished with the California flower catalogs.

"Regions" in California

Often in writing "Your Garden of Flowers" I find it necessary to speak of various sections of the State. Perhaps our readers wonder just where the so-called semi-tropical region lies; or perhaps they are puzzled over the term "interior."

The rules for planting in the interior cannot be followed closely in the desert or mountain sections, yet these regions also lie in the interior.

The semi-tropical district seldom is touched by frost and is of the most even temperature of the entire State. This lies along the coast from Santa Barbara to San Diego, and varies in width, according to the position of the mountains along the coast. At best, it is only a few miles wide and one is soon out of this belt when traveling inland. For instance, the smudge pots must work at full blast in Santa Paula lemon orchards during cold nights, while an orchard within a mile or two of the ocean will not need them. Yet Santa Paula is only a few miles from the coast.

THE COAST REGION

The Coast region is that which lies along the coast from Santa Barbara to Oregon. This also varies in width according to the mountains. It averages about six miles, and usually is windy. Although seldom visited by either extremes in temperature, it is very foggy in summer and rainy in winter. A climate of this kind is excellent for the growing of plants that demand a moist, cool climate. Violets, sweet peas, chrysanthemums and plants like the begonias are a few that succeed best along the coast. However, in planting along the coast, protection from wind must be provided for best results.

The "Desert region" is the section of the State that few of the California boosters mention. However, we have the desert and all the disagreeable as well as wonderful things that go with it. The few plants and flowers that will grow on the desert are the native wild flowers and a few of the fast-growing annuals such as marigold and verbena. Castor beans will grow on the desert if they are started in seed boxes and set out just as soon as the frosts are over. This will enable them

to make quite a growth before the hot weather begins.

INTERIOR VALLEYS

The interior regions are the large valleys, Sacramento and San Joaquin, and the smaller valleys such as the Santa Clara, where the temperature sometimes drops to 15 degrees during the winter and occasionally reaches a high figure in the summer.

I have found that best success is obtained in the interior when one plants and sows according to the Eastern planting schedules. This may be varied, of course, to suit local conditions. In these valleys, plant the hardy annuals and perennials as soon as the ground can be worked, and plant the half-hardy and tender varieties when danger of frost is over.

When planting in mountain sections one must remember the temperature seldom goes very high during the summer, but often drops to freezing in the winter. Thus we must plant a variety of annuals and perennials that flourish in late spring and summer. The variety of perennials that die down in winter, to come up again in spring, such as the cinnamon vine, are best. In planting a garden in the mountains one should gather together all of the varieties of flowers and ferns, natives of that locality, and enjoy a real mountain wild garden.

How to Choose Varieties

In choosing varieties best suited to your climate and locality, the flowers will tell you whether they will thrive if you stop to learn of their native habits. California, being climatically similar to Japan, as well as to Asia and Australia, and closely related climatically in one section or another to almost all the other countries of the world, can and does grow almost every variety of plant and flower known.

If the native home of a plant is South Africa, instantly you will think, "I must provide a very warm situation for this plant." Perhaps you are living in the Sacramento Valley and have been presented with a cyclamen for Christmas. If you are unacquainted with cyclamen, quite naturally you will wonder where it will grow best. The cyclamen being native of the mountains of Europe and Western Asia asks a cool situation, with shelter from the elements.

In choosing varieties we must consider also the length of the seasons and choose plants that will bloom accordingly. Another item to remember when choosing varieties is that of the resistant qualities of the plant iself. Does it break easily? Is it brittle or tough? Such a plant calls naturally for protection. The tough textured plants such as carnations and roses will stand the buffeting of the winds.

Our Gardens Now

The rains have come; therefore we must make haste with the hardy shrubs and roses. They should go into the ground as soon as possible. If you are planning a hedge, set it out at the earliest possible moment.

Lilies, hyacinths, narcissus, anemones, ranunculi and gladioli should be planted now if it is possible to use a spade in the garden.

Evergreens, deciduous vines and shrubs, poinsettias and ornamental trees should not be delayed later than early March in most regions.

Import Dutch Bulbs

Twenty-six carloads of bulbs—principally tulips, hyacinths and narcissus—recently arrived at Los Angeles by steamship from Holland. The bulbs were packed in buckwheat hulls and held at a low temperature, crossing the ocean in fine shape.

A superior quality of bulbs can be grown on the Pacific Coast, but in only one place—near Salem, Oregon—are they being produced in considerable quantities. A large bulb farm in Humboldt County was discontinued a year ago, the stock being purchased by the Oregon concern. Recently, however, new bulb enterprises have been established in the Golden State.

Soldiers for Rough and Ready Island

THE Government is investigating the agricultural advantages of Rough and Ready Island, near Stockton, with a view of locating a number of ex-service men in the vicinity of Escalon. Alfalfa is a leading crop, while grapes and figs are being planted in increasing quantities.—MRS. T. G. HOLLABAUGH.

Facts About Burt Oats

A Recent Contribution to the Cereal Industry by the California Experiment Station

By PROF. GEO. W. HENDRY

University Farm, Davis, Cal.

ONE of the more recent contributions to the cereal industry of California, by the Agricultural Experiment Station, is a new gray seeded oat, called Burt.

After eighteen years of continuous cereal variety testing, including hundreds of varieties of oats, this type has been chosen for distribution as a distinct improvement over either the Common Red or the Coast Black varieties for the interior valleys of the State.

The new oat is a more rapid grower and the kernels fill earlier in the spring so that it is less often pinched by hot weather and drying winds than the later maturing varieties. It possesses a tall, sturdy straw which stands up well on rich lands, and as a hay crop it is both productive and of high quality.

Last season several allotments of seed were made to careful growers for further tests and these correspond with the findings at the Experiment Station. C. Harold Hopkins of the Starloch Stock Farm at Davis divided one of his fields into two parts, planting half to Burt and half to Common Red oats.

The Burt grew taller and ripened earlier and the measured yields showed it to have yielded 37.07 sacks per acre as compared with Red oats, which yielded 28.7 sacks per acre in the other half of the field. The Burt weighed about fifteen pounds more to the bag. In another similar demonstration by A. W. Lewis, Route A, Oroville, California, Burt yielded 20 sacks to the acre and Red oats 15.

Burt oats at University Farm, Davis. This field yielded at the rate of 2570 pounds or 80 bushels of threshed grain per acre. The recleaned seed is being distributed in 10-sack allotments to California farmers who will agree to grow it on fallow ground in comparison with common oats and redistribute the crop for seed.

Farm Bureau Boosts Barley Prices

THE Monterey Farm Bureau Exchange has been intrusted with the selling of 110,000 sacks of Chevalier barley out of a total production of 180,000 sacks in that county the past season. The exchange obtained quotations from England, where the grain is in great demand by brewers. As a result, the local price immediately rose from $1.50 to $1.60 per hundredweight. The exchange has already marketed 45,000 sacks of common barley and 35,000 sacks of wheat.

Sprouting Test Convinces

In order to convince a Fresno farmer of the superior value of the new copper carbonate dust treatment for grain smut, Farm Adviser Benson suggested a little game of 500, which was played with surprising results.

Half a thousand grains of wheat were dusted with the chemical named and an equal number were soaked in bluestone, a third lot being soaked in lime water after being treated with the last-named chemical.

Only 53 per cent of the bluestoned wheat sprouted, while that which was limed afterward showed a 90 per cent germination and the dusted grain 98 per cent.

"I know now why I've had to sow 70 to 80 pounds of seed wheat per acre," remarked the farmer.

The lime neutralizes the effect of the copper sulphate.

STOPS POTATO ROT — *by controlling Late Blight*

TREATING the seed will not prevent a foliage disease. You must spray thoroughly. Spray with Pyrox for three REASONS. It controls the blight; kills potato bugs, repels flea beetles and leafhoppers; invigorates the plants so they grow until harvest, thereby producing more and better potatoes. All this at one time-and-labor cost of spraying.

Pyrox is a smooth, firm paste—a chemical blend of deadly poison and powerful fungicide, with more poison than U. S. standards require. Milled like paint; goes through finest nozzles; sticks like paint when dry.

Fine for all truck, HOME GARDENS, small fruits, flowers, shrubbery. Get your supply in now, and have it ready for instant use.

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Los Angeles, California

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An unbiased, authoritative discussion of insect pests and plant diseases and how to control them. Admits that Pyrox is not a cure-all, and lets users tell you in their own words how Pyrox saves them time and money. You won't have the latest spraying data until you get this finely illustrated, authoritative hand-book.

Send for it to-day

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Repair Your Fence Now with Red Top Steel Posts

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Repair your fence for the last time. Replace old rotten wood posts with strong, sturdy Red Top Steel Posts. Make your fence permanent—and better looking. Red Tops save time, money and labor—you can drive 200 to 400 in a day. Just drive Red Top Posts down with a sledge—the patented triangular anchor locks them in the sub soil like a rock. No holes to dig—no heavy posts to lug—no setting—no tamping.

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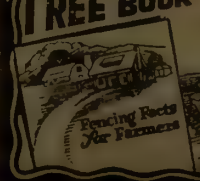

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The Charles Weeks System of Intensive Poultry and Berry Farms

ONE ACRE AND INDEPENDENCE, OR The Fine Art of Earning a Comfortable Living on One Acre in California

For those who desire to dwell in sunny California without living up hard-earned capital.

Charles Weeks, for 18 years proprietor of the most intensive Egg Farm in the world and founder of the famous CHARLES WEEKS POULTRY COLONY at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles.

Write for literature.

OWENSMOUTH.

ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate, fine water, roads, electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

FARMS WANTED

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNown, 367 Wilkinson Bldg., Omaha, Nebraska.

WANTED—To hear from owner of good ranch for sale. State cash price, full particulars. D. F. Bush, Minneapolis, Minn.

NURSERY AND GARDEN STOCK

CHOICE AND RARE BERRY PLANTS—Red Raspberries, Black Raspberries, Purple Raspberries, Blackberries, Cory Thornless, Macatawa, Mammoth, Himalaya, Phenomenal and Red Logan Dewberries, Currants, Gooseberries. Ten varieties of strawberries. Wholesale and retail. Send for free catalogue. Stanford Berry Plant Nursery, Box 726, Palo Alto, Calif.

CORY'S Thornless Blackberries. Large, early, delicious flavor, few seeds; a good seller, better eating. One year, strong transplants from heavy producing vines, 12 for $12, postpaid. Wm. Mortenson, R. 4, Box 20, Lodi, Calif.

WONDERFUL POMEGRANATE TREES are hardy, ornamental and profitable. Offer good 2-year-old trees reasonable. For prices write J. W. IRWIN, Lindsay, Cal.

HACHIYA PERSIMMONS—Extra fine trees. Pomegranates. Circular. SHERWOOD PERSIMMON NURSERY, Fullerton, Calif.

FIELD AND GARDEN SEEDS

WRITE for prices on fourteen different samples of alfalfa seed for your trial plot, and free circular telling how each kind behaves under California conditions.
BOMBERGER SEED COMPANY,
P. O. Box 986, Modesto, Calif.

HAIRY PERUVIAN ALFALFA SEED. Recommended by the U. S. Department of Agriculture and successful farmers. Apply for samples and prices. E. F. SANGUINETTI, Yuma, Ariz. The Home of Hairy Peruvian.

STRAWBERRY PLANTS

FREE—To introduce our Pedigreed Everbearing Strawberries we will send 25 fine plants free. MASON NURSERY CO., Piedmont, Mo.

FOR SALE—Carolina Strawberry Plants in large quantities. $5.00 per thousand, postpaid. G. M. Hawley, El Cajon, Calif.

PLANTS AND BULBS

FOR SALE—Millions of cabbage plants of different varieties. L. C. Johnson, Pomona, California.

MISCELLANEOUS—For Sale

FOR SALE—Seventy tons baled alfalfa. Mrs. M. D. Stearns, Dinuba, Calif.

LIVESTOCK

REGISTERED HOLSTEINS—If you intend to buy the California Holstein Breeders' Annual for 1922 will give you information on many of the leading herds in the State. Write for free copy to CALIFORNIA HOLSTEIN-FRIESIAN ASSOCIATION, 210 Ochsner Bldg., Sacramento, Calif.

IF YOU WANT TO BUY OR SELL registered or grade cattle of the dairy breeds, or registered cattle of the beef breeds, write to the largest and strongest livestock sale service in the West—CALIFORNIA BREEDERS' SALE AND PEDIGREE CO., 211 Ochsner Bldg., Sacramento, Calif.

O. I. C. OHIO IMPROVED Chester White Boars and Bred-gilts, pigs $16 pair, no kin. Write for circulars. E. Ruebush, Sciota, Illinois.

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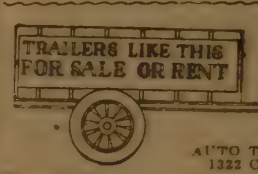

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Honey Helps

(Continued From Page 9)

The fall rains put a stop to honey gathering for the season.

"Viticulturists used to consider bee men among their worst enemies," says Mr. Andrews, "for they firmly believed that bees punctured their grapes and sucked out the juice. It was a long time, indeed, before we could convince the fruit men that a bee never breaks the skin of a grape, although it will remove the juice when the skin has been fractured by some other agency. During a long legal battle over the alleged injury to a vineyard by bees a number of the latter were shut up with a bunch of grapes in the court room. They never touched the grapes and finally starved to death. This little experiment proved more convincing than all the arguments advanced by lawyers.

"The fact that bees will starve to death on lemon honey was proved by shutting up two stands of bees in a six-acre lemon orchard on the Serrito Ranch, the trees being covered with tobacco cloth, which was stretched over the entire orchard at a height of thirty feet. The bees made five sections of very nice honey, but every one of them died before fall."

UNDAUNTED, TRIES AGAIN

As county bee inspector, Mr. Andrews has devoted a great deal of time to keeping these valuable insects free from contagious diseases. On one occasion his life was threatened by an irate apiarist who threatened to shoot the inspector the moment he touched a hive.

The market problem has been the hardest one to solve, in the opinion of Mr. Andrews, who has been prominently identified with three associations formed for that purpose. The first one was started in 1894 and proved a flat failure, largely because there was no clause in the by-laws compelling the members to market their crop through the organization. Only one car of honey was disposed of co-operatively before the society went to pieces. In 1903 another association was formed and lasted three or four years, finally failing for the same reason that proved the undoing of the first organization. It cost Mr. Andrews and the other directors $500 each to wind up the business of this society.

BEES AND GRAPES

Undaunted by two costly failures, the veteran honey farmer helped form a third association in 1917. Care was taken to insert the compelling clause, but too great confidence in a cat's back market drove the society on the rocks. Honey was sold as high as 22 cents wholesale. Banks were induced to advance 60 per cent of the market price in 1920, loaning the growers 12 cents a pound, which was more than their honey finally brought.

The price of honey this year has ranged from 5 to 10 cents, the Andrews crop selling 52 tons at 8 cents—$8320. This is not considered a profitable price, since it leaves the man who does the work only 4 cents a pound for his labor and expense, as the owner of the bees gets half.

THE MARKET PROBLEM

"Three times and out doesn't discourage me," declares the Corona bee king. "I am ready right now to help form a new bee association, for I am still convinced that in no other way can we make sure of receiving a proper price for our product. Our last organization spent $75,000 advertising California honey in New York City. We improved the market, but now the dealers get the benefit. We erected in Los Angeles a bottling plant which was a total loss.

"One of the chief advantages of an association is that it stabilizes the price and grade of honey. A good way to increase the sale of our product is to put it up in small packages, each holding one, two and up to five or ten pounds. The average customer will buy honey in these amounts, while few will purchase a large supply at one time. It isn't a question of which is the most economical method, but one of human nature."

The best way to get into the bee business, thinks Mr. Andrews, is to buy an established apiary, as about all the available bee pasture has now been pre-empted.

Trades Hammer for Hens

(Continued From Page 11)

as 1000 pullets of the same age are filled. One large shipment was made to the Hawaiian Islands, more than 2000 miles distant.

"Brooding young chicks is perhaps the most difficult of all poultry operations," says Mr. Armstrong. "There is where more beginning poultrymen fail than anywhere else. After the birds are ten weeks to three months old the most difficult period has passed.

"When chicks commence to die the owner generally thinks they have some dangerous disease and begins to dope them with equally dangerous drugs. In nine cases out of ten the mortality is due to a filthy brooder, lice and mites or improper feed. Don't feed the chicks hard-boiled eggs, musty grain or very rich feed of any kind.

"Keep their quarters absolutely clean, washing it with some mite-destroying liquid if necessary, and provide plenty of fresh, dry straw. Cold air is good for chicks, but they must at all times have access to a warm brooder, from which cold drafts are excluded. Get the little chirpers out onto the ground as soon as possible —three to seven days after hatching —to prevent leg weakness."

Armstrong's hatching egg business has increased until he now sells as high as 5000 eggs to a single customer. One man hatched 910 chicks from 1000 eggs; another, 2401 from 2788 and still another 96 from 100. One man raised 416 pullets from 1000 baby chicks.

All breeding stock is related to hens having yearly records of 240 eggs or better. One pen of pullets has laid 232 to 265 eggs each and has two months yet to work before completing the year. Tancred and Tom Barron birds, some costing $25 to $40 each, were used for foundation stock.

Five hundred pullets and 1500 hens are housed in two modern laying houses, one of which is 20x140 feet and the other 18x120, the combined capacity being 2000 hens. A two-inch pipe runs through the center of each building, supplying fresh spring water to each room. Trap nests make it possible to keep tab on the production performance of each hen.

At one end of each laying house there is a two-story feed shed, where all provender is stored and mixed. The grain is fed by scattering in straw on the floor and hoppers are kept filled with dry mashes. All droppings and other refuse is transported to the opposite end of the building in a litter carrier running on an overhead track and dumped outside, being later applied to the kale and grain patches. The methods used in handling manure, supplying water and moving pullets saves lots of labor.

The larger laying house has underneath its entire length a roomy scratching shed or "winter garden," where the hens can escape hot sunshine in the summer and cold rains in the winter. Peeled fir posts support the building, an illustration of the economy practiced whenever possible.

Electric lights are supplied by a 3 h. p. Kohler plant, which "kicks in" and begins to generate "juice" whenever a light is turned on, thus avoiding the loss incident to storing current in a chemical battery.

A motor truck which is able to exceed the speed limit of 30 miles is used for hauling supplies, eggs and stock. The proprietor is himself a high-powered human dynamo and makes every minute count, even when it comes to traveling a mile in that short space of time.

But how about Armstrong's mechanical education? Was it wasted? By no means. Every farmer needs to be an expert mechanic, because his work is largely of a mechanical nature. This is especially true of the poultry farmer, who is required to plan and erect buildings, install water and electric light systems, operate auto trucks and perform many other mechanical operations. In addition to doing all these things, a few years ago Armstrong built a large incubators. The materials cost $45 and the labor $20, making a total expense of $65, which is about one-third less than the figure at which similar machines at that time were selling.

"Three things which we constantly keep in mind in our breeding and feeding operations," says Mr. Armstrong, "are rugged, hardy vitality; large, uniform eggs; and heavy production. We strongly believe in keeping chickens out in the open air as much as possible and on clean, new ground, with plenty of fresh, green feed.

"Wheat, rape and kale are ideal poultry pasture plants. The first two can be grown together, the winter wheat being pastured in the spring and early summer and the rape afterwards until late fall, when the kale is available for winter feed. We also feed lots of buttermilk, which costs three cents a gallon at the Corvallis creameries. Chick and other dry feeds are purchased of a big milling company, which employs experts to prepare rations for every poultry need."

We Should Renew Piston Rings Oftener

THE average tractor piston ring travels 9000 miles at the rate of 14 feet a second, in a superheated condition, before it is replaced with a new ring. Is it any wonder that it often becomes worn, resulting in imperfect compression, scoring of cylinder and leakage of gas?

It seldom pays to use piston rings more than 400 hours, even after repairing. The continued use of worn, imperfect piston rings is a good example of a "penny wise, pound foolish" policy which often leads to loss of time and money.

The great amount of time and labor required to change piston rings is the main reason why this important repair job is not oftener performed, as the cost of new parts is inconsiderable. Some of the more highly improved tractors have side plates through which piston rings can be removed in a few minutes. This not only saves time, but results in the more frequent replacement of piston rings, a much-needed improvement. In most tractors it takes two hours to change piston rings.

A new ring should slide around freely in the piston, having a clearance equal to the thickness of a thin sheet of paper. If it binds it should be rubbed against a sheet of fine emery paper tacked to smooth surface. The opening between the ends of the ring should be about four-fifths the thickness of a postal card.

Two types of piston rings used in modern "gas" engines.

If the ring does not touch evenly all around, place it on the piston and spread upon it some valve grinding compound. Moving it up and down and around in the cylinder will wear off the high spots.

Piston rings should be inspected as often as possible. Dark spots indicate places where the ring is not touching the side of the cylinder, indicating an imperfect fit and need of repairs.—PROF. L. J. FLETCHER, Davis, Cal.

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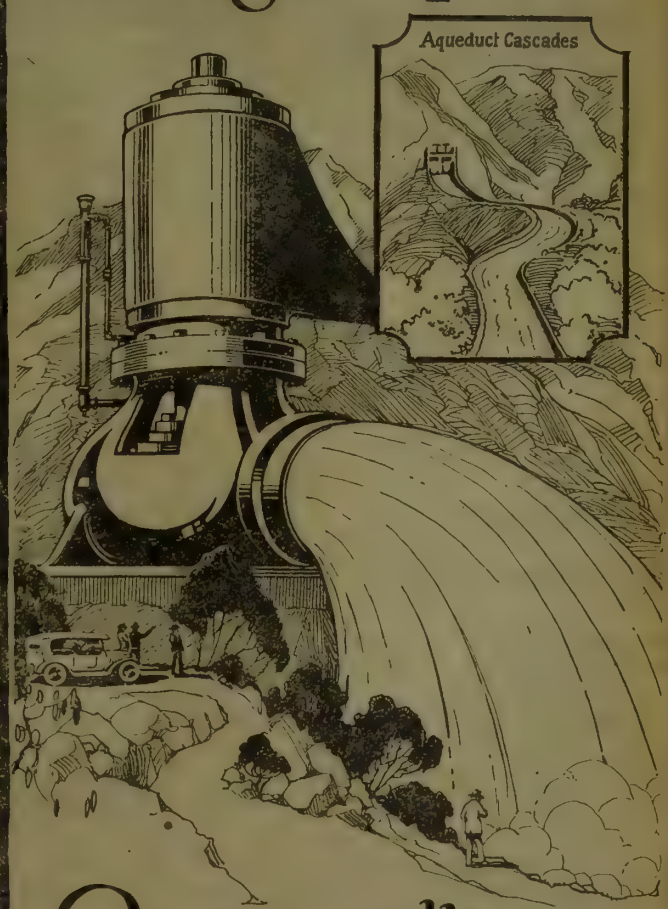

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New warehouse of Bean Growers' Association at Pittsburg, Calif.

Bean Warehouse

THE California Bean Growers' Association is the latest of the California co-operatives to handle its products direct from the field to the distributors. Recently it put into operation the first unit of its Pittsburg plant, which is shown above.

This warehouse and processing plant is probably the most modern in the country and in it the beans of its members are cleaned, processed and stored. The warehouse is 380 by 80 with a six-story cleaning, processing and sacking department; a 1000 sack capacity fumigator and warehouse with a capacity which will enable it to handle a half million sacks during the season.

It is situated on the San Joaquin River and has railroad connections with three transcontinental lines, making it possible to receive beans from all sections of the State and ship all over the world by rail and water.

The ultimate aim of the association is to pack and distribute its product under its own brand.

Weldon—Pruning

(Continued from Page 3)

an orchard so pruned. When the fruit hangs low on strong main branches it takes tremendous weight to cause breakage. Thinning of the tops of the main framework branches should be heavily done, and the pruner should begin the work of thinning when he is performing his job.

CONCLUSION FROM OBSERVATION

The writer has visited a great many peach and apricot orchards since long pruning has been practiced. For three years experiments have been conducted in the Chaffey Union High School district in four different orchards. No one but the writer yet has pruned these experimental blocks of trees since the experiments began. Thus there has been a chance for some rather close observations.

The system of pruning which was described first, has not given results for the reasons already discussed.

The second system which has been treated more in detail in this article HAS given results. It is the system that Doctor Whitten taught, and if long pruning becomes popular, it is apparent that it must be practical.

It will mean heavier production than a cutting back system, and heavy production may mean heavier thinning; it will mean fruit of satisfactory size if trees are not allowed to overload; it will mean good quality if pruning is heavy enough; longer life of trees and easier picking and, according to experimental evidence from every corner of the State, it will bring greater financial returns.

Oranges Average Six Boxes

As a result of scientific soil culture directed by Dr. P. A. Boncquet, Tulare horticulturist, the orange grove of Prof. A. McGee of Exeter yielded an average of six boxes a tree the past season, 13 boxes being picked from a single tree. The soil was very poor when Dr. Boncquet took charge of the orchard, but by the application of fertilizer, irrigation, deep plowing, liming and the growing of leguminous crops, all conducted according to specific needs, the soil has been built up until the very profitable yield mentioned has been secured. — FLOYD BYRNES.

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by George P. Weldon

(1) A common and faulty type of long-pruned tree. Production in this case is too high, necessitating propping and complicating picking.

(2) Fine development of branches in three-year-old, long pruned tree after the season's growth and before pruning.

(3) Three-year-old peach tree long-pruned from the start. Note low, hanging branches and vigorous growth. Note also six main upright branches.

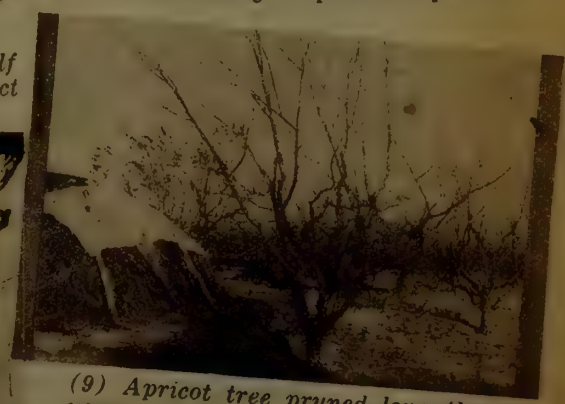
(4) Fine type of long-pruned, three-year-old peach tree at end of the season's growth.

(5) A crooked tree will straighten itself if given a chance. Note strong, erect branches growing from bent portion.

(6) Old style, short pruning, as practiced for contrast, in Chaffey Junior College experiment plot.

(7) Pile of wood removed from short-pruned tree shown in Fig. 6. Note comparison with pile at right.

(8) Long-pruned tree, showing small pile of wood removed. This means great reduction in labor costs.



(9) Apricot tree pruned long three years. Only 31½ pounds of wood removed, with 116 cuts in eight minutes.

(10) Similar apricot tree pruned short for three years—51½ pounds of wood removed with 285 cuts in 14 minutes.

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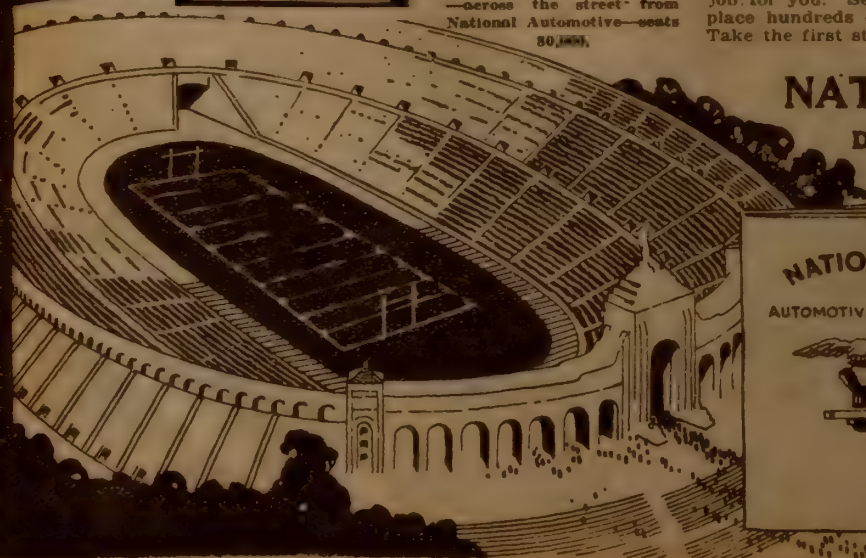

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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

JANUARY 14, 1923

Every Farmer a Mechanic

MR. AVERAGE FARMER is an inventor; most of his clever devices are never patented, but he goes right on thinking up new labor-savers. Furthermore, the modern agriculturist must be a first class mechanic, dealing every day with complicated machinery. At the right is shown the tractor-garage of a California citrus grower, made from an old galvanized iron tank.

Above—A motor truck "train" hauling Imperial Valley cotton. Left—Harvesting sorghum on Fred Gunterman ranch, near Calexico, Cal. The crop is cut, chopped, conveyed to a wagon, and made ready for the silo in one operation.

Here is a class in dairy instruction at work in the well-equipped butter and separator laboratory of the new Dairy Industry Building, University Farm, Davis. These milk producers of the future will be fortified with scientific knowledge, based on actual experience.

The tractor and disc-harrow at the right were photographed on the famous Sunshine Ranch, Los Angeles County. Instead of the usual rocks and pieces of scrap-iron, neat cement blocks have been provided as weights for the discs.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JANUARY 14, 1923

Walnut Growers Recognize Need for Pruning

Old Theories Abandoned—Up-to-Date Producers Cite Good Reasons for Moderate Thinning of Branches—Why, How and When

By ROBERT W. HODGSON

Agricultural Extension Service, University of California.

THROUGHOUT the broad expanse of California walnut groves—there are now nearly 85,000 acres—may be seen at this season the tell-tale piles of brush and the long pole saws that denote the pruning season. For after the gathering of the nuts for the first pool, usually closing about November 15, the growers' thoughts naturally turn to the next seasonal operation on the list and that is pruning.

ROBERT W. HODGSON

Time was, and that not so long ago, when few walnut orchards were pruned except when the owners ran out of stove wood and the weather demanded heat; or when the lower branches grew so close to the ground that the mules got tangled up when spring plowing time came.

And in the event that either of these contingencies finally occurred, the owner saddled up a horse, picked out a good hand-ax and in the good, old-fashioned way met the situation by hacking off all the offending limbs he could reach. The idea of pruning the walnut tree as a means of increasing production or for any other purpose had not then been born.

But times have changed and the walnut grower of today is as progressive and up-to-date as his friend and neighbor, the citrus grower. With ever-increasing land values, mounting taxes and interest charges, and increases in cost all along the line, he has found it necessary to give serious consideration to many orchard practices once deemed unnecessary.

Little or no scientific information is available on the subject of walnut pruning and the nut experts openly admit that it would be difficult with the data available at present to prove its necessity, yet they all recommend it, and growers nearly all follow some form of annual treatment. What, then, are the reasons for this change from the old easy-go-lucky-method to present day practice?

First of all, as above suggested, for convenience in plowing, cultivation and general orchard work. The tractor or mule spends a good deal of time between April and September in the walnut grove. There must be careful spring plowing and frequent cultivation and irrigation, not to mention the recently-added dusting or spraying. It is therefore of considerable importance that all low-hanging branches which might interfere with the orchard work be removed. In addition, it is well known that when a limb gets down so low as to interfere with work, it is generally so old and shaded as to be practically worthless anyway, except for cord wood.

Second, and of considerably more importance, is the often-repeated observation that the admission of an adequate amount of sunlight to the interior of the tree is intimately associated with big crops. For years walnut growers here and there have noticed the fact that trees in the border rows have outyielded consistently the trees further in, and it has long been known that the records for yields have come from trees standing by themselves, without crowding.

TAKING OUT TREES

An additional factor in bringing this lesson home has been the rather phenomenal results which a few of the owners of the older groves have secured when they pulled out from one-fourth to one-third of the trees. Instead of a decrease in crop in nearly every instance there has resulted an appreciable increase.

Reasoning that this response could hardly be due to decreased competition for plant food, some years ago a few growers started systematic pruning. The fact that none of them ever has discontinued it and hundreds of others have adopted the practice, may be considered as fairly good indications that they believe it to be beneficial.

It now appears the old idea of the walnut as a forest-like tree requiring no pruning (and mighty little else, either) is about to be definitely abandoned and in its place substituted the idea that just as all other fruit trees under California conditions, if unpruned eventually grow so dense and thick as to lose the interior bearing habit, so it is with the walnut—and the remedy is pruning.

PRUNING REALLY THINNING

However, questions of short pruning or long pruning have caused the walnut growers little worry. From no pruning at all, the jump was direct to long pruning which in reality is thinning, without going through the "grief" period of short pruning as with deciduous and citrus fruit.

Moreover, the walnut grower doesn't care a snap about the thickness of the hull on his nuts; all he wants is as many seeds, and as large seeds as possible. Therefore he doesn't have to worry about thinning, that nightmare of the peach or apricot grower whose long pruning has set three times the fruit the tree possibly can carry. The heavier the set of nuts in his trees, the better the walnut grower likes it, for he has learned that adequate irrigation will size up the seeds to the point he desires.

DEAD BRANCHES REMOVED

Therefore, after removing the low-hanging branches, the next step is to take out what dead branches there may be—for there always are a few—and then to cut out the weakest limbs so as to keep the tops of the trees always well opened up, thus permitting plenty of sunlight to filter in to the interior fruit- (*Continued on Page 18*)

Miner's Pick Uncovers Olives and Oranges

Oroville Exhibit Shows How Fruit Growing Has Displaced Search for Minerals

"THREE times and out" has been the history of the mining industry in Butte County, owing to the fluctuations of the metal market. Agriculture is proving the last and best bet in that locality, a permanent source of prosperity. The farthest north commercial citrus orchards are located here, where the mountains meet the plains: Olive growing also is a leading industry. Many other profitable crops are produced. Each year a Northern California orange and olive show is held at Oroville to illustrate the progress of these thriving industries. W. R. Butler gives his impressions of the 1922 exhibit.

—*The Editor.*

BUTTE COUNTY, with the co-operation of sister communities, fairly outdid herself in her recent exhibition of soil products.

In the center of the Oroville display of quality oranges a large cornucopia overflowed with golden fruit. Over this feature was displayed the slogan, "Oroville—The Home of Earliest Oranges." On a lower platform to the right were small trees—lemon, orange, avocado, olive, date palm, guava and feijoa.

To the left were glass bowls of ripe olives and pyramids of olive oil in cans, shaded with branches bearing ripe olives. The card over this feature read: "Oroville—The Premier Olive District of the World."

Across the aisle the Oroville Chamber of Commerce sold small boxes of oranges, and cans of Wyandotte ripe olives. The Mt. Ida and the Ehmann packing plants, largest of the kind in the world, had comprehensive exhibits of canned ripe olives and olive oil; also the Bangor district, which is located fifteen miles east of Oroville and comprises some 50,000 acres in the foothill thermal belt.

Bangor displayed a wide variety of products—olives, oranges, lemons, pomelos, avocados, almonds, walnuts, chestnuts, figs, prunes, plums, peaches, apricots, pears, persimmons, apples, grapefruit, grapes, raisins and corn.

Wyandotte district also exhibited a wide variety of canned fruits and vegetables and a large display of boxed fruits.

Next came the display of the Manzanita farm center, with its mammoth pumpkins—one weighing 175 pounds—and a wide diversity of farm products—apples, pears, quinces, grapes, oranges, lemons, nuts, dried fruits, corn, wheat, oats, barley, beans, peanuts, sweet potatoes. Also a big exhibit of canned and preserved fruits and canned vegetables and an artistic exhibit of basketry.

The U. S. Plant Introduction Station at Chico had an interesting exhibit of many new and curious fruits, nuts and vegetables gathered from all parts of the world. O. W. Baker, grower and packer, displayed in his booth oranges, olives, potatoes, yams and almonds. In the center of the north end of the building, starting from the floor and sloping to the ceiling, was a big American flag made of oranges wrapped in red, white and blue paper. This consisted of oranges from the groves of the Oroville, Palermo, Thermalito and Wyandotte districts. On a long platform in front of the flag with a border of standard boxes of oranges and a background of ripe olives were spelled out with oranges the names of the companies installing the exhibit—W. P. Hammon and the Stewart Fruit Company.

The Paradise district had a quality exhibit of boxed apples and pears and an appetizing showing of fig products. The successful Government project at Orland, Glenn County, exhibited in a dainty way its fine oranges, lemons and ripe olives.

The Biggs and Rio Bonito districts had a booth thatched with rice straw and displayed in an educational way bags of paddy rice, fancy head rice and various rice by-products, such as rice polish, bran, screenings and chicken feed. The Biggs district grew 130,000 bags of rice the past season. Other products on exhibit from Biggs-Rio Bonito were pomegranates, dried prunes, home-canned fruits and vegetables, walnuts, almonds, general farm products, oranges, pears and persimmons.

Thermalito Farm Center had an attractive booth—a summer house constructed of pillars of oranges and thatched with greenery, in the center of which played a small fountain. This district is doing some constructive work in date growing, and had an interesting display of dates to prove this fruit can be produced successfully.

The 600-acre Berkeley Olive Association orchard, the largest Mission olive orchard in the world, is located seven miles north of Oroville. The association is composed of twenty-seven members. Each member owns one individual tract, but the whole planting is under one management. It is a good example of successful non-resident co-operation on a big scale.

An interesting exhibit of snow white cotton produced near Tres Vias was a novel feature of the show. It was the acala variety, planted April 20, 1922, and harvested November 20, yielding 400 pounds to the acre.

Sacramento, "big sister" to all Sacramento Valley counties, through her Chamber of Commerce, sought to show just how the city functions for the valley with manufactories using products of the orchard, field and vineyard; rail and water transportation; larger banks and clearing houses; all doing in a big way what small communities are unable to accomplish alone. A display of fruit, vegetable and olive products, canned and processed in Sacramento and grown in Butte County, featured the visual evidences of this mutual well-being.

BUNGALOWS REPLACE SHACKS

Replacing the miner's shacks, the visitor now finds modern bungalows surrounded by attractive lawns and well-kept, productive orchards and vineyards. On the more rolling hillsides the soil is strewn with fine gravel and decomposed lava rock, with an occasional outcropping of large boulders. It is in this character of land the olive is said to do best.

For ten years local people—bankers, merchants and ranchers—have all witnessed the success of the farms watered by the old miners' ditches, which helped prove out the land and its opportunities. To bring the entire district under water requires a more elaborate system than the present one. Those interested in seeing this brought about have bought large tracts of land—more than they could eventually farm—from those owners who were unwilling to bond, thus eliminating all opposition to a $2,000,000 bond issue, which will make possible the bringing of water to 60,000 acres of land possessing proven productivity.

The future holds great things for the orange and olive growers of Butte County. They are already planning for a bigger and better show at Oroville next year and are determined to make the best possible use of all their wonderful natural resources.—WM. REYNOLDS BUTLER.

ORCHARD and FARM

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.
GEORGE GRANT, Art Director

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS

Luther Burbank, James Dryden, Walter H. Gardner, J. D. Bixby, Helen Temple, George P. Weldon, Robert E. Jones, Herbert A. Shearer, Dr. J. Eliot Coit, W. S. Guilford, Wm. Reynolds Butler

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and enclose stamp for reply.

Pithy Paragraphs

AN IOWA TREE ON MISSOURI SOIL? Community rivalry is an American institution; undoubtedly much of our wonderful development has been due to it. Here is a rather amusing example: Iowa claimed a remarkable pear tree which bore 40 bushels of fruit this year. A Missouri horticulturist of an investigating turn of mind discovered the tree was practically on the boundary line between the two rival States. And almost every newspaper in Missouri made capital of the incident to point out that the roots extended into Missouri soil! To a foreigner this incident might appear ridiculous. To an American it is significant. May we always boost the home ball team, the home town, the home State and the home land! This is the spirit that wins.

NATIONAL ORANGE SHOW LOOMS Now that another successful orange show has been held at Oroville, and Central and Northern growers have settled down again to the routine of orchard work, all eyes in the Southern citrus world are turned towards the San Bernardino show, to be held in February, which promises to surpass all previous exhibits—and San Bernardino has put on some big ones! More than $10,000 in awards will be offered. Already workmen are preparing the forty-acre tract and laying out the grounds. When the work is finished, the entire area will be surrounded by a wall of Moorish architecture. For its beauty alone the show will be well worth attending, but of even greater importance is its educational value. Watch for further announcements in ORCHARD and FARM.

STANDARDIZE THE BREEDS One valuable line of work which the Southern California Livestock Association contemplates undertaking is the standardization of the various breeds. Under present conditions, individual breeders differ widely in their ideas as to what constitutes a perfect type of each particular variety. The result is that all Jersey breeders, for example, are not working along the same lines, producing various types or families, which are confusing to buyers. These variations are especially noticeable at stock exhibitions, making the judge's task extremely difficult, since he is forced to discriminate in favor of one particular type. Of course there are published standards of all the breeds, but it is in the interpretation of the specifications that individuals differ. Herein lies the opportunity for standardization on the part of some authoritative organization, such as the one mentioned.

KEEP YOUR EYE ON THE JUJUBE Have you tasted the fruit of the jujube? Were you to sample it in the dark, you might think you were eating a small, but very good date! This interesting fruit, in the opinion of authorities, has a great future in California. The young tree illustrated on page 2 (rotogravure) of the last issue, bore at 18 months! It is growing on the experiment farm conducted by George P. Weldon of the ORCHARD and FARM staff, near Ontario. The fruit dries on the tree and on mature trees is produced in great quantities. A delicious confection is made by treating the jujube with syrup or sugar. ORCHARD and FARM predicts many profitable commercial jujube orchards within the next decade. But small experimental plantings are desirable until market demand is established.

"What's New?"—Keeping Abreast of Agricultural Progress

Kill a Cow a Day

WASHINGTON farmers killed a cow a day last year, having found, by testing, that number of unprofitable producers among their dairy herds.

Boys Grow Peach Trees

IN ORDER to help meet the growing demand for peach trees, 17 students of the Gridley High School are growing one-eighth acre each of nursery stock. This is probably the first boys and girls' club devoted to the production of young trees.—M. T. RICE.

Fertilize Cover Crops

AN INCREASE of 300 per cent in the yield of cow peas, buckwheat and rye was obtained by the use of 300 pounds of superphosphate per acre on the farm of J. A. Ream in Butte County the past season.

Prune Pears Long

SIX acres of long-pruned pears on the ranch of Charles Silva, Butte County, yielded an average of 5.83 boxes per tree, while 31 acres of short-pruned trees bore only 3.7 boxes per tree. The trees are seven years old and just coming into bearing.

Hens Eat Dried Whey

GOOD results in feeding dried whey to laying hens have been obtained by the Department of Agriculture. One hundred pounds of whey contains one and one-half pounds of the dried article, which is 30 per cent albumin and four pounds of crude sugar. Dried whey also is used in making baby food.

Sheep for Bean Ranches

C. C. STAUNTON, Ventura County farm advisor, is of the opinion that sheep could with advantage be pastured on bean land when the latter is not being cropped. He thinks they would likely help to kill out morning glory vines which are such a pest in some places.

Supplying Feeder Pigs

A LARGE supply of feeder pigs is available in Idaho, Utah, New Mexico and Texas, according to George Stoller, who says the animals are well-bred and weigh from 50 to 130 pounds each. Many such pigs could with advantage be fitted for market in California, it is pointed out.

Sulphuring Helps Soils

GREATLY increased yields of farm crops, particularly alfalfa, have been obtained in Mendocino, Stanislaus and other California counties by the use of sulphur and lime, the latter to correct soil acidity, the former to furnish plant food. Although gypsum contains both of these minerals, it does not produce the same effect as when they are applied separately, experimenters assert.

Utah Buys Sonoma Chicks

BENJAMIN BROWN and O. E. Metzger, representing the Utah State Poultry Association, visited California recently to place an order for 100,000 chicks. The first visit was made to Sonoma County, where M. W. Duster, Assistant Farm Advisor, and E. R. Temperli, inspector for the Sonoma County Farm Bureau Accredited Hatcheries, showed them around the poultry districts of the county and explained to them thoroughly the organization and operation of the breeding projects being conducted by the county, particularly the Sonoma Farm Bureau accredited hatchery project. The result was they placed their entire order with a number of the Sonoma County Farm Bureau Accredited Hatcheries instead of dividing the order with other poultry sections of the State as they had originally intended.

Value of Double Yarding

PROF. J. E. DOUGHERTY, University poultry specialist, calls attention to the fact that most of the California poultry farms are located near cities, to save transportation costs, and on land so high-priced that not enough is used to grow all the green feed the chickens need. Even where greens are grown in one yard while another is occupied by the birds, the supply of succulent forage produced is very inadequate. "Double yarding," explains Professor Dougherty, "under the economic conditions existing in the poultry industry of California today, is mainly of value as a means of keeping the soil in a sanitary condition. It permits the 'resting' of each yard alternately for a long enough period to plow, thoroughly cultivate and plant it to some quick-growing crop, such as barley. Plowing turns under the surface layer of soil so that the poultry manure it has accumulated will rot, and brings fresh, clean soil to the surface; the plowing and cultivation together loosen up the soil so that air and sunlight can penetrate; growing a green crop aids in removing from the soil the manure with which it becomes impregnated while being used by chickens and aids in other ways in cleansing the land.

"The alternate plowing and cropping of each yard while the other is being used by the chickens is the most feasible method that can be used to keep poultry yards clean and free from contamination. Even then, the soil for a distance of 20 feet around each poultry house should be sprinkled liberally with air slacked lime every spring and fall before plowing."

Growing Hubam Clover

HUBAM, the new variety of sweet clover, so widely heralded in the East and South, has been grown very successfully in the 18-acre lemon orchard of T. J. Walker, near San Fernando. Three pounds per acre was planted the middle of last April. Within two months the ground was completely covered and by August the clover in some places was higher than a man's head, the owner asserts. Ethelbert Johnson is of the opinion that Hubam is the coming cover crop for Valencia orange orchards. In spite of a cold, late spring, a March first planting was waist high by the end of June. Mr. Ethelbert is planning to make two plantings this year, one in February and another in July. Unlike ordinary sweet clover, Hubam makes a dense growth of leaves from the ground up. It is a legume and in order to obtain best results the seed should be inoculated with nitrogen-gathering bacteria. Hubam will not thrive on sour soil, which should be sweetened with lime. It makes fine hay and bee pasture, but probably is chiefly valuable as a cover crop and for green manuring.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

IV—J. ELIOT COIT

IN THE fields of practical and scientific citriculture no man stands higher in the estimation of California citrus growers than Dr. J. Eliot Coit. As an author and teacher his fame and reputation are international. Doctor Coit is the author of the only modern textbook on citriculture, "Citrus Fruits," published by the Macmillan Company in 1915, a book which is in the hands of thousands of California citrus growers and which is used as a constant source of reference. Doctor Coit had the advantage of eight years of College of Agriculture training, four years in South Carolina and four years at Cornell, where majored under the famous Dr. L. H. Bailey, receiving the degree of Doctor of Philosophy.

DR. COIT

After leaving Cornell, Doctor Coit went to Arizona as horticulturist for the Experiment Station.

He was soon called to California, where he was stationed at Whittier in the pathological laboratory under the direction of Prof. Ralph E. Smith. From Whittier Doctor Coit went to Riverside as superintendent of the Citrus Experiment Station.

When Dean Hunt came to California and reorganized the College of Agriculture in 1912, Doctor Coit was called to Berkeley to head the new division of citriculture, the first division of its kind ever organized.

When the Los Angeles County Farm Bureau was organized in 1917, as a war emergency measure, Doctor Coit was sent to Los Angeles to act as the first Farm Advisor for that county. After spending a year and a half in this work he returned to Berkeley again to head the division. Believing that a great opportunity existed for the creation of a new profession, that of horticultural consultant and expert, Doctor Coit left the College of Agriculture some two years ago to enter his chosen field, establishing what is known as the Coit Agricultural Service.

That he has been tremendously successful is best evidenced by the fact that his business rapidly is growing and expanding. In the combination of both scientific and practical citriculture, Doctor Coit today stands as the leading man in his profession in the United States. He contributes regularly to ORCHARD and FARM.

NEXT WEEK—HERBERT A. SHEARER.

Long Pruning and the Caldwell System

By J. ELIOT COIT

EVERY fruit grower is familiar with rapid growing, upright shoots on fruit trees known as "suckers" or "water-sprouts."

A few years ago scientific investigators discovered that the reason the buds at the ds of such shoots grew first and stest was because growing points ve off a substance which, for lack a better name, is called an inhibi-r. This flows down the stem and events the growth of lower buds which it passes.

The true nature of this inhibiting bstance is not yet known although me think it may be carbon dioxide. If it is desired to force any par-ular bud on a shoot into growth, is only necessary to cut a notch ove it and it immediately grows t. It is now known that the reason tched buds grow out is not be-use the plant sap is prevented from ssing them—dammed up at the bud it were—but it is because the notch lieves the bud from the repressing fluence of the down stream of hibitors.

LED TO LONG PRUNING

This discovery led naturally to the ng system of pruning which has arked such an advance in the cul-re of deciduous fruits. There is nother way, however, to force out e buds along the length of a vig-rous shoot. If the shoot is bent own to or below the horizontal, the uds all along the upper side grow t because the stream of inhibitors, sponding to the law of gravity, flows long the under side of the horizontal ranch and no longer affects those uds which happen to be uppermost, nd many of them grow out.

Because many grow, the food sup-ly is insufficient to make suckers of em all; consequently most of them ecome fruit spurs and the yield of e tree is immediately increased.

SYSTEM EXPLAINED

The Caldwell system consists of electing certain shoots before they row as long as they otherwise would, ending them over and tying them own with string. This results in the rmation of a fine lot of fruiting ush near the body of the tree, here it can be borne without prop-ing, rather than on the extremities long poles. The system is based on rrect scientific principles and is ally a refinement of the long prun-g system.

It may not be practicable in the ase of large, old trees to climb into e tops and tie down all the ter-inal shoots. But it certainly is practicable in training young trees and will result in earlier and heavier bearing.

This is particularly true in the case of apricots, plums and some varieties of pears and apples, which tend to produce little but vertical shoots from the second to the fourth year.

The system may prove of value for lemons and for deheaded olive trees, which tend to pole-like growth. Also it will prove of particular value to the suburban dweller who takes pride in developing perfect specimens of fruit trees in his garden.

Bartlett Pear started according to the Caldwell system of "tying down" limbs. F. W. Allen, Assistant Professor of Pomology, University of California, through whose courtesy this photograph is published, says: "We do not feel that tying down will entirely take the place of pruning. From our limited tests we are not ready to recommend this practice unqualifiedly for commercial orchards, wishing to withhold our final recommendations until we can feel absolutely sure it will prove desirable." Some growers hail the new plan as a substitute for pruning.

Easterner Makes Orange Money

Farmer Newspaper Man Wins Out as a Citrus Grower—His Methods

NINE years ago a Pennsylvania newspaper man came to Southern California for his health. Soon he became interested in oranges, and decided he might as well take a hand in the game while waiting for health to return. The idea of owning the same grove year after year seemed too motononus for the newcomer; therefore as soon as he had a chance to sell an orchard to advantage he did so, putting the money back in another lot of trees. In nine years he has bought eleven orange orchards and sold nine, having two in his possession now.

"People say I am lucky," admitted the orange orchardist, who prefers not to have his name published. "Maybe I am," he added, "but others who have excercised good judgment have made money in much the same way. One Claremont grower cleaned up $100,000 in oranges in fifteen or twenty years.

"Why do so many people fail with oranges? Well, I should say the commonest reason is because they do not give the trees proper care and attention. It takes a pile of money to handle an orange orchard in the right way. Many lack the necessary capital and others cannot see the profit in investing large sums in such operations as pruning, fumigating and fertilizing.

FEW WERE PREPARED

"Although the freeze last winter was by no means the first one, few orchardists were adequately prepared to fight the frost. Some who had smudge pots were unable at the last minute to obtain a sufficient quantity of fuel. It pays to be forehanded in the orange game.

"It costs about $2500 a year to take care of a ten-acre orange grove properly. Many Eastern farmers who have been accustomed to operating a 160-acre farm for that sum are unwilling to spend it all on ten acres, the result being failure. The old saying about the necessity of spending money in order to make money is peculiarly true of orange culture.

"A ten-acre grove which I bought last winter for $21,000 right after the freeze has cost me $400 for irrigating and cultivation the past season. Pruning had been neglected and cost $600, but will not need to be repeated for three years; therefore this sum may be divided by three in order to give the annual pruning expense. This also is true of fumigating, which cost $680.

"Ten tons of barnyard and stockyard fertilizer are applied in the fall and an equal quantity of commercial fertilizer in the spring. The cost is about $50 a ton, making a total of $1000. Vetch makes a fine cover crop where there is plenty of water for irrigation.

"The four items mentioned amount to $1800. Taxes, water and other overhead expenses easily bring the total up to $2500. A good orchard should yield twice this amount, leaving a nice margin of profit. A man should be able to make a living with five acres of good trees.

NETS $6000 on TWENTY ACRES

"A twenty-acre grove netted me $6000 one year. After the crop was harvested the orchard was sold. The next year the owner lost the entire crop. This illustrates the ups and downs in the orange business.

"Last year I lost the crop on a five-acre grove, but made good money on an orchard in another district. More than once I have sold $10,000 worth of fruit from ten acres—$1000 an acre. From a twelve-acre orchard containing ten acres of good trees, I sold $10,600 worth of oranges one year during the war. A neighbor and I cleared $4000 on a grove one year.

"Another year I paid $7600 for a grove, kept it two months, sold $2800 worth of fruit and then disposed of the grove for $8000. I cleared $2500 on another grove which I owned only twenty-three days. Prices advanced about $500 an acre during the war, but have now dropped back to ante bellum level."

Home Farm Happenings

by One of Us

PUTTING THE TRAYS BACK

We are making a new tray rack and getting all of the prune trays back in place. The old tray rack was not put on a solid enough foundation so that it sagged here and there. We will put big blocks under this one so that the sills will stay level and the trays will set squarely on edge.

Every broken tray we are setting aside to haul to the barn—for a rainy day repair job.

Trays were high in price this last season—one more good boost for the dehydrator. Lumber experts tell us there will never be any cheap tray shook again.

We thought for awhile we would clean up the trays when we steamed up the boiler at the dipper to "blow it off," but the weather is getting cold now and if we don't get them absolutely clean, mold will grow again before next drying season and we will let it go now until next summer.

CARING FOR YOUNG BULLS

Weaned a bunch of young bulls a few days ago and have them in a feed lot, giving them alfalfa hay and a little grain.

They would be better off in a pasture if we had one fenced "bull strong," but we haven't. Therefore it is cheaper to feed them than to have them breaking out and running all over the country.

A lot of young bulls in a poorly fenced pasture surely can make life miserable for whoever may be looking after them. Surprising how quiet and peaceful they are, though, when you get them by themselves. First thing we did was to put them through a chute with a stanchion at the end, catching each one, looking at the tattoo in the ear, retattooing any that were dim and putting on horn brands with hot number brands.

The horns are small and the branding will have to be done again, but it is mighty handy in referring to the pedigrees.

CLEANING UP THE YARDS

The winter cleanup of the farm yards is going on—and a fine lot of manure we are taking out.

Some gravel will need to be hauled into some of the low spots—an eave-trough fixed on one corner of the barn and one end of the barn floor filled up where some water gets in after a big downpour of rain.

The manure is going on the yard around the houses and around some yard trees that we just don't give enough water when we are busy with a dozen other things in the summer season. Another thing—the soil is quite heavy, and when it gets dry it is difficult to soak up again. We are figuring that in addition to supplying a lot of readily available fertility, the manure will hold the moisture better.

Had a splendid example this past summer. We put a half dozen loads around some orange trees that were showing "dry signs"; the soil would get dry in spite of us. Some weeks after the manure was applied the trees showed a most remarkable change—new growth; darker, richer leaves, and now a good crop of big navels. Also we are putting a good coating of manure on the flower beds that haven't been doing any too well.

WE WOULD TALK "SHOP"

Pardon us for talking shop, but we have just accomplished a job that has been put off for months, and we feel so good about it, we must pass the word along. One rainy day last week we decided to clean up the shop. It was an all-day job, but we burned the shavings, thus removing a fire menace, sharpened all the tools, sorted over the bolts and "junk," put up some shelves and had a general "renovation." It looks a lot better—and we are glad the job is done.

COTTON CREEPING NORTHWARD

More than a bale of fine cotton was produced the past season near Tres Vias, Butte County, Cal., which is about the same latitude as Denver and Philadelphia. The plants grew three feet high and the lint seven-eighths inch in length. The cotton was not irrigated, but received a small amount of seepage water.—M. T. RICE.

H. P. Drahl in his vineyard, noted for heavy yield and quality of product.

Drahl's Successful System

Advanced Methods Pay—Fresno County Farmer Proves Foresight Beats Hindsight

NINE YEARS ago H. P. Drahle bought thirty acres of Fresno County fruit land and began farming it in the way which to him seemed best, regardless of the precept and practice of neighbors and official advisers. His methods happened to be right in line with what are now accepted as the most advanced agricultural ideas, which probably accounts for the $1000-per-acre crops he has grown.

Three years ago three acres of Emperor grapes yielded thirty tons of fruit, which sold for five cents a pound —$3000. The past season 700 Muir and Lovell peach trees yielded twelve tons of the finest kind of dried fruit. From less than three acres of Malagas, thirty-six tons of fruit were picked the past season. Six acres of Emperors in their first fruiting season produced thirty-three tons of grapes. The Malagas were sold for $50 a ton and the Emperors for $70.

CROWNS GRAPE LOW

The above figures speak for themselves and tend to prove the merit of Drahle's methods. Contrary to the usual practice, he does not believe in high crowns for Thompsons, preferring to head them at fourteen inches.

Cover crops, ample irrigation and subsoiling are some of the outstanding Drahle methods. Melilotus indica is sown in October at the rate of six pounds per acre, after the ground has been irrigated three or four days, using three furrows to each middle. The crop is cut up with a disk in March or April and then turned under with a mold-board plow. Heavy annual crops of clover keep the ground mellow, so that it doesn't pack.

A 75 horsepower tractor is used to draw two subsoil standards 28 inches deep between each two rows of vines. The ground had been in grain forty years before it was planted to grapes and had acquired a very hard, tough plow sole, which neither water nor roots could penetrate successfully.

Peach trees are not cultivated during the summer season, regardless of weed growth. Irrigation is resumed as soon as the fruit is gathered, in order to develop strong bud and wood growth for next season's crop. Wiring limbs together has been tried and found superior to propping, for trees which are sufficiently well balanced to make the former method practicable.

The writer has never seen finer peach trees than Drahle's. Although not pruned by the long method, they have not been cut back enough to reduce the vitality of the tree nor lessen the crop of fruit. An abundance of new fruiting wood is found in all parts of the tree, from the ground up.

A visitor once asked Drahle why he left so many small limbs near the ground, comparing one of the trees to a Cochin China rooster, with feathers on his legs. It was explained that bare limbs are unprofitable and that the bearing wood should be kept as low down as possible, as peach trees have a strong tendency to produce fruit higher up each year, while twigs on the main branches are apt to die. The higher up a tree has to "suck sap," the less fruit it will bear, he maintains. The thriftiest peach trees are those which have plenty of green growth on the main branches, it is pointed out.

Drahle is a big, burly Missourian who believes that every farmer, no matter what his main crop may be, should keep a cow and have a garden. He blames the auto largely for the disappearance of the family cow and truck patch.

STANDS BY COW

"Some of my neighbors say they can buy vegetables cheaper than they can grow them and that they won't be tied to a cow when they can go joy riding," says Drahle. "I find it cheaper to produce vegetables than to buy them and consider it much nicer to gather all the fresh garden stuff I want from my own garden than to depend upon a precarious supply of doubtful quality from the city.

"As for the cow, I'd rather be tied to a milking stool a few minutes each day than to do without fresh milk and cream. An auto is a great convenience, but it can't take the place of a good family cow."

Three thrifty lemon trees and a great profusion of roses and other flowers add to the attractiveness of the Drahle home. Two thousand dollars an acre was offered for the place a few years ago, but the owner wasn't tempted to sell, because he didn't know where he could better himself. Land prices have since dropped considerably, but that doesn't worry Drahle, for he likes his work and earns a good living.—O. H. B.

Typical peach tree in Drahl orchard. Note ideal shape. Modified long pruning.

Success With Hunisa Grape

THERE are not in the State of California more than five small Hunisa vineyards, plus a number of scattering vines. With rare exceptions the grape has proved a complete failure commercially, although it has merits that might make it vastly superior to the Emperor as the standard late variety.

This grape is larger than the Emperor, better colored, fine in flavor and a great keeper. No other variety can compare with it in production. Usually it has only a single seed in each grape. Its disastrous failing is in producing long, straggley bunches with numerous small, seedless grapes, which spoil its appearance and sale.

G. R. Goldman, at the edge of the hills east of Cutler, on dry bog soil, is growing this variety successfully. Whether his results can be duplicated remains to be seen. He planted an Emperor vineyard a number of years ago, replanting the "misses" with Hunisas.

He now is growing these vines with much lower heads than the Emperors and in pruning leaves few spurs for fruiting. The upper bunches often have a few "shot" berries; the lower clusters are firm, well-filled and practically free from this fault.

In appearance and quality, they greatly surpass the Emperors. In the middle of November his unpicked Emperors were as much green as red, but the Hunisas were colored finely. It is proper to state, however, in the Munson vineyard on the same date, the Emperors were fully as well colored as the Hunisas. This was sandy soil. These Hunisas were on wires, and "shot berries" were plentiful enough to make the crop practically worthless.

It is difficult to state whether soil, pollination, or short pruning is responsible for Mr. Goldman's success with this variety. He prefers short pruning and keeping the bunches as low as possible and yet off the ground. The growing of these grapes is only an experiment and trials so far make it more of a failure than a success, but its merits make it worth watching. —TULARE FARMER.

Pruning Doubles Yield

Three hundred long-pruned apricot trees in Tulare county yielded 32 tons of apricots the past season, while the same number of short-pruned trees bore only 14 tons of fruit. Thirteen tons of peaches were picked from ninety long-pruned trees, while only four and one-half tons were harvested from the same number which had been short-pruned.

Will Plant Peaches

CARL E. GERDES of Terra Bella has four acres of Phillips cling peaches which the past season produced nine tons of dried fruit, and six acres of three-year-olds which yielded twelve tons. Prices and production pleased him so well that he is planning to plant more peaches.

Will Loganberries Come Back?

WAR prices brought a great boom to the loganberry buisness in the Willamette Valley. Prices were "kited" to 13 cents a pound, which was double the amount necessary for profitable production. Farmers, however, are like other people when it comes to getting all they can while the getting is good, hoping in this way to retrieve losses on products which they have been forced to sell below the cost of production.

Conservative canners sounded a note of warning, trying to hold the market down to 10 cents, but without avail. Everybody wanted loganberries, the fruit having a great vogue the two years following the close of the war. Soft drink manufacturers squeezed the juice out of more than 3000 tons of loganberries, and for a time it looked as though the beverage would rival grapejuice.

HEAVY PLANTING

Everybody planted loganberries, attracted by the fabulous profits—$500 to $1000 an acre—which in a few instances were made with this popular berry. Growers paid as high as $250 an acre merely for the privilege of plant propagation.

Then the crash came. Dealers were forced by the high price of both sugar and berries to charge enormous prices for canned loganberries, which could not be realized when the period of liquidation and readjustment came two years ago. Canners could not book orders for the 1921 crop and some of them ceased operations entirely, so far as loganberries were concrened, while others took them on consignment, afterwards paying what conditions warranted, which in some cases was only 3 or 4 cents a pound. The juice presses were allowed to dry up, while rich, red berries rotted on the vines. The fruit boomers who had been predicting that there would never be enough loganberries produced to supply the ever-increasing demand were strangely silent during the crisis.

Similar conditions prevailed during the past season. Growers held meetings and demanded 6 cents a pound, which they said was as cheap as loganberries could be produced at a profit. The canners were inclined to agree with them, but found growers who were willing to sell for as low as 3½ cents, so were unwilling to pay more.

ASSOCIATION HAS TROUBLES

The Oregon growers, Statewide Fruitgrowers' Marketing Association, tried to hold the price up to at least 5 cents, but controlled only 1500 tons out of a total production of 8000 tons, so were unable to handle the situation in a satisfactory manner, the price slumping to 4 cents.

The result is that many growers are threatening to dig up their vines, and some will undoubtedly pursue this course.

What of the future? Will the loganberry come back? Many observers believe it will. There are almost as many ups and downs in the fruit business—especially berries—as in a city elevator operator's life.

This is by no means the first time that loganberries have sold below production cost. The cause then was lack of markets and an adequate marketing association. The present depressed prices are due to the same causes. Let the growers get together and pool their crop with the Oregon growers or some other reliable organization, not neglecting to advertise and open up new markets for their products, and there is every reason to expect satisfactory prices.

MORE ADVERTISING NEEDED

The loganberry is comparatively a new fruit. Many prefer it to the raspberry and blackberry, but not one person in ten who is familiar with these fruits has ever heard of the loganberry. The fact that successful loganberry culture is restricted to comparatively a small area in the Pacific Northwest is one reason why the fame of the berry has not spread more rapidly through the United States and other countries. While this is a disadvantage as far as getting the fruit into the hands—or mouths—of the people is concerned, it will enable the comparatively few growers who are so fortunate as to live in the Northwest to obtain fancy prices as soon as people become acquainted with loganberries, because the former will have a monopoly of production.

As soon as the juice makers adjust their financial difficulties and again go into action, loganberry juice will once more compete with grapejuice as one of the most popular and healthful beverages enjoyed by man. Meanwhile, keep the loganberry vines pruned and plowed and they may yet yield rich rewards.—O. H. B.

Remove Dead Figs

THE removal of old, dead figs from branches during the winter is a practice not carried out by the majority of fig growers, but the Beckwith Company of Reedley strongly advises it. They state:

"We might mention here also the importance of preventing a certain form of 'die back.' At the end of the season there will usually be found a few figs still clinging to the tree which, by reason of the cold weather, have failed to mature. If these are not stripped off they will decay and the exuding juice which spreads on the limb furnishes a home for certain injurious bacteria causing the so-called 'die back.' Along in December the figs can be jarred off quite readily with a lath."—TULARE FARMER.

Lespedeza Clover

IN answer to an inquiry regarding Lespedeza, a species of annual clover grown to some extent in the Southern States and loudly boomed by a prominent national agricultural weekly, Prof. M. P. Kelley of the agronomy department of the California College of Agriculture, writes:

"Lespedeza clover is not now grown to any extent in California. It has been many times tried experimentally, but has never proven a success under our conditions."

Purebreds Pay Best

PUREBRED livestock is 40 per cent more profitable than scrubs, on an average, according to the U. S. Bureau of Animal Industry, which fixes the percentages for the various varieties as follows: dairy cattle 48; beef cattle, 37; poultry, 41; swine, 28; sheep, 38; horses, 37; goats, 37.

Fall Freshening Pays

RECORDS of 10,000 cows show that cows which freshened in the fall produced more milk than those which calved in the spring, also exceeding in production those which freshened in either winter or summer. A higher average price was received for the product of cows which freshened in the fall.

Milk Improves Children

THE introduction of milk into the schools of Riverside reduced the number of children suffering from malnutrition 25 per cent, according to a statement made by L. H. Moulton of the State Dairy Council at a recent stock breeders' meeting.

"Milk is a natural food for boys and girls and parents are just waking up to the fact that nothing is cheaper, more wholesome or more easily fed than this popular lacteal product," declares Mr. Moulton. "As dairies are made more sanitary and the T. B. test given more universally, people's confidence in this basic food increases and sales multiply accordingly."

Adding Machine Great Help

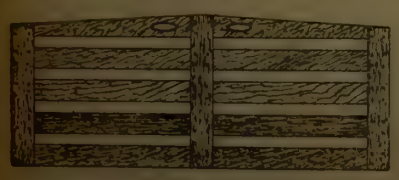
MAX ARP, successful Oregon dairyman, finds that a small adding machine soon pays for itself in computing monthly milk records and in casting up other accounts on a big dairy farm. There is no reason why a farmer should not employ the same mechanical equipment as other business men, provided the same operations are to be performed in sufficient volume to warrant the expense. Dealers in office equipment will find enterprising breeders of pure-bred livestock ready to consider the purchase of any apparatus which will increase the efficiency of their operations.

Live Stock Hurdle

A LIGHT, easily handled live stock hurdle is a great help when separating sheep or hogs. It becomes a necessity when judging stock in the show ring, or selling or buying in the auction mart; and at home when exhibiting fat stock, or breeding animals before a prospective customer.

Petted animals, like spoiled children, behave badly before company. In any case it is bad form to whip them; swearing may lose a prize ribbon or a customer, therefore, the safe and sane way is to secure some thin oak boards five or six inches wide and to make a hurdle.

Six-inch boards measure about five and one-half inches when dressed; that is wide enough to make strong



LIVE STOCK HURDLE

brace joints by putting in four stove bolts at each intersection where the upright cleats cross the horizontal bars. The cleats should be double, three-eighths thick and bolted through as shown.

The lengthwise bars may be three-eighths or thinner if the boards are as tough as they should be. This construction will be light and strong and a car along the highway. This is espe- will brace the hurdle in a workmanlike manner and it will be an ornament as well as a useful addition to the stable or stock pens.

The drawing shows a hurdle eight feet long and about three feet high. The size, however, may be changed to suit individual preference. It is better to make small openings between the boards to discourage hogs from attempting to burst through.—H. A. SHEARER.

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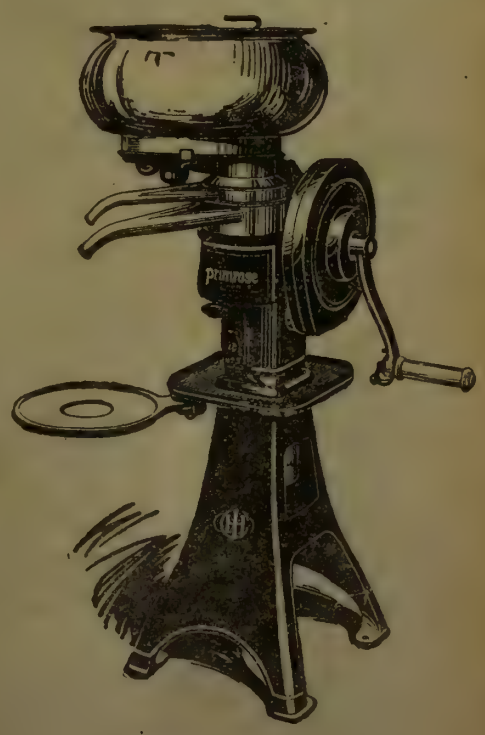

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[BALL-BEARING]
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Cream Separators

are found on many farms, helping the owners get all of the cream out of the milk, and in good condition to bring the top market price. If you are not familiar with the Primrose, you ought to go to the store of the McCormick-Deering dealer and see the one he has on his floor. It is the highest development in cream separator construction. For years the Primrose has been known to excel others in efficiency, durability, close-skimming, light-running, and long life. And the added feature of ball bearings now places it one more step ahead.

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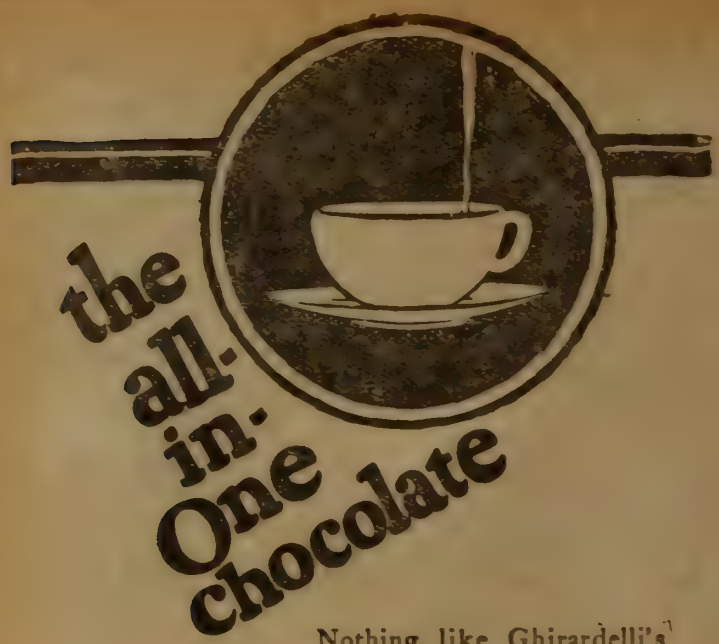

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Silos in the Imperial Valley

How Southern Farmers Are Handling Their Silage Crop

I. W. EPLER, Imperial Valley dairyman, cuts down the cost of silo construction by digging a deep pit and plastering up the sides. He has three of these underground silos on his ranch one mile north of El Centro. Each one is 14 feet across and 22 feet deep, has a capacity of 90 tons and cost $135. About half of this amount went to pay for the curbing, which is four inches thick and extends two feet below the surface of the ground and six feet above. The silage has an unpleasant habit of spoiling a little just where the curbing joins the lower portion of the silo.

Mr. Epler fills his pit silos with milo maize and honey sorghum, putting in one load of the former to every two loads of the latter. The sorghum generally yields 40 tons per acre. One crop made 47 tons, an immense amount of sweet juice and palatable fiber.

"In digging a pit silo, stop when you strike the water table," advises Mr. Epler. "When your silo is down in the ground you need never lie awake at night when the wind blows, fearing the structure will get out of plumb and look like the leaning tower of Pisa.

"It is easier to empty a pit silo than the other kind, because you are not bothered with the wind blowing the feed away and the box in the center can be filled by moving the material only once, whereas it is necessary to make two throws to get silage to the door of an above-ground silo.

"We use our hay derrick for emptying a silo, employing the team which pulls the feed wagon to lift the box out of the pit. The box holds about one-half ton and has a hinged bottom, with automatic dump trigger.

"Sorghums solve our feed problem. We give our cows plenty of alfalfa hay and pasture, but find they need grain and silage to make a balance ration and also to enable us to carry as many cows as possible on a given acreage. We believe two or three tons of silage has as much feed value as one ton of good alfalfa hay."

COWS AVERAGE POUND A DAY.

W. A. Swerdferger, another milk producer of the Southern valley, takes contracts for cutting sorghums and putting it into silos for $2 a ton. Men are paid 30 cents a ton for cutting the stalks down and throwing them into piles, earning $4.50 a day at this work. In loading sorghum, two men stand in the middle of the hay rack and pile the stalks at either end, working towards the middle. This makes it easy to unload, preventing the stalks from getting tangled.

Two cement silos 18 by 40 feet, which cost $[illegible] and hold 500 tons, were filled by Mr. Swerdferger one year with honey sorghum, of which he grew the record crop of 52 tons per acre. Cottonseed meal was fed with the silage to 100 cows, which averaged 100 pounds of butter per day. That was pretty good, but Swerdferger tells of a cow which supplied all the milk, butter and cream his family could use and in addition enough cream to make two pounds of butter per day to sell.

The idea of cutting sorghum by hand in a region where the temperature is often 100 in the shade—and no shade—does not appeal to the corn belt farmer with shock fodder memories—or anybody else, for that matter. Other Imperial farmers very successfully perform this hard, disagreeable work with machinery.

HARVESTING SORGHUM BY MACHINERY.

C. A. Magaw, who is farming one of the Timkin ranches of 520 acres, cuts hegira grain sorghum with a binder and shocks the surplus left after filling two galvanized iron silos 20 by 34 feet, which hold 460 tons of silage. When the latter is all fed, the silos are filled with shock fodder, which is wet down as it is chopped up for silage. The silos are filled three times each year.

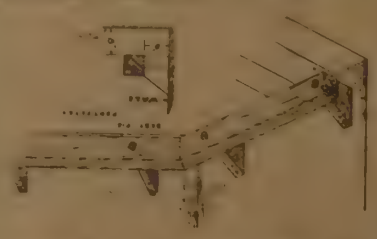
Fred Gunterman goes Magaw one better and not only cuts sorghum by machine power but chops it into silage as soon as it is severed from the ground and elevates it into a wagon which is driven alongside. This labor saving dual machine is operated by a gas engine and drawn by a tractor. The contents of the wagon are sucked up and blown into huge wooden silos by a machine which is run by a belt attached to a tractor.

Gunterman has near Calexico a model half-section farm, on which he produces an enormous quantity of first-class feed. Soil fertility is maintained by an intelligent system of crop rotation, alfalfa being the principal legume employed.—O. H. B.

Baby Pig Protector

EVERY farrowing pen should have a rail fender near the wall to prevent the sow from crushing the baby pigs when she lies down. Planks often are used for this purpose, but a rail is better for several reasons.

The rail should be about three inches square, and securely attached to the wall about eight inches above the floor and about eight inches from the wall. This spacing gives the little fellows plenty of room to get out of the way and to remain in sight of the attendant. There is room to lift them out without disturbing the sow. The



pigs are in sight where they are not likely to be left out long enough to become chilled. There is no hiding place such as a plank affords.

Plank fenders have cost the lives of a great many pigs by hiding them away from the attendant until they become chilled.

Pig fenders should be well braced and firmly attached to the wall by bolts and brackets. Lag screws fastened in the studding are perhaps best and easiest to use. They should be long enough to pass through the rail, bracket and wall boarding and to get a good screw hold in the studding.

The supporting brackets should be placed high enough to be out of the way of cleaning the pen.—H. A. SHEARER.

How to Treat Warbles

ARE there any warbles in your cattle? Better take a look, warns a prominent breeder. One estimate places the annual damage done by these troublesome little insects at hundreds of thousands of dollars. Their presence is indicated by small lumps on the back of the animal. Examination will disclose a hole through which the grub breathes. Squeezing the lump will force the warble to protrude, when it may be pulled out with a tweezers. Prevention consists in keeping the flies away in early summer with an oil spray. The holes made by warbles injure the value of the hide. The life history of warbles is a subject upon which there is much disagreement, but the above facts are the essential ones needed in controlling the pest.

New Zealand Cow Wins

ALCARTRA PIETERTJE CLOTHILDE, a New Zealand cow owned by A. V. Marks of Taraniki, has given in twelve months 34,000 pounds of milk containing 1170 pounds of butterfat, the equivalent of 1462 pounds of butter. There are only four other cows which have produced over 34,000 pounds of milk in a year and five which have exceeded the fat figure.

IMPORT CHEAP FIGS

A few weeks ago Spanish figs sold in New York City for 4½ cents a pound. Even with a 2-cent tariff, foreign figs compete with the home product, it appears.

INCREASING "GRASS" ACREAGE

An increase over last year of 50,000 boxes of asparagus is expected in the amount contracted for by the Hume Canning Company at Benicia for the coming season.—DESALONE HOLLABAUGH.

Getting Ahead on Forty Acres

Corn Belt Farmer Makes Good

THERE is a general impression among the big grain ranchers of California that a man cannot make a living on 40 acres devoted to general farming. L. N. Irwin, a former Illinois farmer, came to the Sacramento Valley 10 years ago and not only has made a comfortable living on that amount of land, but also has gained $1000 a year. Here's his story.

By O. H. BARNHILL

CAN a man make a living on 40 acres of California land used for general farming? If this can be accomplished successfully, it will go a long way towards solving the problem of idle acres. California has 2,000,000 acres under ditch but not cultivated, according to Dr. Edwood Mead, who was commissioned by the State to make a special study of the land settlement problem.

The average man is not adapted to specialty farming, which largely accounts for the great number of failures with fruit, poultry, bees and other agricultural products suited to small tracts. Most people need at least 40 acres of good land where they can follow mixed farming in order to make a living—to say nothing about surplus earnings.

Numerous attempts have been made to cut up quarter sections into 40-acre farms and place a family upon each tract of this size. Many of these projects got no farther, for the farmer failed to make good, because of either lack of capital and knowledge of local conditions or other causes.

STARTS WITH $4000

These failures did not daunt L. N. Irwin, a former Illinois farmer who was going strong on a rented farm, but finding it pretty hard sledding. He came to California in search of cheap land and was somewhat taken aback to find he would have to pay $250 an acre for impoverished grain land in the Sacramento Valley. Upon investigation, however, he found that the land would produce about twice as much feed as could be grown on the same area in his home State, where real estate prices were even highetr.

Therefore, he chartered a car and moved out, buying 40 acres three miles west of Dixon for $10,000. He had only $4000 werth of this world's goods and there was nothing on the place but an old barn, but arrangements were made for paying the balance of the purchase price and developing the property.

A team of Percheron horses and a pure-bred Holstein calf were included in the car of goods which had been shipped from the East, the intention being to make cows and horses the two chief products of the farm. Experience indicated however, that these animals do not mix well on a small farm, and the horses were dropped.

DEVELOPS DAIRY HERD

A Holstein herd of 27 animals, which includes 18 cows, has been built up, needed improvements made and the place put in shape to make some real money. Meanwhile, Mr. Irwin has made a good living for himself and family and gained about $1000 a year for the 10 years he has been here, which is a very creditable and encouraging accomplishment. How has he done it?

Cows and alfalfa are the two pillars upon which success has been built. Instead of a crop of grain two years out of three which is what the surrounding land produces, Irwin's farm yields a half dozen crops of hay each year. The alfalfa is not pastured in the lazy man's way, but allowed to grow unhindered until it has reached its maximum value. A few acres are reserved for pasture and a few acres more planted to almonds. The nut trees now are large enough to add materially to the family income.

Sir Aggie Mead De Kol is the herd sire. His seven nearest dams have yearly records averaging upwards of 1000 pounds of butter. The cows constitute an exceptionally fine herd of Holsteins, in striking contrast to poorly-bred scrubs which depend upon pasture for feed and barely get by, during the winter season. A fine lot of calves rapidly are growing into good money.

Irwin ranch reflections. This fine herd of Holstein cows is the main source of revenue on the forty-acre farm.

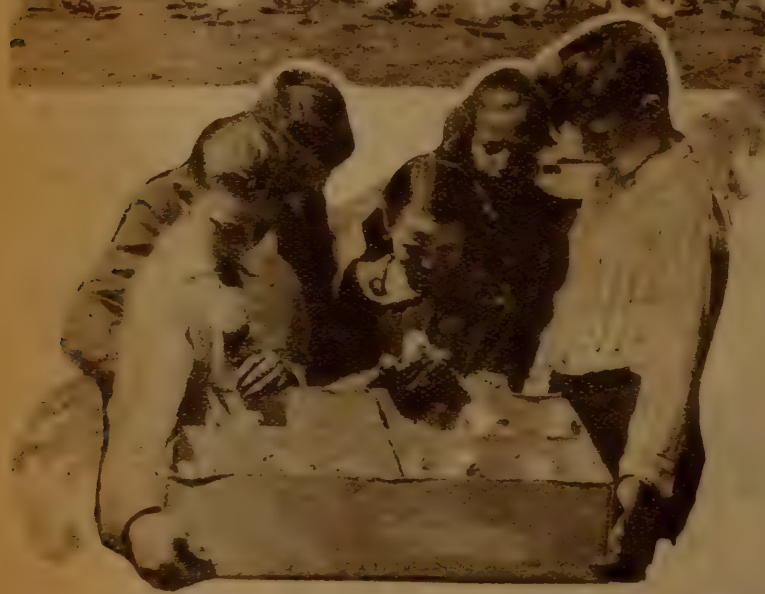
Contented calves having their first picture taken.

A model dairy heretofore has been the main source of income, but is to be gradually superceded by the pure-bred stock business. Dairying is hard, confining work and after a man has worked at it half a life time he generally plans to do something which leaves more time for other things.

A milking machine takes the place of the hired man, a substitution which is appreciated by the entire family and especially Mrs. Irwin. This mechanical milker is to be operated by electricity, but has heretofore been run by a two-horse-power gas engine. It has proved a success, but needs to be properly cared for, and the cows must be carefully *(Continued on Page 18)*

The Irwin Family in Front of Their Fine Farm Home in the Sacramento Valley.

Sonoma's Daring Step—What Accredited Hatcheries Are Accomplishing



"America's Egg Basket"

Sonoma County, famous for its Petaluma and other poultry centers, as well as its diversified products, is one of the world's largest egg producers. Above is shown a typical Sonoma County flock. Left—Petaluma school children with baby chicks furnished by Chamber of Commerce, as part of its poultry extension program. (International Photo)

By R. B. EASSON

Extension Poultry Specialist, University of California

REALIZING that definite and lasting results might not be obtained until 1924, Sonoma County in October, 1921, started a revolutionary movement in the management of chick hatcheries.

The idea found expression in the now famous "Accredited Hatchery List," made up of commercial chick establishments which were willing to subscribe to very rigid rules and regulations, and submit to regular inspection.

Already difficulties have been encountered and overcome, while criticism and dissatisfaction have not been lacking. Those backing the project, however, feel that results already more than justify its existence. One object was to do away with certain conditions of selling and advertising baby chicks which were considered detrimental to the best interests of the county.

The Farm Bureau has supported the plan with the idea of improving stock, increasing egg production, standardizing breeding flocks, and upholding Sonoma County's fine reputation as a purebred poultry center.

RIGID CONTRACT SIGNED

The Sonoma County Farm Bureau Accredited Hatchery List was started with thirteen hatcheries with a combined capacity of 1,202,000 eggs. These hatcheries signed a contract with the Sonoma County Farm Bureau Poultry Department covering a period of three years, binding themselves to the following rules:

I. Fowls used as breeders shall be in good, healthy condition as judged by the inspector, and shall be culled so far as may be practical during the first period beginning November, 1921, and shall be thoroughly culled during the early summers of 1922 and 1923 according to the standards recommended and demonstrated by the Agricultural Extension Service.

II. Females are to be at least twelve months old.

III. Males are to be approved by the inspector as to vigor and shall not be less than eight months of age. The males to be used during the breeding season of 1922-23, beginning November 1, 1922, shall have in addition, trapnest pedigree records on the side of the sire of 175 egg or better and the males to be used during the breeding season of 1923-24, shall have a trapnest pedigree of both the dam and sire of 175 eggs or better.

IV. No artificial lighting earlier than 5 a. m. or stimulating feeds to produce higher than 40 per cent during the months of December and January.

V. Eggs to be delivered within seven days, and precaution taken to prevent chilling or overheating.

VI. Weight to be 22-26 ounces per dozen.

VII. Eggs must be uniform in size, shape, color and shell texture.

VIII. Ample supply of greens must be fed birds in inspected pens.

IX. Grain must constitute at least 50 per cent of the total amount of grain and mash feed, and where fed in houses, litter must be reasonably clean, dry and loose.

X. No chicks bearing the Sonoma County Farm Bureau Accredited Hatchery trade mark can be sold for resale as Sonoma County Farm Bureau Hatchery Chicks.

NO PERSUASION USED

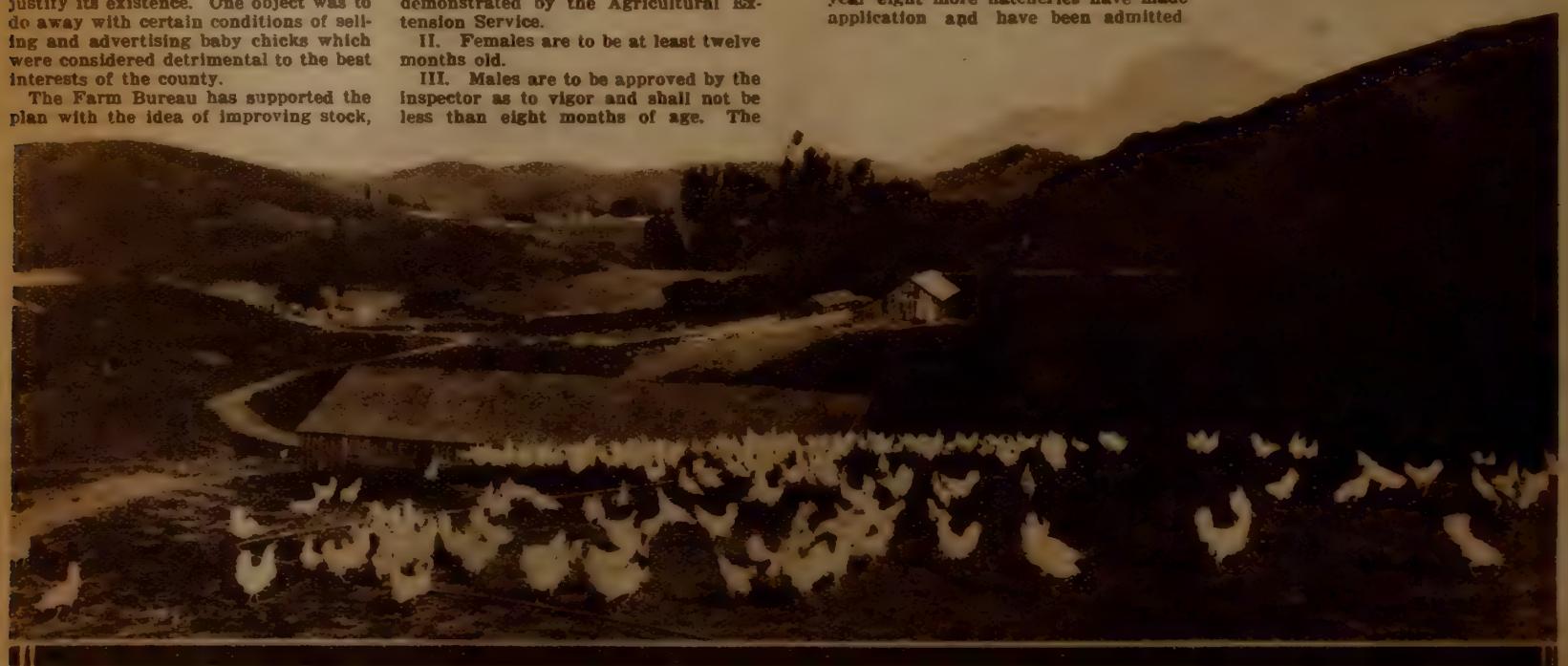
Any hatchery that joins the Accredited List does so without any invitation or persuasion. During the past year eight more hatcheries have made application and have been admitted bringing the total capacity up to 1,456,000 eggs.

One of the improvements inaugurated since the Accredited Hatcheries have been operating is that the Farm Bureau requires all advertising to be submitted for approval before it is published.

During the first five months that the Accredited Hatcheries were in operation, special stress was placed on the removal of speckled and brown-breasted birds from the breeding flocks and by March, 1922, over 7000 hens had been removed. Also during the spring season of this year considerable improvement has been made in handling hatching eggs on the different ranches, including better selection and better care during the cold nights and mornings. Whenever pox or severe colds were found among the breeding flocks the use of the hatching eggs was discontinued.

Before the culling season had begun, each hatchery visited all his eggmen and prospective eggmen and if they refused or did not wish to co-operate they were dropped. At this time arrangements are made by each of the hatcherymen with their eggmen for handling the cockerels for the ensuing year.

The cocks that are being used in the Accredited Hatcheries flocks for the present season have been secured from breeders that have been highly recommended to the Farm Bureau as reliable poultry breed- *(Continued on Page 18)*



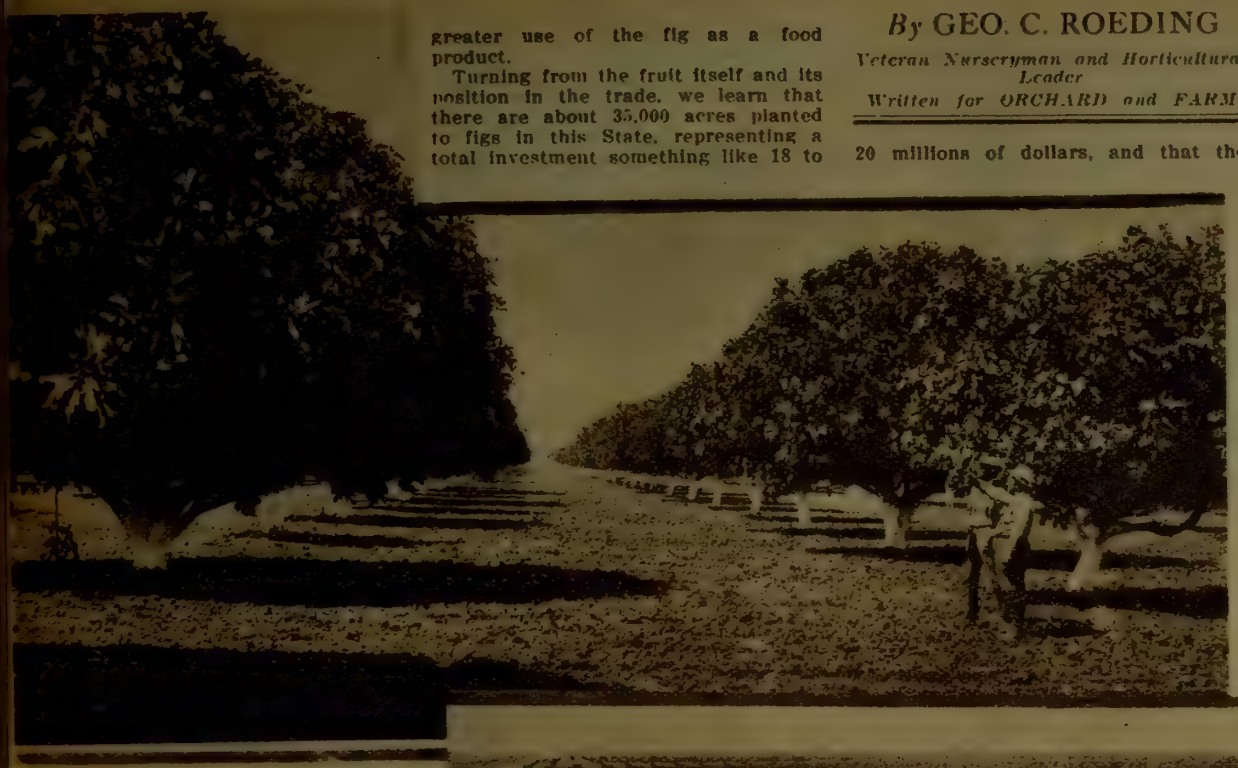
Nestled Among Sonoma's Rolling Hills Are Some of the Finest Poultry Farms in the World

Our Growing Fig Industry

By GEO. C. ROEDING

Veteran Nurseryman and Horticultural Leader

Written for ORCHARD and FARM



ASSOCIATED with history and legend throughout the centuries, the fig is one of the oldest and most valued of fruits.

Nor is its early exploitation confined to the Orient; its place in the horticultural literature of the Occident is quite as pronounced. Figs have been grown in our Southern States, to be used in the fresh state, for over a century; likewise has the fig tree been a feature in California for even a longer period.

It remained, however, for the people of the present era of our fruit industry to develop it to large proportions as an article of commerce, and to introduce (through the co-operation of the United States Department of Agriculture) the little fig wasp, and thereby make possible the production of the genuine Smyrna fig of Commerce on American soil.

In 1901 the total production of Smyrna figs on the Roeding orchards was something like six tons; in 1921 it was for the State 1500 tons; in 1921 large and ever increasing acreage constantly coming into bearing.

The total output of Adriatics, the variety most in evidence preceding the advent of the Calimyrna (Smyrna), is about 7000 tons; the Black Missions yielded about 1500 tons. It is conceded these figures are somewhat below normal; that the present crop will be of all varieties, in excess of 12,000 tons.

To one unacquainted with trade conditions it will be somewhat surprising to learn that we imported last year something like 32,000,000 pounds of figs and that the consumption of domestic figs was something like 20,000,000 pounds additional, or a grand total of 52,000,000 pounds. While it is true that this country consumes large quantities of this delicious fruit, it is after all rather small as compared to over a hundred million consumers.

California fruit production is unique in the fact that she grows many of those varieties that can be produced in no other State in equal quantities; this gives California a safe lead in growing certain fruit food products, among which is the fig.

With an assured protective tariff, there is no reason why fig culture should not develop and expand in all directions. The production of Calimyrnas (a coined word to differentiate the foreign imported from the same California-grown fig) is constantly increasing and it is the judgment of shrewd observers that the time is not far distant when California will completely supply our domestic markets with this product.

The success that has followed the activities of co-operative organizations among orange and raisin growers, under conservative methods, is sure to come to the organized peach and fig growers, which represent about 75 per cent of the present output. New methods of curing, processing and packing are being developed, all of which gives assurance of wider markets and greater use of the fig as a food product.

Turning from the fruit itself and its position in the trade, we learn that there are about 35,000 acres planted to figs in this State, representing a total investment something like 18 to 20 millions of dollars, and that the growers realized about one million dollars for their crops in 1921.

Commercially speaking, the law of elimination has reduced the recognized varieties in the trade to about four; Calimyrna, Mission, Adriatic and White Endrich or Kadota. The Calimyrna is a very large fruit; turbinate; pyriform; very short; stalk short; ribs distinct; orifice large, of pale ochre color and widely open when the fig is mature and before shriveling; skin lemon yellow; pulp reddish amber, sometimes pale amber, turning to dark amber just before falling; seeds large, yellow, fertile, overspread with a clear white syrup, giving the fruit a richness and meatiness unsurpassed by any other fig.

Tree of spreading habit; leaves medium to large, and five lobed. The dried fig contains 64 per cent sugar, which is 1½ per cent more than that found in the imported Smyrna fig. Dries readily and with less trouble and expense than (*Continued on Page 16*)

Hail the Fig!

Above — Views of mature and young fig orchards in the San Joaquin Valley, where the industry is making a steady and profitable growth.

Left—Unusual and hitherto unpublished photograph of fruit, showing the tiny fig wasp (Blastophaga grossorum) entering a fig. It was not until the introduction of this wasp and the wild or capri tree on which it breeds, that commercial production of Smyrna figs in America became possible.

Above—A modern fig packing plant, operating under the auspices of the Peach and Fig Growers

Fighting Jack Frost

Left—Standard type heaters. Right—New orchard heaters in use on ranch of Azusa Foothill Citrus Association

On the Paul H. Gray ranch near Covina. The tractor pumps the oil from tank to tank wagon, then hauls fuel to the orchard for filling the heaters

Close-up of new heater, showing feed pipe from tub, shut-off valve, burner and stack

Striking photograph of heaters burning in a deciduous orchard

Waldo Waterman at the engine of his "windjammer"

The unique Waterman "windjammer" on the Reynolds ranch near Covina. (See article opposite.)

Heating All Outdoors

Experience Proves Protection Against Jack Frost Is Cheapest Insurance

By ROBERT W. HODGSON

OF ALL the orchard sights of Southern California during the winter season none is more provocative of inquiry and scepticism on the part of tourists than the thousands of orchard heaters set up in neat array in the citrus groves far and wide, ready for the fray with Jack Frost.

When told that the peculiar stove pipe contrivances which are to be seen on all sides are for the purpose of protecting the orchards against damaging low temperatures by heating the whole out-of-doors, the scepticism just mentioned usually turns to plain unbelief.

It is a fact, however, that progressive California citrus growers—as a result of oft-repeated bitter experience, the most recent repetition of which occurred on January 19, 20 and 21, 1921—have learned the necessity of taking out insurance against loss of crop and injury to trees by providing frost protection. And it has been shown conclusively that the oil-burning heater, which makes little or no smoke and actually heats the air in the orchard, is far more effective than the old-fashioned smudge pot, with its dense clouds of smoke and protection by delayed thawing.

PROGRESS MORE RAPID

To the famous freeze of the holiday season of 1912-13 may be attributed much of the progress made by California citrus growers in the solution of the problem of frost protection. Immediately following this catastrophe it became apparent to the leaders in the industry that much experimental work was necessary before a satisfactory knowledge of the principles and technique of orchard heating would be available to growers. As a result, a large number of growers undertook careful experimental work on the subject, testing heaters of different design in various arrangements. This work later was supplemented by the United States Weather Bureau, with valuable and much-needed meteorological investigations regarding atmospheric temperature and topography.

After some ten years of experimenting a number of general principles have been developed which today constitute the basis of successful orchard heating practice. It is now generally agreed that the only satisfactory method is the use of one or more heat producers to the tree, burning low, and uniformly distributed throughout the orchard. This gives the greatest efficiency in proportion to the oil consumed. It results in the formation of an "air ceiling," which effectively confines the heated atmosphere to the zone occupied by the trees, without its dissipation to the upper regions through the circulation generated by large fires. Many different fuels have been tested, but oil so far is most widely used because of its almost perfect combustion.

ORIGINAL LARD PAIL

The original heater was the "lard-pail" type, consisting of a sheet-iron bucket, holding from one to two gallons of fuel, which was ignited at the surface. It was early learned that these pots did not furnish heat over a long enough period to provide security. The evolution of orchard heaters therefore has been toward larger fuel reservoirs. The standard heater at the present time holds seven to nine gallons of fuel and will burn from ten to fifteen hours.

The next lesson learned was the necessity for better combustion, which caused a constant redistilling of the fuel until the fire died out from inability to burn the thick asphaltum residue. Simple burners were devised and special attention devoted to improved ventilation resulting in the development of the present long smokestacks, either perforated or with louvres and with dampers so arranged that the flame is readily regulated.

Good heaters, however, are only a part of successful orchard heating. The exhaustion of fuel, with resultant freezing of the crop after expensive oil already had been burned, soon brought a realization of the necessity for having on hand at all times an ample reserve supply. Therefore a galvanized iron or concrete reservoir of ample capacity is today recognized as essential.

Moreover, there must be plenty of tank wagons for refilling.

There must also be well-located thermometer stations, thoroughly reliable night watchmen, plenty of lighters, wicks of excelsior in those heaters not equipped with wicks, frost fighters, each with an exact knowledge of what he is to do when the emergency comes—all these and more are necessary if orchard heating is to be successful and frost insurance worth while.

NEW DEVELOPMENTS

Among the most promising heaters is one recently developed by Messrs. Griffith and Vosburg of the Azusa Foothill Fruit Company. In many respects this is the most ingenious yet devised and possesses a number of admirable points.

The reservoir is an ordinary wash tub of galvanized iron, which contains sufficient fuel for 35 to 50 hours of continuous burning. Since the burner is supplied by a feed pipe from the reservoir, there is no distillation of fuel, which remains of the same specific gravity. This insures uniform combustion. Other desirable features are comparative cheapness and simplicity of design. These heaters cost about $3 each and 36 to 50 to the acre are used by the designers.

"HEAT MILL" BEING TESTED

One of the most recent developments in orchard heating is the so-called "windjammer," of which several sorts now are under test. The two of most interest and promise are the Webb and the Waterman. Both utilize the aeroplane propeller as a means of circulating heated air from a central heating plant throughout the orchard.

They are designed to protect ten-acre blocks, although it appears that this size acreage probably is too large for the present capacity of the machines. Neither yet has reached the point where the growers feel safe in investing their money in them as a means of frost protection. Both, however, are extremely interesting and decidedly ingenious and valuable as indicative of what the future trend of frost protection technique may be.

"The Best Insurance Money Can Buy"

LEADING growers have demonstrated to their own satisfaction that orchard heating is the only tried and proven method of frost fighting and that protection against Jack Frost is the best insurance money can buy. It safeguards the orchard income and hence thousands of heaters annually are set out in California orchards.

Like all orchard practices, heating and frost protection are evolutionary. New advancements continue to be made, at first purely experimental, later demonstrational, and finally commercial. This article summarizes briefly recent discoveries. —*Editor.*

The Waterman Mill

THE Waterman heat mill, which has been installed in the orange orchard of Irwin G. Reynolds, cost $2500. It contains four burners, which consume 100 gallons of crude oil, costing 4 cents a gallon, per hour. The engine consumes 12 gallons of gasoline per hour, making the total cost of fuel $5.64 per hour.

It is claimed this machine will raise the temperature 10 degrees in a ten acre orchard, sending warm air 400 feet in all *(Continued on Next Page)*

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Whether you are a tenant farmer, longing to own a farm home of your own, or a farm-owner handicapped by the need of more land or capital, you are fighting with the odds all against you. The high-priced lands around you will forever hold you down—for those fine producing acres are not going to be given up cheaply. The conditions that have held you back are changed. The Canadian Pacific Railway now offers you a farm home on a long term plan of easy payments that is remarkable. But you must act now.

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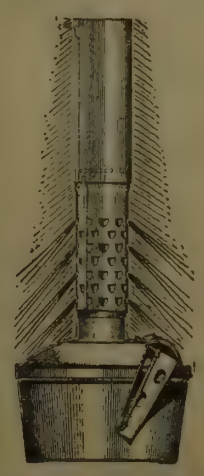

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directions. The Government Weather Bureau has installed a number of thermometers in the vicinity of the mill and will make close observations of operations.

The device consists of a tower 40 feet high, set upon a concrete foundation. Surmounting the tower is an aeroplane propeller, revolving horizontally. This forces the air downward over a conical, roof below and sends it out over the orchard. It is claimed that without the use of fuel, this air circulation will raise the temperature three or four degrees, since the higher layers of warm air are made to displace the colder lower strata.

Beneath the roof, the pageda-like eaves of which are ten feet above the ground, are four crude oil burners of the atomizer type, which leaves no residue. The lower part of the heat chamber is lined with fire brick. The roof is composed of large squares of 12 and 14-gauge sheet steel, the lower edges of which are raised. This permits the escape of the heated air, which is drawn out by the suction created by the propeller driving the outside air downward over the roof.

The revolving air fan is constructed somewhat differently from an aeroplane propeller, since its purpose is not to pull something forward, but to push the air backward. The thrust pressure, as it is technically called, is five pounds per engine horse power on an aeroplane propeller, while it is only two pounds on the one used in the heat mill. This gives a lifting power of 240 pounds, which is just enough to lift the vertical shaft, thus avoiding considerable friction.

In order to prevent the heated air rising before it has reached the outer portion of the orchard, an atomizer may be installed to spray water into the heated air and thus increase the latter's weight, the inventor points out.

A six-cylinder 120 h. p. aeroplane motor which cost the Government $3000, but which was purchased for $300, is used to operate the air fan. Hall-Scott motors of similar size and construction can be purchased of the Government on similar terms—10 per cent of the cost—according to Waldo D. Waterman, inventor of heating device.—O. H. B.

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Big Seed Catalog Ready for Growers

Morris & Snow Seed Company of Los Angeles Issues Big Annual Book

The Morris & Snow Seed Company of Los Angeles, one of the oldest and largest seed houses in California, has just issued its 1923 catalog. The book contains a vast amount of valuable information to orchardists, ranchers, gardners and growers generally. The big book is really a manual because of the "Hints on Growing" which presents valuable information on spraying, fumigating, fertilizing and use of insecticides. It tells how and when to sow seeds and set out plants for best results, and explains the correct use of tools and implements. Notes on marketing, telling how, when and where to buy and sell to advantage are another feature of the 1923 volume.

The big book contains 64 pages and has more than 150 illustrations. It is said to be the most complete book of its kind ever issued in the Southwest. The company announces that a copy of the book will be sent free to readers of this paper who write for it. The address of the Morris & Snow Seed Company is 437 South Main Street, Los Angeles, Calif.

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GROW YOUR OWN

Hints for Vegetable Raisers by Cal. Gardener

IN all parts of California except the cold, mountainous regions, January may be a month of garden activity. It is a combination planting and preparation month. Along the Coast where killing frosts are unlikely to occur, many of the regular early spring vegetables may be grown from seed planted now, while plants of half-hardy varieties raised in boxes or under glass may be set out in the warmer regions. In fact, paper protectors used on cold nights will make it possible to weather light frost even in colder districts. This is a good time, also to start tender plants in the hotbed, especially in colder sections.

Northern and Central California

The gardener must take into consideration local conditions. But in many places the standard early vegetables grown from seed may be sown with safety for early production.

The most successful garden is that which produces a succession of crops of the different varieties. Therefore small plantings at this time are in order. The following may be started in most districts:

BEETS—Crosby's Egyptian, Extra Early Egyptian and Early Eclipse are good varieties for early planting and excellent for table use. Sow about 2 ounces to each 100 feet of row, about 1 inch deep, in rows 12 to 18 inches apart. Later the plants may be thinned to 4 or 6 inches apart.

TURNIPS—The good, old turnip may be grown at almost any season in most sections. If seed was not planted in the fall, sow part of a row now; ½ ounce of seed to each 100 feet of row. Have rows 12 to 18 inches apart and thin plants to 6 inches or more apart in the row. Turnips should be grown quickly; that is, forced by irrigation, and protection, so as to be tender. A moist, well-worked soil and uninterrupted growth are requirements. Several early varieties are good, including Early Snowball, Early White Dutch and Orange Jelly or Golden Ball.

CABBAGE—Cabbage is more easily grown in the home garden than most persons believe. Seed may be planted now. It will sprout quickly and should be thinned so as to allow each plant to develop. These should be transplanted when 4 or 5 inches high. Most home gardeners will find it more advantageous to buy plants for setting out a little later.

SPINACH—Spinach is truly an all-year 'round plant. If you have been enjoying a winter supply, it may be well to plant again now for late spring and early summer greens. A variety recommended for early spring planting in the north is "Long Standing"; it does not go to seed readily, and usually produces a succession of crops.

CARROTS—Probably one of our most healthful vegetables. Sow ½ ounce to each 100 feet and leave fairly close in the row; the plants may be as close as 2 inches. Repeat often for a succession of tender roots. Danver's Half Long is the variety perhaps most widely planted for general purposes.

RHUBARB—A rhubarb bed is a source of much pleasure in the permanent garden. Rhubarb should be grown where the soil may be kept moist, young plants may be set out 3x6 feet now. The best stems are produced the second year, and it will continue to produce for several years. "Giant" varieties now are preferred. Among these are Burbank's, Wagner's and Panama.

KALE—If you were not so situated as to be able to grow a winter crop, kale may be planted now to advantage. Most gardeners buy the plants, setting them about 18 by 24 inches.

RADISHES—Start a succession of radish crops, by planting a few feet now. One ounce will cover 100 feet of row. If rows are well spaced, the plants will require little thinning. Because of the small roots, and comparatively small tops, good radishes may be grown ¾ or 1 inch apart. Radishes are perhaps the easiest vegetable to grow, and are not troubled by the usual pests. A novelty kind is the Scarlet Turnip White Tipped. Many like the long, white "Icicle." It is well to plant several varieties. But don't plant too many at once.

LETTUCE—Now, at the time when Southern commercial growers are shipping the famous California head lettuce East, the home gardener well may start a succession of plantings. To insure a continuous crop, plant a little seed every time you pull up plants.

ONIONS—The early garden would be incomplete without some tender young onions. The seed may be sown during the month of January in rows 14 inches apart. In weeding and pulling young onions, the larger plants may be left about 4 inches apart to develop mature bulbs for dry storage.

PEAS—Probably your winter peas are producing; even so, it is well to sow the early spring varieties now, as they do not thrive in hot weather. The Alaska is a good winter and early spring type. Tall varieties such as Alderman and Abundance may be grown at this season. As for the smaller varieties, most gardeners now prefer the "semi-dwarf" kinds, such as Senator and Strategem. The "Melting Sugar" is a novelty pea, with waxy, brittle pods, which may be eaten like string beans.

PARSLEY—The housewife who takes pride in her cooking and serving, will enjoy a parsley bed. The parsley plant is an all-year standby in most parts of the State. A few plants of the popular curled varieties will yield sufficient for a family, provided it is kept picked and not allowed to go to seed. Soak the seed two hours before planting and give the bed plenty of water. The plants should be 4 to 6 inches apart.

ASPARAGUS—An asparagus bed should be a part of every home garden, and will repay the owner many fold for the slight extra care it requires. Starting plants from seed is a rather slow process as there will be little or no return for two years, but roots may be set out in late January. Rows should be at least 2 or 3 feet apart. Plants should be 18 to 20 inches apart.

Coast and Southern California

In the warmer regions where frost is less likely to be a factor, January is an ideal planting time, especially the latter half of the month. To be sure, no recommendations can be made which will cover every section, but the home gardener will judge by his experience and that of his neighbors. There is danger, of course, that seed planted now may be washed out by heavy rains or even be nipped by frost, but most vegetable growers prefer to take this chance, replanting if necessary. It is well to sow the standard annual vegetables every two weeks from now on, so that a succession of crops can be harvested.

Have you ever tried raising Globe artichokes? Set out some plants now and you should enjoy the fruits of your labors a year hence. Artichokes seem to do best in the fog-belt, near the ocean, where there is less likely to be severe heat.

ASPARAGUS—If you have not an established bed, there is no time like the winter and early spring months to start one. Set out 2-year-old roots of such varieties as Argenteuil, Palmetto or Martha Washington. A bed 10 by 20 feet will supply the average family.

BEANS—In most parts of the South, bush and pole beans may be started in January. There are so many varieties that the gardener may choose those locally grown, or consult his seed catalogs. The Kentucky Wonder, of course, is a standard. Stringless green pods are good bush beans. The Ventura is a good wax bean. A leading authority has compiled the following suggestions on bean growing for the home garden:

During the early spring give sandy soil preference, but heavy soil in summer. When the ground is properly moistened and pulverized, plant bush beans one or two seeds every four inches, in rows twenty to twenty-four inches apart. If the soil is heavy, one-half inch is deep enough. Plant deeper in sandy soil. During the cool spring months plant shallow; during the hot summer months plant down to moist earth, if it should require five inches. Do not plant in muddy soil, nor irrigate immediately after planting, else the seed will rot. During the winter months do all irrigating in the morning, because the water from the pipe is warm and will help the growth. When applied in the evening the water chills the plants, cools the soil, retards the growth and causes mildew. During hot summer days irrigate or sprinkle in the late afternoon.

Mulch the soil as soon as it gets dry after each irrigation. All beans should be sprayed with powdered sulphur of the best grade twice during the season—once before the blossom appears and again just before the green bean is ready to pick. Apply the sulphur in the morning of a bright sunny day before the wind rises, and before the dew has dried. It is not necessary to cover the foliage with sulphur thick enough to injure it, but if sulphur is scattered along the row so that the dust will pass lightly over the field, the fumes created by the heat of the sun will prevent mildew.

BEETS—The instructions for planting beets given for Northern California may be followed. It is well to cover beet seed by hand, as raking may draw the fine seed out of the ground and produce an irregular row. Crosby's Egyptian and the Early Flat Egyptian are favorite table varieties in the South.

BROCCOLI—Have you ever tried this succulent vegetable? It is something like both cauliflower and cabbage, with a head similar to cauliflower but smaller, and having a flavor much like business sprouts. Usually seed is *(Continued on Page 15.)*

Cows Thrive on Artichokes

COWS prefer artichokes to green corn and give more milk on the former feed, according to the experience of Joseph C. Sibley, Pennsylvania congressman and farmer. The mammoth French white Jerusalem is the variety grown, which is considered chiefly valuable for its tubers. But Sibley's cows were fed the green tops during the summer until the middle of August, when green corn stalks were substituted. The cows protested against the change and immediately began to give less milk.

Mr. Sibley says the past season is the first one in nearly fifty years of dairying that he has been able to hold up average production to June standards until late summer. He has tried all common cow feeds, none of which equal artichokes, judging by his experience.

Thirteen cows were milked. The average lactation period at the end of the test was seven months. Their average daily milk production in June was 27.5 pounds of milk; July—after the pastures had dried up and the cows had been fed on artichoke tops—28 pounds. During August, when green corn was substituted for artichokes, the yield dropped to 24.5 pounds.

A silo full of artichokes, tops and all, was fed in 1921 with such good results that three silos were filled with this crop the past season.

Ten Oxford ewes were pastured on quarter-acre plots of artichokes. At the end of thirty days they were on the fifth plot, had gained an average of eleven pounds each and were in fine shape for the block.

Artichokes make fine hog feed also, but when fed to stock should never be cooked, as this is said to destroy the vitamines and reduce the value of the tubers one-half. When properly cooked, this variety of artichokes makes fine table food, according to Mr. Sibley. The tubers may be run through a sausage grinder and dried for future use. This develops a rich, nutty flavor and a sweet taste.

In planting artichokes it is important to get the variety mentioned, as the common Jerusalem is of very inferior quality. They are easily grown and very hardy, but will respond liberally to good soil, well watered and fertilized. They should be planted late in the fall or very early in the spring, the same as potatoes. In fact, they are sometimes called wild potatoes.

For silage they should be planted in rows two feet apart and six inches in the row. When planted in this way the tops will make such a dense growth that most kinds of weeds will be smothered, says Mr. Sibley.

"CHOKES" IN CALIFORNIA

Five bushels of artichoke seed have been sent free to the Alaskan experiment stations by Mr. Selby, who was a member of the House committee on agriculture which authorized the establishment of the stations.

Artichokes are grown on the Pacific coast for hog feed, there being a considerable acreage on the Foreman ranch near Lankershim, in the San Fernando Valley. H. L. Musser, Los Angeles seedsman, who is very familiar with California farm crops, is of the opinion that artichokes would make better silage than sunflowers. The former yield immensely, sometimes growing to a height of 14 feet. Mr. Musser also considers the "ground" artichoke of considerable value as a table food, when properly cooked.—O. H. B.

Hints for Vegetable Growers

(Continued From Page 14)

planted and the young plants reset one foot apart in the row.

CABBAGE—Much winter cabbage is grown in Southern California. If you have none maturing now, it may be well to set out some plants during the early part of this month. Immediately after transplanting, the plants should be watered and constant, deep cultivation is essential. Copenhagen market and Winnigstadt are standard varieties.

CARROTS—This is a good time to establish a succession of carrots. Start by sowing a few feet in the row, at the rate suggested above. The Oxheart is perhaps the most popular in the South at present.

EGGPLANT—Seed may be sown now for transplanting later. The eggplant isn't easy to grow, and is found in a relatively small number of home gardens. Yet it may be produced successfully if the young plants are started early and protected. The plants should not be set out permanently until all danger of frost is over. The New York Improved is a favorite variety.

LETTUCE; RADISHES—These two seem to belong together in the garden, but most novices make the mistake of planting too much of each at one time. Sow a few seeds at a time at intervals of a week. It is possible to enjoy fresh radishes and lettuce in Southern California almost every month in the year.

ONION—Seed or sets may be planted now. The Australian Brown is a good variety for one who wishes to produce mature bulbs for storage. The Mammoth Silver King is recommended for the home garden, both for green onions and for large dry roots for storage.

PARSLEY and PARSNIPS—Both are seasonable now. See instructions Pg. 14 for parsley. One ounce of seed will sow 100 feet of row. Cultivate same as carrots. The Hollow Crowned is a good type for all around use. The Devonshire also is good.

TURNIPS—Turnips, as explained above, are an all year crop. Favorite varieties in the South are the Purpletop Milan, Early Snowball, Purpletop Strapleaf and White Flat Dutch.

January is a good month to fertilize and prepare the soil. It is well to apply sulphur to the garden plot. Not only is it an excellent fertilizer, but also it will destroy fungus and microscopic insects. A little marine shell or other lime may be added to most gardens with profit at this time.

In colder districts prepare the hotbed and raise young plants for February transplanting.

Transplant berries, grapes and deciduous fruits now. This is the tree-planting month in many sections.

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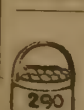

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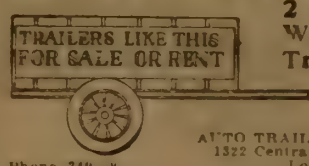

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BEES PAY BIG—Italian bees and queens shipped to any point west of Rockies; pound packages, dollar each; queens, 50c. Satisfaction or money back. SPENCER APIARIES CO., Sawtelle, Calif.

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NATURAL LEAF TOBACCO. Chewing, 5 pounds, $1.75; 10 pounds, $3; 20 pounds, $5. Smoking, 5 pounds, $1.25; 10 pounds, $2. Pay when received. TOBACCO GROWERS' UNION, Paducah, Ky.

SITUATIONS WANTED

AGRICULTURAL COLLEGE graduate, single, age 28, experienced with pure bred cattle, sheep and hogs and in fruit raising and general farming. Competent to manage large proposition. Best of references. State full particulars. H. F. WILLSON, Box A, Straloch Farm, Davis, Calif.

AUTOMOTIVE INSTRUCTION

AUTOMOBILE Mechanics, Owners, Garagemen, Repairmen, send for free copy America's Popular Motor Magazine. Contains helpful, instructive information on overhauling, ignition wiring, carburetors, batteries, etc. Automobile Digest, 606 Butler Bldg., Cincinnati, Ohio.

TYPEWRITERS

TYPEWRITERS—All makes, $20 up. Payments. Free trial. PAYNE CO., Rosedale, Kans.

Fig Industry

(Continued From Page 11)

to the ground of its own accord, being practically dry when it falls and requiring when placed on trays, only from two to three days' exposure to the sun.

THE WHITE ADRIATIC

During a period covering nearly a quarter of a century the White Adriatic has been extensively planted, the acreage devoted to it now being the largest and the total out-put correspondingly heavy. The tree is a strong and healthy grower; fruit above medium size; skin white and thin; pulp red, fine, exceedingly aromatic and changes to an amber color when dried.

Among the older orchards, and also as single specimen trees in gardens, the Mission or California Black has been a conspicuous variety for over 50 years. It yields a large fruit of a dark purple or almost black color when fully ripe; it makes a really good dried fig; tree grows to an immense size and bears large and regular crops.

The White Endrich (often listed as the Kadota) is an early introduction of the late W. B. West, a pioneer nurseryman of Stockton. In its period of cultivation it has been sold under the following names: White Endrich, White Pacific, Verdoni, Smyrna, Kadota. It is medium sized; thin white skin; pulp white to pink. One of the best for canning, preserving and pickling. Inferior for drying.

THE CAPRI FIGS

Reference also must be made to the Wild or Capri Figs which supply the pollen which fertilizes the Calimyrna (genuine Smyrna) fig through the aid of the little fig wasp (Blastophaga grossorum) whose natural home is in the fruit of this variety. This makes it obligatory on the part of the owner of Smyrna fig trees also to establish a number of Capri trees in his orchard.

Since the insect breeds usually three or four generations, it is advisable to include varieties to cover the several generations.

The early history of the fig in California is not without its romance, and represents a rather strenuous career. The plantings of the Mission era were restricted to the Black variety, the fruit of which was used merely for a local supply. Later, with the promotion and development of commercial fruit culture, it commanded a larger and wider attention, resulting in numerous efforts to introduce what in a broad sense is known as the fig of commerce.

PIONEERS OF INDUSTRY

It is timely to remember here some of the early horticulturists and plantsmen who gave of their money, time and labor in this commendable ambition. Among these must be mentioned the splendid effort of an evening newspaper of San Francisco, which brought in shipments of Smyrna fig cuttings in 1880.

In 1885, E. W. Maslin raised trees from Smyrna fig seeds which developed well, but failed to mature fruit, due to the absence of pollination or caprification.

In 1886 W. C. West succeeded in bringing in cuttings, which were grown successfully, but failed for want of the activities of the fig wasp already alluded to.

The late John Shinn, B. S. Fox and John Rock, all pioneer nurserymen at Niles did much in an experimental way to establish fig culture in California. Mr. Rock introduced many varieties, including the Capri, from Southern Europe, some of which are still in evidence at Niles as magnificent trees.

In 1890, H. E. Van Deman, of the United States Department of Agriculture, introduced and distributed cuttings of Capri figs from Turkish Asia, some of which are still living as isolated specimens. It was not, however, in the scheme of things that their efforts should become fruitful; that was an event only possible in the introduction and establishment of the little fig wasp, which occurred in Fresno County in 1899 through the efforts of the United States Department of Agriculture, in which the writer was a participant.

BUTTE RICE LEADS

Butte County claims to produce three-fourths of all the rice grown in California. The crop the past season was estimated at 880,000 hundred-pound sacks.—M. T. RICE.

Start a Poultry Hatchery!

You can make big profits operating a hatchery under the ELECCHIC co-operative plan. We furnish equipment.

ON EASY TERMS

and help you sell all your chicks. Full particulars on request. POULTRY EQUIPMENT COMPANY, Roscoe, Calif. (via Burbank), Dept. M.

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Read how H. M. Leathers, using my new simple methods that anyone can apply, developed the champion layer, 335 eggs, at Washington State Station contest.

FREE 1000 Money Making Poultry Secrets you can have for the asking. Just send name for my new book "Dollars and Sense in the Poultry Business," 96-pages, illustrated. No cost—no obligation. Get more winter eggs. However if you send 25 cents we will also send you 25 colored celluloid leg bands to mark your best layers. *Mention breed of hens.* T. E. QUISENBERRY, Dean, American Poultry School, Desk 984, Kansas City, Mo.

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FRUIT TREES
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Sebastopol, P. O. Box 264, California

Why Not More Ducks?

Quackless Ducks Prove Profitable for the Back Yard Poultry Plant

FOR the back yard poultry yard, ducks possess many advantages over chickens, being much more easily grown and confined than the latter. They require little care and seldom are troubled by disease or insect pests. Their incessant quacking, however, is a source of much annoyance in closely-settled districts. Some ducks are practically quackless, an important point for people who wish to avoid trouble with their neighbors. Ducks do not fly over the yard fence and scratch up the adjoining garden, nor crow at an unearthly hour in the morning—which are points much in their favor.

E. F. Dickey of Duarte, Cal., raised from a dozen ducks and two drakes, 100 fine fowls the past season, in a yard 75 feet square, which he thinks could easily accommodate twice the number produced. He is planning greatly to increase his flock the coming year, and is enthusiastic about duck culture.

Cement Pond for Ducks on Dickey Ranch

DUCK POND INEXPENSIVE

A cement pond, 18 inches deep, 12 feet wide and 18 feet long provides plenty of water, which is considered essential to successful duck husbandry. "A duck is a water fowl," says Mr. Dickey, "and to deprive it of a place to swim and find aquatic feed is not only poor business but downright cruel as well."

The pond, which cost $15 for cement work, is drained every week or two through an iron pipe leading to the family orchard, which is thereby irrigated without extra expense.

"Ducks make their own nests, lay and hatch eggs and brood their young without human help," says Mr. Dickey. "They are much easier to raise than chickens and less subject to disease. Aside from keeping the goslings separate to prevent their being trampled, duck raising involves very little trouble."

MUSCOVIES NEARLY QUACKLESS

The ducks are fed wheat, corn and sprouted barley twice a day, supplemented by a wet mash composed of equal parts of bran and egg-laying mixture.

Muscovies, which are practically quackless are the principal breed kept by Mr. Dickey, although a few mallards are grown for home use, being preferred for their gamey flavor. Surplus stock is sold readily at good prices in the local market.

Another enthusiast who has had excellent success in duck culture, is Mrs. Annie E. Frary of San Francisco. She raises a quackless strain of Muscovies, which are the largest variety, the drakes weighing 10 pounds when full grown. Mrs. Frary has had young drakes which weighed 9 pounds at four months and 14 pounds at maturity, she states.

EARLY LAYERS

These ducks begin laying when six months old and produce very large eggs, the yolks being twice the size of those of hen's eggs. It takes five weeks to incubate a duck egg. An Oakland duck laid seventy-one eggs in seventy-three days, missing only two days in ten weeks.

Young ducks always are in good demand at profitable prices, 22 to 26 cents being the price paid by Los Angeles dealers in December. Roast duck with apple sauce is everywhere considered a great delicacy and duck production is an industry which might be profitably extended in California.

"Eat More Eggs"

THE caption for this paragraph has been suggested as a slogan for the newly organized California Poultrymen's Association, which has its headquarters at Petaluma. The purpose of the organization, according to H. W. Kerrington, one of the directors, is to educate people to the food value of eggs and why they should eat more of them; to explain why different prices are charged for eggs in different places; to make public the fact that egg production is a billion-and-a-quarter industry, and to disseminate other information in the interests of egg producers of the Golden State.

FAIR WINS SILK FARM

The Butte County Olive and Orange Exposition was the means of causing Mrs. A. M. Cheesewright to decide upon establishing a silk farm at Oroville, according to her testimony. Mrs. Cheesewright is assisting in the installation of a California exhibit in the Ferry Building at San Francisco. She believes thoroughly in the value of such fairs and exhibitions as are held in the Pacific West.—M. T. RICE.

World's Greatest Egg Producers Right At Your Very Door

You don't have to go outside the State any more for the best in Leghorns because we have assembled for you right here in California the best egg-laying strains in the world—flocks from Hanson and Bruce of Oregon; Tancred, Beal and Hollywood Farms of Washington; Ferris of Michigan; Pennsylvania Poultry Farms; Hillview Farms of Illinois and Tom Barron of England. Come and see them at any time. At the prices we are asking for these birds, your investment in them is sure to pay handsome returns.

We guarantee 100 per cent fertility on all hatching eggs by replacing all those found to be infertile.

HATCHING EGGS: 15 for $2; lots of 100, 12c each; lots of 500, 11c each; lots of 1000, 10c each.

BABY CHICKS: Lots of 100, 25c each; lots of 500, 24c each; lots of 1000 or over 23c each.

Our hatching capacity is limited so place your order early. If you order by mail, enclose a check for 10 per cent of purchase and fix date of delivery.

If you don't care to bother with baby chicks make arrangements for delivery of 3, 4, 5 or 6-month old pullets.

THE CALIFORNIA WHITE LEGHORN BREEDING FARMS

Location: 3 miles north of Lankershim on Lankershim Blvd., then two blocks west on Tulare Street.

LANKERSHIM, Los Angeles Co., Calif. R. R. 1 Box 277-M.

1500 Eggs from 160 Hens

"Dear Mr. Reefer: I have fed two boxes of More Eggs to my hens and I think they have broken the egg record. I have 160 white Leghorn hens and in exactly 21 days I got 125 dozen eggs."—H. M. PATTON.

More Eggs Tonic keeps hens in the best possible laying condition. It is a concentrated tonic, not a food. It contains every element that helps make eggs.

Start using More Eggs Tonic right now. Keep your hens laying right through the coldest weather when eggs are highest. You can get big profits from your hens this winter, just as hundreds of other More Eggs users are doing.

Hens Lay All Winter

Results tell the story. Here are just a few letters from poultry raisers who are getting more eggs and more profits through the use of Reefer's MORE EGGS Tonic.

Gets 132 Eggs on December 1

"Dear Mr. Reefer: Sometime ago I got some of your More Eggs and it meant MORE EGGS. I am now fully convinced of its utility. I have 14 pullets and 14 hens one year old, and the first 10 days in December they layed 11 dozen eggs."—H. F. FOHLAND, President Citizen's Bank, Ashland, Ore.

Moulting Hens Lay 200 Eggs

"Dear Mr. Reefer: From the 21st of November to the 7th of December, my 36 hens have moulted and laid 200 eggs. Your More Eggs Tonic is fine and I never will be without it in my home."—F. SHAW.

48 Dozen in One Week

"Dear Mr. Reefer: I can't express in words how much I was benefited by answering your ad. I sold 42½ dozen eggs last week, at 4 dozen, ate some and had 1½ dozen left."—MRS. LENA McBROOM.

37 Eggs a Day

"E. J. Reefer: That More Eggs Tonic is simply grand. When I started using it they did not lay at all, now I get 37 eggs a day." EDGAR E. J. LINNIGER, Elmwood, Ind.

Increase from 8 to 36 Eggs a Day

"E. J. Reefer: I am well pleased with your More Eggs Tonic. I was only getting 8 or 9 eggs, now I am getting 3 dozen a day."—WM. SCHMIDT, Sandy Bend, Kan.

Act NOW! Send No Money!

Do not send a penny. Just send the coupon below and I will send you two $1.00 packages of my latest improved More-Eggs Tonic. When the postman delivers them to your home, pay him only $1.00 plus postage. The other $1.00 package is free. Remember this scientific egg tonic has been tried and tested, but to prove its value to you I am going to send it to you on 30 days free trial. If at the end of 30 days you are not entirely satisfied, I will send you the money you have paid. Act now! Mail the coupon.

E. J. Reefer, *Poultry Expert*
9th & Spruce Sts., Dept. 5781 Philadelphia, Pa.

E. J. Reefer, *Poultry Expert*,
9th and Spruce St., Dept. 5781, Philadelphia, Pa.
Send me two packages of More Eggs Tonic for which I agree to pay the postman $1.00, plus postage, when the package arrives. It is understood that if I am not entirely satisfied at the end of 30 days, you will refund my money.

Name .....

Address .....

.....

If you prefer, enclose $1.00 cash or money order with this coupon. This brings your order sooner. C. O. D. packages sometimes take longer in the post office.

Grain Gamblers of Tulare

NO, THEY don't gamble on the market, but on the weather—those farmers who annually plant 400,000 acres of grain in the dried-up bed of Tulare Lake, once the greatest sheet of water in California. If conditions are just right they reap a rich harvest; if the weather is unfavorable they stand to lose the immense amount of money required to plant such an extensive acreage.

Excessive drouth will kill the crop; too abundant rains result in disastrous floods, as was the case last year, when 6000 acres was covered deep with water. Compared to the entire acreage, however, this was a small amount to lose, and the flooding left the inundated land in fine condition for the next crop.

As soon as the crop is removed water is pumped over the levees and from numerous wells to wet the thirsty soil for future seeding. Heavy yields are secured, running as high as 36 sacks to the acre.

A solid field of waist-high grain covering 625 square miles is one of the wonders of California, a spectacle which many people drive miles to see. —FLOYD BYRNES.

CERTIFIED SEED PAYS

The superior value of certified seed spuds is illustrated by the experience of H. A. Hyde, Monterey rancher, who is getting $2.60 for Burbanks grown from selected seed, while ordinary potatoes are selling at $1.60.

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SEEDS
Are Dependable Seeds
NEW CARMEL GOLDEN CORN
(Pkt., 15c; Lb., 50c)
Two New Table Peas
BRITISH LION
THE LINCOLN
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NORTON TOMATO
(Pkt., 15c; Doz., 75c; Oz., $1)
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USE A LOG SAW!
This outfit easily cuts 15 cords a day, falls trees, buzzes up branches. Does work of many men.
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Room 2351-P Magee Bldg., Pittsburgh, Pa.

Success on Forty Acres

(Continued from Page 9)

stripped afterwards. After being washed, the machine is placed in a jar containing a weak solution of chloride of lime. There are less bacteria in the milk, according to official count, than when the cows were milked by hand and there has been no diminution of the yield. No tuberculosis ever has been found in the herd.

"Inyoloco, the sign of a good farm. Registered Holstein," is the handsomely painted sign which greets the visitor to the Irwin ranch. Prof. Gordon True, head of the animal husbandry department of the University Farm at Davis, for years has kept tab on Irwin's agricultural operations and says that more real money is made on the latter's little 40-acre farm than on some thousand-acre grain ranches.

FARM HOME ATTRACTS

Thoroughbred children are another prominent product of the Irwin ranch. Four bright, healthy youngsters are a great source of joy to their parents, one of whom takes the three eldest to school at Davis in the morning, while the other brings them home in the evening. The residence compares favorably with city houses for comfort and appearance, while the surroundings are far more attractive.

Trees, vines and shrubbery surround the farm buildings, in pleasant contrast to the average California grain farm. The shrubbery, fruit and shade trees have been planned with care and good taste, for which much credit belongs to Mrs. Irwin, a university graduate of unusual ability and culture.

A wide, open lawn in front of the house affords a splendid playground for the children and permits an unobstructed view of the road and mountains in the distance.

On one side of the house there is a cement driveway, flanked with a family vineyard and pergola, while on the other side a road leads to the barn between olive trees and a vine-trellised fence. The milk house is floored with cement and everything kept as sanitary and comfortable as possible. Canal water is used for irrigation, although the land could be advantageously watered from wells.

OTHERS FOLLOW EXAMPLE

For years the Irwin ranch resembled an oasis in a desert of grain fields and even yet a solid block of plowed land extends for two and one-half miles eastward. Other small farmers are coming in, however, attracted by the possibilities of diversified farming within 20 miles of the State Capital. It is only three miles to the University Farm at Davis, where free counsel and advice upon all farm subjects is available. The State Highway is but one-half mile distant.

Having the neighborhood settled up with small farmers whose interests are similar to his own is the project which most interests Irwin at present. Prof. J. E. Dougherty, of the poultry husbandry department at Davis, is developing a 20-acre farm just south of the Irwin ranch, while a tract of similar size is being improved not far away, as well as others somewhat larger. The price of land has not advanced greatly in the past decade, but a great many more advantages now are available.

Sonoma County Accredited Hatcheries

(Continued from Page 10)

ers. These cocks have come from various parts of the Pacific Coast. There were over 18,000 cockerels purchased for the Accredited Hatcheries and about 8000 of these birds were raised in Marin and Sonoma Counties.

About 7500 cockerels were shipped in by different breeders and the larger percentage of these birds are double pedigreed. There were approximately 2700 cocks used in the breeding yards last year that were single pedigreed. Through death and selection, these have been reduced to 1750 that are to be mated again. All the cocks and cockerels mentioned above have their pedigrees covered by a sworn statement as to their correctness.

In regard to the culling, over 269,400 had been culled and inspected during the past summer and from these birds, 57,380 culls and 6150 colored hens have been removed. Also about 40,000 birds that are just passing the twelfth month are to be mated for this season's hatching; these birds at present are being inspected for vigor and colored feathers.

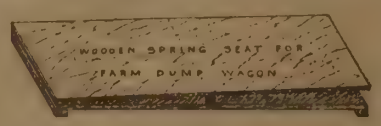
During last spring another improvement was made, that of giving recognition to the eggmen that have stock with higher egg production pedigree. There were three grades established: (1) Accredited "A" grade—those chicks are from eggs from flocks meeting the requirements of the Accredited Hatchery Plan; (2) Accredited "AA" grade—those chicks hatched from eggs from flocks which have met the Accredited Hatchery requirements for the 1922-23 season and in addition have an egg production record for the cockerels on both the side of the dam and sire's dam of 200 eggs and over, and also have been culled under the direct supervision of some one approved by the Accredited Hatchery Inspector; (3) Accredited "AAA" grade—those chicks hatched from eggs from flocks meeting the Accredited Hatchery requirements of the season 1922-23 and from cockerels with production records of both the dam and sire's dam of 250 eggs and over, and which in addition have been closely culled under the supervision of some one approved by the Accredited Hatchery Inspector.

The production of the Accredited "AA" and "AAA" grades is optional to the hatching egg producers and the hatchery.

In conclusion let me say that the Accredited Hatchery Project is here to stay, for even now more than 50 per cent of the hatcheries are ordering cockerels that will meet the requirements of the project for the 1923-24 season.

Wooden Spring Seat

WHEN dump boards are used on a farm wagon there is no seat for the driver. It often happens that stone, sand, fertilizer, lime, manure and other bulky things are hauled considerable distances. Farm wagon seats with steel springs are out of place on such trips, and usually the driver jolts along on the load and sits or stands



on the bare bottom boards on the return trip. What little spring there is in a two-inch plank seems to augment the jolts and the man comes in at night all "tuckered out." Then he wonders what used him up.

Here is an old-fashioned, wooden spring seat that dates back to pioneer days, but it has never been improved upon for farm wagon use.

It is made of two boards 12 inches wide and long enough to reach across the wagon. The lower board is cleated across at the ends to prevent it from slipping. The upper board is selected for toughness and springiness. It is bolted to the lower board at one end and rests on a cleat that is nailed to the lower board across its center, or the cleat may be placed nearer one end according to the thickness of the upper board, to give the spring necessary.—H. A. SHEARER.

Cotton Yield Shrinks

THE latest estimates place the 1922 California cotton crop at 100,000 bales, compared to previous estimates of 150,000. The shrinkage in the Imperial Valley is attributed to the scorching heat in September and early frosts as little later. The Blythe district, which produced 6000 bales, lost 2000 acres by June floods, while the remaining crop was cut short by water shortage, caused by debris-clogged ditches.

Tractors in Orange Groves

THERE are more tractors to the square mile in the San Gabriel Valley and the citrus belt of Orange County than in any other part of the United States, according to a recent survey. A year ago there were 21,922 tractors in California, an increase of 4542 in two years.

Walnut Pruning

(Continued from Page 3)

ing parts. All branches removed are taken out bodily, never stubbed or headed, for this has been found to result in the production of worthless water sprouts.

The removal of the lower branches is comparatively a simple matter, but the taking out of branches away up in the tops of the trees is quite a different thing—a hard, dirty job unless one uses the pole saw which was invented for this specific purpose.

The proper method of cutting is a matter of considerable importance with the walnut, since the wood is very subject to heart rot and even at best, the wounds heal over slowly. All cuts should be made close and parallel to the main axis of the trunk or branch, and left so as to encourage the healing-over process. As an additional aid, the usual practice is to protect all cuts larger than two inches with a covering of asphaltum paint or other pliable and elastic dressing.

Although usually done in the fall for the reasons mentioned, it has been demonstrated that the time of pruning—whether early fall, winter or spring—has little connection with the results secured.

Farm Water Tower

A GOOD many farm water towers, more or less artistic in design, are in use in different parts of California. The design here shown is made from a photograph taken in Mendocino County, north of the city of Ukiah.

The building is framed like a derrick and braced to make it strong enough to support a large tank full of water. It is 20 feet high to the tank floor and the space inside is divided into two rooms, one above the other. The lower room is used for general storage and the upper room is fitted with stationary wash trays and other laundry fixtures, including a washing machine run by electricity.

The upper floor is made strong with 3-inch by 12-inch joists to support the water tank. The tank floor is double boarded and covered with galvanized iron to catch leaking water and to shed rain.

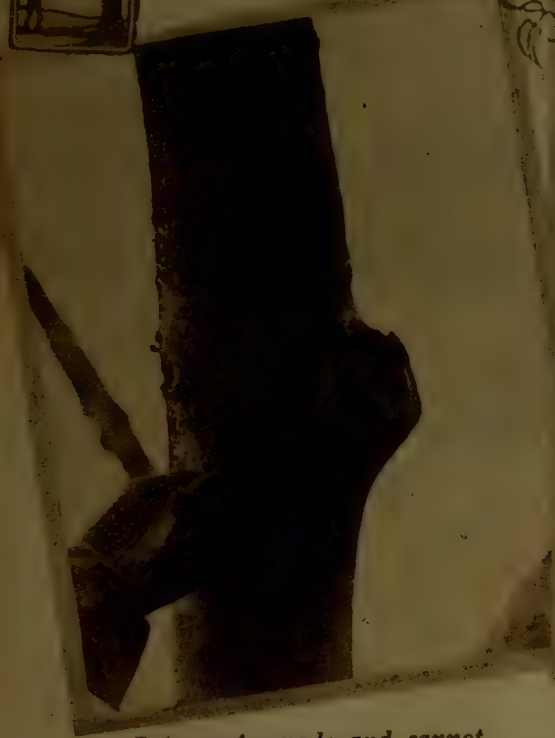
The wash room floor is of matched pine laid on 2-inch by 6-inch joists spaced 18 inches on centers. The ground floor is concrete, sloping to a drain grating in one corner of the room. The well is in the center and the concrete floor is masoned around the top curbing of the well to prevent water from running into the well.

Cast iron flanges with bolts and gaskets are used to connect the stand pipe at the joints and at the tank. The stand pipe passes up through the center of the tank and discharges about three feet above the top of the tank to aerate the water.—HERBERT A. SHEARER.

Solano Will Irrigate

THE farmers of northern Solano County recently organized an irrigation district for the purpose of watering 125,000 acres of land east of Dixon. This region heretofore has been farmed without irrigation, but the advantage of artificial watering is realized and further steps will be taken to provide an adequate supply of soil moisture.—MRS. T. G. HOLLABAUGH.

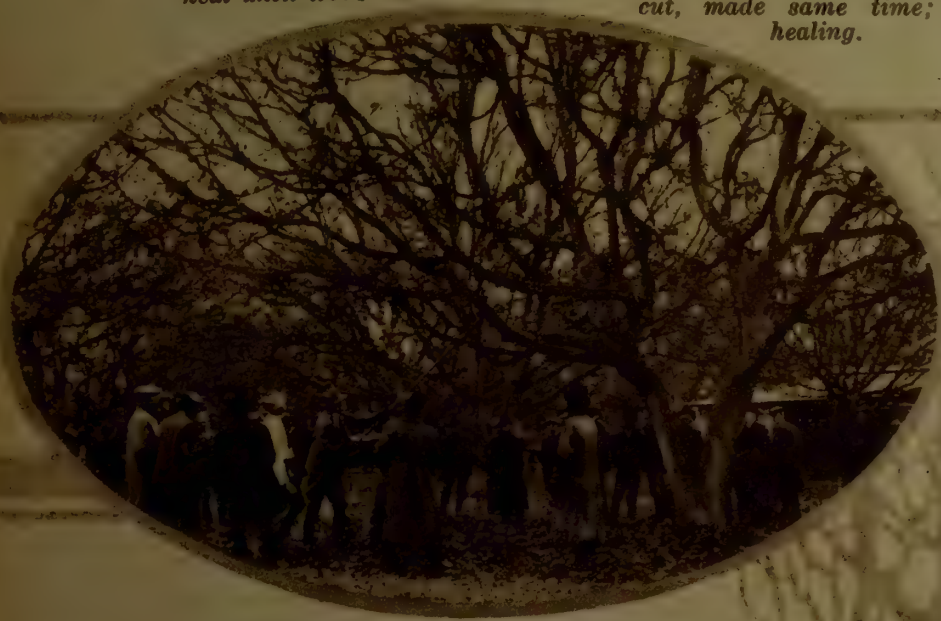
WALNUT PRUNING



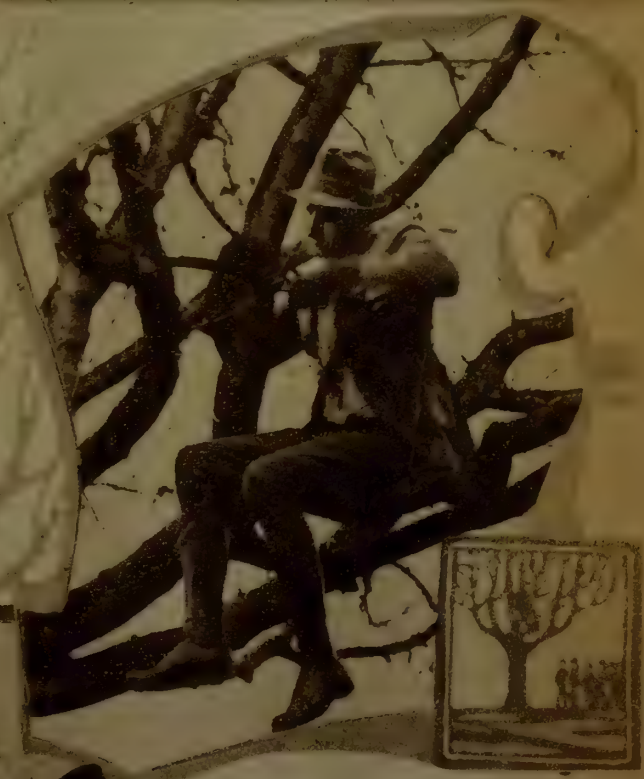
Cut poorly made and cannot heal until wood rots.

Above — Good cut; wound healing over. Below—Poor cut, made same time; not healing.

Hand indicates cut properly made after wound has healed.



The walnut tree is forest-like in growth. A pruning demonstration.



Farm Adviser Robert W. Hodgson of Los Angeles County demonstrating pruning.

Walnut growers are interested in pruning. (T. H. Lambert grove, El Monte, Cal.) Insert (left to right)—Farm Adviser Hodgson, T. H. Lambert and W. B. Hooper, extension specialist, University of California.

life insurance

The right baby chick feeding policy always pays at maturity

Every baby chick is full of promise-to-pay. It represents a "fund" that must be watched and "nursed" and made to earn. You, as the poultryman, act as trustee of this fund. The little chick virtually lays its life in your hands and says:

"Here I am—take good care of me and, when I grow up, I'll take good care of you."

That's why the right baby chick feeding policy always pays at maturity. Feed Sperry Baby Chick Scratch *right from the start* and you'll know the chicks will turn out all right in the end.

Prime, re-cleaned seeds and cracked grains, bone meal and charcoal—everything that goes into Sperry Baby Chick Scratch is watched for CLEANLINESS. If this feed were being made for human consumption it could be no cleaner.

The result is a uniform, balanced ration granulated and proportioned just right for baby stomachs. It is more than a feed—it means *life insurance* to your baby chicks and *profit insurance* to you!

SPERRY PRODUCTS
EVERY HOME
SPERRY FLOUR

Together with Scratch, feed Sperry Baby Chick Mash

Seasoned poultrymen find it good policy also to feed Sperry Baby Chick Mash in conjunction with Sperry Baby Chick Scratch after the first week. It means rapid growth for the chick and no strain on the gizzard or digestive tract.

Oat groats (ground-without hulls); cornmeal (pure, fresh and kiln-dried); bran and shorts of uniform feed value; soya bean meal (ground fresh at our own mills); specially selected bone meal; Rauh's Meato—the finest quality meat meal known to feeders; and Peebles' dried buttermilk—these last three are the high-protein nutrients that go into Sperry Baby Chick Mash. A scientific, laboratory-controlled formula that builds bone, muscle, tissue and feathers for baby chicks.

Order a sack of Sperry Baby Chick Mash with your next delivery of Sperry Baby Chick Scratch—and see!

SPERRY BABY CHICK FEEDS

CLIP THIS COUPON AND GET OUR POULTRY BOOK—FREE!

POULTRY & STOCK FEED DEPARTMENT **SPERRY FLOUR CO.** DEPARTMENT O, SAN FRANCISCO, CALIFORNIA

Please send me your book "Makes Hens Happy" which contains expert directions on feeding baby chicks.

Name_____ Address_____

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

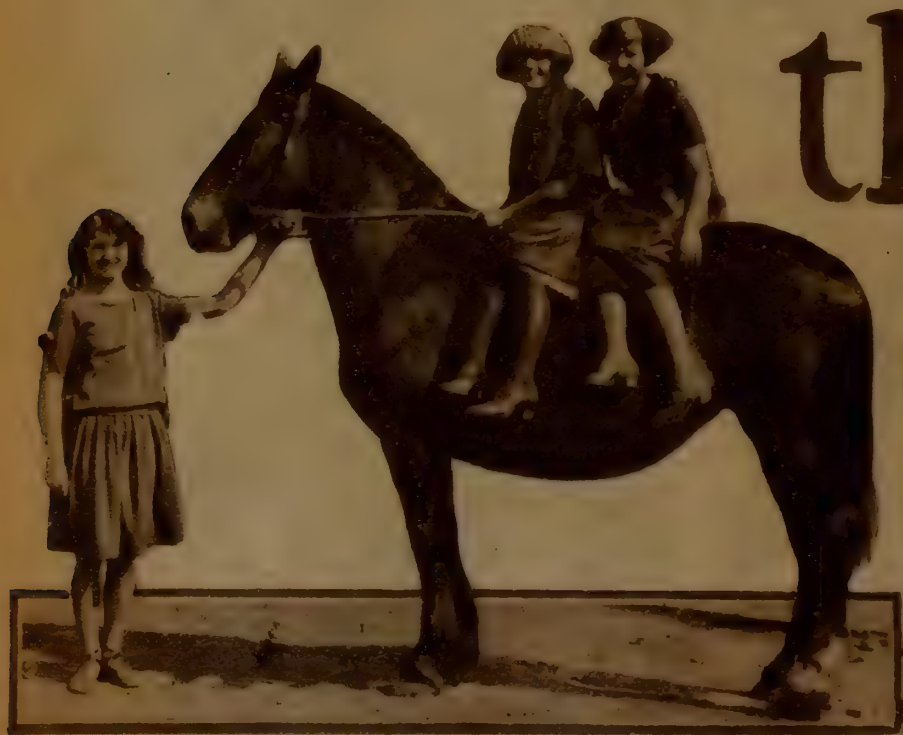
JANUARY 21, 1923

California Topman, barley-fed California steer—first at Chicago International.

What is it that makes California girls more beautiful, California men more stalwart, California cows more productive, California animals more prolific, and California kiddies the healthiest in the world?

Tillie Alcartra, probably the most famous dairy cow of all time—a California product. During the year when she broke the world's production record, she had the freedom of pasture and barn nearly 300 days.

It must be the climate



Outdoor life brings smiles, dimples and rosy cheeks to California's "Sunkist" girls. "Bob" Jones, in his unusual article, on opposite page, finds an interesting analogy in the uniform superiority of California products.

If there is one State where everything favors the swine-grower, California brings home the bacon!

This is Gretel, famous milk goat of the University Farm herd, Davis. She produced in one year nearly 3000 pounds of milk, or more than many cows.

Sunshine, bean-poles and outdoor children in February are significant. This winter garden later will produce luscious vegetables, rich in vitamines, which, with milk and fruit, round out the daily diet of the happy youngsters.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JANUARY 21, 1923

California Leads in Men and Animals

What Are the Mysterious Forces With Which Nature Has Blessed the Golden State?—Why Are Her Triumphs Startling the World?

By ROBERT E. JONES

Contributing Editor of ORCHARD and FARM

ITH every month and every year bringing new evidence of the superiority of men and animals of the Pacific West, the eyes of all America are turned in wonderment towards the setting sun. Why has California, youthful in velopment, outdistanced in so many ys the older States where industry ripened by experience? Why are so many awards, so many blue ribbons, so many championship cups, so many amazing records being added to her ever increasing laurels?

BOB JONES

Thus I mused. Virginia and I had been hiking over the Berkeley hills. It was January, with a tinge of early spring in the air. We sat on a assy slope for lunch, overlooking the mpus of California's great university an undulating carpet of green tree s below, studded with splashes of anite buildings. Out beyond lay the y of San Francisco, in form like a ant's stadium, with its surrounding ls for spectators and an entrance for ayers through the Golden Gate. Upon e field of salt water in the center e great game of commerce was in ogress that winter day.

COAST CREATURES FORTUNATE

"It's good to be here, isn't it, Virnia?" I demanded. She nodded asnt, her mouth full of sandwich, and th fond father attitude I appraised r, a girl of 11 years, long and lithe limb, bright-eyed and rosy-cheeked. e had kept me on a dog trot all orning along the hill trail, dashing re and tripping there to pick a flower kick over a toadstool—just like a ppy, covering twice the distance I od. Just now I had the advantage, r she was hungry and too busy eatg to talk back or run away.

"Virginia, you are a bit stronger and nger and have the chance of being ore beautiful than if you had been rn and reared elsewhere in this orld of ours," I began. "There is something about the trees and soil and air and sunshine surrounding us here that gives you a better chance of growing into a fine, healthy woman.

"Do you know that you are a fortunate little lady, and that if you behave yourself and enter into communion wholly with all that Nature has bestowed upon you in the way of environment, you will always be strong and happy and live a long and useful life? That is the heritage of all earthly creatures here on the Pacific Coast."

"I see some cows over there," remarked my small daughter, who was looking through field glasses at the Marin shore, unmindful of my talk.

"Yes—cows. It applies to them, just as it does to you and me," I continued, persisting in my train of thought. "Take the case of Tilly Alcartra, the California Holstein matron of fancy name, a leader of the Yolo County set. She is the most famous dairy animal that the history of cowdom has known, because in the 12 years of her life she has produced more milk than any other animal. Tilly has given enough butterfat to make 3760 rolls of butter, worth at present prices $3008. One of her six calves sold for $50,000 in Philadelphia two years ago. Undoubtedly she is of good family, but there are other cows with equally good pedigrees. It was her favorable environment here on the Pacific Coast that made possible her premier position in the bovine kingdom—there is no other reasonable way of accounting for it.

"This world's greatest cow was not given the painstaking care usually accorded a record-making animal. A good part of the year when she was giving the most milk she ran free with the rest of the herd. She had the freedom of pasture and barn, day and night, for 285 days of her test year. That is an almost unheard of thing for a cow on test and would not have been practicable in a severe climate. In the Eastern States such cows must be kept in doors for at least five months of the year. They are almost never allowed outside during the winter months. But Tilly had free range nearly all the time.

"Mr. Morris, one of Tilly's owners, believes that the fresh, green feed she had the year around had something to do with her prodigious production. Here in California, alfalfa hay is cut green for more than nine months of the year and fresh stock beets are always to be had. This sort of food keeps animals in condition.

"Tilly's great record was due to two factors — her inborn nature as a producer and her favorable environment. The latter was due chiefly to climate, for this made possible her outdoor life and variety diet.

"Pacific Coast cows are larger than those in the Eastern States. Visitors from the East often remark that cows of the herd of Holsteins to which Tilly belongs average 200 pounds heavier than the animals of similar age in an important Atlantic State.

"Humboldt County, California, has a cow testing association, the figures of which show a higher average production per cow than those of any other similar organization in the United States. The Humboldt records are kept under the supervision of the California College of Agriculture."

But Virginia had become tired of my monologue and insisted that it was time to move on to greater heights. The big clock on the college campanile told me that we had lunched two hours, and that was too long, she contended, even in January sunshine. Soon we were off again, headed for the crest of Grizzly. Here we met Paul Bunker, who lent to my climatic speculations a more sympathetic ear than Virginia. (Pacific Coast youngsters out in the open are veritable little animals, disinclined to show proper respect for the opinions and scientific conclusions of their elders. They care more for breathing the fresh, free air, climbing trees, swimming and similar sports.) Virginia, while I was talking, had scampered off and was half way up a small pine tree, waving at me like a frolicsome sprite.

CHILDREN TALLER AND HEAVIER

The morning Examiner which I had brought along contained a report of the Federal Child Welfare Bureau, which stated that California children are taller and heavier than other groups which had been studied, and that climate and environment were responsible for this superiority.

Miss Gertrude Egett, a Fresno girl who competed against thousands of others from all parts of the country, was declared by competent judges the most beautiful woman in America, I recalled.

There on the lofty heights overlooking San Francisco Bay, soaking in the January sunshine, I remembered other evidence which had come my way, of the peculiar friendliness of Pacific Coast environment. Being something of a tennis enthusiast, I knew that in the last decade California has contributed three national tennis champions—Maurice McLaughlin, Lindley Murray, and William Johnston.

Came to mind also the knowledge that Charles W. Paddock, the University of Southern California sprinter, had made four world's records. And it was only last summer that track athletes from the State University and Stanford University invaded the Eastern States and captured the highest honors at *(Continued on Page Eleven)*

Is It Boasting or Boosting?

JEALOUS and less fortunate residents of other States sometimes accuse California boosters of boasting. But this recital of facts, even the most caustic critic must confess, more than justifies the interesting conclusions drawn by its popular author. All of agricultural California knows him affectionately as "Bob."

Is Co-operative Buying a Safe and Successful Practice?

A Group of Southern California Poultrymen Answer Decidedly in the Affirmative

T WAS about four years ago that a half dozen ranchers in the Arcadia district of Los Angeles unty decided if they bought their pplies together, in large lots, they uld purchase them cheaper.

The first trial of the co-operative ea was to send for a few cars of rn and oats from the East. The ving effected on this small order oved so satisfactory that thereafter ey purchased their ranch needs in is way. More ranchers joined the x and soon the group grew so large at an organization was formed; in out a year it was incorporated.

Out of this small beginning has own the San Gabriel Poultry Supply sociation, an organization at the esent time of about ninety mems. Not only does it include Arcaans but also ranchers from Monvia, Alhambra, San Gabriel, South anta Anita and other neighboring mmunities. Annual election of ofcers was held just recently, the new ecutives including E. B. Evans, present; W. S. Wheeler, vice president; . V. Senior, secretary, and H. N. ickinson, treasurer.

SALARIED MANAGER

It is interesting to note that as on as the group became incorpored the business of the organization ew so important and valuable that it was decided a salaried manager should be employed. At the annual meeting, Mr. Dickinson, a former grain dealer of Illinois and a poultryman of experience, was chosen as the new manager and is now devoting all of his time to his work.

Every week Manager Dickinson visits the various members, getting a list of their needs. He then makes the rounds of the large wholesale feed and supply houses in the Southland, getting bids on the various supplies needed.

In this way the lowest possible prices are obtained, effecting a saving of hundreds of dollars a year to the members.

For instance, he was able to get laying mash at $2.60 per hundred pounds a few days ago, while the small buyer would have had to pay on the basis of $2.80 for the same amount. Members of the association have been paying $2.15 net per hundred pounds of whole corn, the purchaser buying in small quantities paying about $2.30 or $2.50. The association has been selling seed barley at $1.94 per hundred pounds, while others have been asking $2.10.

All the above prices are net to the buyer, the association charging 2 per cent on grain and 3 per cent on mash. Despite this small charge, which it must ask for an operating tax, members are able to buy far cheaper from the organization than if they were purchasing direct. All prices, too, include delivery to the door.

A CASH BUSINESS

The association does practically a cash business, as when Mr. Dickinson calls one week on the members he collects for their last week's supplies.

The organization is proving a veritable godsend to the small rancher, who is able to buy at the same prices as his nearest neighbor, who is ranching on an elaborate scale and who buys in large quantities.

Not only are poultrymen's supplies bought, but auto accessories as well; or perhaps two or three farm implements, or a tractor. Mr. Dickinson scouts the market every week on varied and interesting demands.

Since it became incorporated the association has charged dues of $10 a year. But now the organization is growing so fast and is proving so valuable that plans are afoot to change it into a stock company.

STOCK TO BE SOLD

Stock would be sold on the basis of $10 for each 150 hens. For those ranchers having cattle or other animals, there would be a corresponding basis.

The goal is 600 shares, which would give the association $6000. With this money members plan to build a centrally located warehouse where supplies may be stored.

Tentative plans call for a modern plant with great storerooms and equipment of the finest type. Grains, feeds and various supplies then would be bought in car lots and delivered from the warehouse to the ranchers.
—ELLAVERA NELSON.

Melons Pay for Land

FROM twenty acres near San Fernando, Cal., Frank Ghighlia harvested 800 tons of Klondike watermelons the past season, according to authentic reports. The melons were sold for a cent a pound, which amounted to $16,000. The land was bought for $9000 a few months before the crop was planted. Ghighlia's experience well illustrates gardening possibilities in Southern California. The variety grown is said to be the sweetest of all watermelons.

ORCHARD and FARM

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
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GEORGE GRANT, Art Director

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Luther Burbank, Walter H. Gardner, Prof. E. H. Stoneburn, J. D. Bixby, Helen Temple, George P. Weldon, Robert E. Jones, Herbert A. Shearer, Dr. J. Eliot Coit, W. S. Guilford, Wm. Reynolds Butler

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and enclose stamp for reply.

Pithy Paragraphs

FARMERS MOVING TO TOWN AGAIN?

During the past year the number of people engaged in farming in the United States decreased 1,700,000, according to estimates of the Agricultural Publishers' Association. The fact that production has not shown a corresponding decrease, but a considerable increase, strikingly demonstrates the effect of more efficient methods, in which improved machinery has played an important part. The marketing of crops and animals by motor trucks, for example, has relieved many men and animals for productive employment.

WHY CITY MEN SUCCEED

Why do city men often succeed where experienced farmers fail? One reason is because the former realize they know nothing about agriculture and hence readily follow the example of successful ranchers and take the advice of specialists who have made a thorough study of the best methods of farming. The man who has been raised in the country, however, often is prone to place too much dependence upon precedent and stick to the old ways, ignoring the great progress which the farming industry is constantly making. The individual who can grow crops and animals most successfully is neither the man from the city nor the ultra-conservative farmer, but the one who combines much practical experience with the latest methods, machines and varieties of proven value.

KEEP POSTED ON PRUNING

Many valuable trees are ruined every year by unskilled pruning. This loss may easily be prevented by keeping posted on advanced methods. The general principles of trimming trees are easily learned, and if the owner is familiar with these he can either do the work properly himself or employ pruners who know their business. It is unsafe to assume that simply because a man is in the pruning profession he knows how to handle a tree properly. Many so-called horticulturists are really ignorant tree butchers who slaughter fine shade and ornamental trees as well as ruin orchards. Men who do custom work on trees, vines and plants should be required to show personal recommendations from farm advisers or other responsible authorities.

EGG MARKETING COMPETITION

The formation by Atlantic Coast poultrymen of an egg marketing association covering a dozen States and handling the product of 10,000,000 hens, indicates the magnitude of the commercial chicken business, and the difficulty that soon may be experienced in finding a profitable market for the output of this gigantic industry. The Eastern egg men announce they will put up a strong fight for the business which is going to Pacific Coast producers. They are going to advertise that a large part of the 15,000,000 Pacific Coast eggs shipped East are sold as fresh eggs, although they are three to four weeks old—it is claimed—upon arrival. This alleged fraudulent practice will be put before the consuming public in a way to hurt the market for Pacific Coast eggs as much as possible. Western producers have a real job ahead of them in holding and enlarging their egg market.

"What's New?"—Keeping Abreast of Agricultural Progress

Using Purebred Queens

MORE than 3000 purebred queen bees were introduced into the State of Washington last year. This means that a similar number of colonies of bees will produce more honey the coming season.

Kill Weeds—$100 Acre

MEN who make a business of ridding land of morning glories in Monterey County charge $100 an acre for a guaranteed cleanup. Another serious weed pest, leppidium draba, has appeared in several places in the Salinas Valley. Determined efforts are being made to prevent its spread.

Beats Japs With Beets

BECAUSE his seeder wouldn't operate properly, Kirk Cropsey's California beets were too thin. This, however, resulted in more rapid growth, enabling the owner to beat his Jap competitors in the market six days. Cropsey is a Nebraska gardener who spends his winters at Inglewood.

Sudan Grass in Arizona

INTERESTING experiments in feeding Sudan grass hay to dairy cows, in comparison with alfalfa, recently were concluded by the Arizona Agricultural Experiment Station. According to W. S. Cunningham, the experiments showed Sudan grass hay is worth about three-fourths the price of alfalfa hay for this purpose.

Blackberry Is Immense

THE Colombia blackberry, which flourishes in the South American country of that name at an altitude of 8000 to 10,000 feet, is said to be the largest berry known, sometimes attaining a length of 2½ inches and a diameter of 1½ inches. The berries are light crimson in color, shading to wine color when overripe. The canes have an unpleasant habit of sprouting from the roots, instead of forming compact bushes.

Ship Prunes by Water

OREGON'S famous "Mistland" Italian prunes are being shipped by water to Europe and to Atlantic ports of the United States. The motorship San Francisco sailed November 29 from Portland with 1200 tons of this delicious dried fruit—2,400,000 pounds—bound for Philadelphia and Norfolk. The Roman Prince carried 400 tons—800,000 pounds—to Liverpool. The rate by rail to Atlantic ports is $1.25, while the water tariff, including dock delivery and wharfage, is only 64 cents, or little more than one-half.

Epsom Salts for Hens

PROPER doses of Epsom salts are invaluable for maintaining healthy hens, according to Prof. James Dryden, who says that this old-fashioned remedy is used by the ton for preventing fowl diseases and curing the latter in early stages. One pound of salts, dissolved in warm water, is the proper dose for 250 hens, administered in the morning. Fresh water is given in the afternoon, and on the following day the dose is repeated. The next day after the second dose Douglas tonic is given for two or three days, one teaspoonful to a quart of water. This treatment is for colds, catarrh and diarrhoea.

Pit Silos in Arizona

THE underground or pit silo is becoming increasingly popular in Arizona, particularly in districts some distance from railroads, where the expense of hauling materials may be considerable, according to S. P. Clark, of the Agricultural Experiment Station, Tucson. It is pointed out the pit silo is practicable only in districts where the water table is not too near the surface, where drainage is good, where rainfall is not sufficiently heavy to cause seepage, and where the character of the soil is such that it will not "cave in" readily. The actual cash outlay in constructing a pit silo need not exceed $100, and may be as little as $25, depending on capacity and local conditions, it is pointed out. The cost of a number of such silos in Arizona ranged from $1 to $1.50 a ton capacity. On account of the possible formation of dangerous gases, a lighted lantern or candle should be lowered into the silo before it is entered. If the flame is extinguished, danger exists. Bulletin No. 140, issued by the Arizona College of Agriculture, gives practical and helpful information on the pit-type silo.

Grapefruit Grower Retails

AN interesting experiment in middleman elimination is being conducted by the Salton View ranch, near Thermal, Coachella Valley. Grapefruit is packed in pasteboard cartons, 40, 50 and 60 to the box, and shipped by express direct to consumers. "Desert Sweets" is the trademark chosen. This seems an appropriate name, since the sweetest grapefruit in the world is said to grow in the Imperial and Coachella valleys.

Sevillano Olives Succeed

SEVILLANO olives are the most profitable kind of fruit grown at Corning, California, a community of 5000 horticulturists and small farmers. These olives bring 5 to 14 cents a pound, yielding growers rich returns. In order to "get in on" this good money as soon as possible, producers are top-working many poorer kinds of olive trees to this new variety. Because trees of the latter are scarce and high-priced, some people are planting cheap sorts, expecting to graft them later to Sevillanos.—WARREN N. WOODSON.

Canker Destroys Cottonwoods

BECAUSE of the prevalence in Arizona of the cytospora canker, a disease destructive to cottonwoods and poplars, the Arizona Agricultural Experiment Station recommends the planting of resistant varieties, such as Western and native cottonwoods and the Lombardy poplar. Tree holes should be large and provided with good drainage, the report adds, and the trees well irrigated. Blasting should be resorted to where the surface soil is underlaid with hardpan. In pruning, dead areas in the trunks should be carefully chiseled out and the cavities painted with creosote and filled with common or asphaltic cement. Stubs or large branches should be cut off close to the trunk and the surface given a good coat of lead paint. All diseased branches should be cut off and burned immediately. Ten per cent formaldehyde should be used to sterilize pruning tools. Because of the importance of these trees in the Southwest, everyone is urged to observe the above precautions, which, it is said, will result in control of the canker.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

V—HERBERT A. SHEARER

PROBABLY no name is better known in the field of agricultural journalism than that of ORCHARD and FARM'S engineering editor.

MR. SHEARER

He brings to the staff a lifetime of experience both in practical farming and writing. Among the widely known journals Mr. Shearer has edited are "Farm Stock Journal," "Farm and Home," "Farm Epitomist," and "Farm, Field and Fireside," later known as the "Farm Press."

Mr. Shearer has managed extensive farm projects in New York, Indiana, Illinois, Idaho and California. At one time he had charge of a 5000-acre project in the Sacramento Valley, and was prominently identified with the big Twin Falls irrigation project in Idaho, where he superintended land-clearing operations and interested the farmers in planting legumes.

Among the books and pamphlets prepared by Mr. Shearer are "Red Clover" and "Crimson Clover" (on which he is a recognized authority), "Farm Buildings" and "Farm Mechanics," the two latter being standard text-books.

Mr. Shearer, in addition to contributing regularly articles on practical farm engineering topics, answers questions of subscribers and helps them solve their problems. His mechanical and shop hints, illustrated with his own drawings, are of widest practical value, and are based on actual experience and observation during many years of closest contact with things agricultural.

NEXT WEEK—W. S. GUILFORD

Power Pointers

WALTER H. GARDNER

ributing Editor of Orchard and Farm

IE nurseryman has found that the honest power of a big tractor and the burly strength of the sub- deserve a place on his property.

TER H. GARDNER

Up in Napa County such an outfit is being used to dig young vines—very much as a beet plow is used. A special blade attached to the subsoiler undercuts a row of vines so that the plants can be pulled loose by hand.

AKE YOUR OWN PIPE

"It's going to be easy for Cali- a farmers to make their own con- pipe right in the field," is the ration of a new arrival in Call- a—the representative of an Eng- firm. "Furthermore, the pipe can sed within 24 hours after it is ufactured. This pipe is "spun," the r is drawn out by centrifugal mo- —and no inside form is used." all look forward to a concrete ple.

N YOU HEAR IT COMING?

A half dozen firms or individuals carrying on experimental work perfecting the adaptation of the n engine to the farm tractor. In of the steam tractor is its abil- o use low grade fuel; the elimina- of the transmission and its unique ty to deliver full power at any d desired. On the other hand, it lky, far from care-proof, and quite cult to repair if it does get out of r, but the improved steam tractor st coming around the corner.

OW OFTEN REPAIRED?

Once upon a time a tractor man- turer hoped to fabricate a machine would work season after season only a few minutes spent each in keeping it at top pitch. Mod- manufacturers, however, try to l a machine that will work through ason with mighty little adjustment epair—a machine that needs an of-the-season overhauling before it ut away in storage for the next getic campaign. That seems to be the farmer wants—"something will go when he steps on it." "In connection," declares R. C. Force he C. L. Best Tractor Company, periodical overhauling of a good of machinery has an absorbing est not found in the daily grind e necessary chores where animals kept."

OW MANY HORSES HAVE YOU?

"If you count mechanical horse- er as an equivalent of an animal, kes 247 horses to take care of my acres of orchard," says a success- farmer. "That adds in the trac- pumps, trucks, dipper, saw, spray- nd washing machine." If these actual horses the owner would to buy about 400 acres more to ll pasturage for them—for it takes t two acres to maintain a horse. is this particular farm an excep- It's a safe bet that there is more one horsepower installed to a cul- ed acre in California.

T YOUR STRAW TO WORK

In several parts of the country mercial machines are being oper- for distilling gases of high-heat value from the straw and refuse e farm. The writer recently saw experimental plant. Straw was ed into a retort and closed tightly larger fire box beneath was like- filled with straw and lighted with atch. The retort soon gave off s that were washed in one pot then were delivered to a drum in- ed over water. This gas was used perate a stationary engine, a cook e and a mantel light. From the pot was collected a creosote ted for paint and disinfectant. charge was supposed to give the nary farm house all the power, and light it needed for three . It cost nothing but the price of iling the straw and one machine.

CITY HORSES INCREASING

Philadelphia now has 24,000 horses, an increase of 24 per cent over last year; New York, 72,000, 12 per cent; Chicago, 51,000, 18 per cent, according to the Master Horseshoers' Association.

BUYS WASCO COTTON

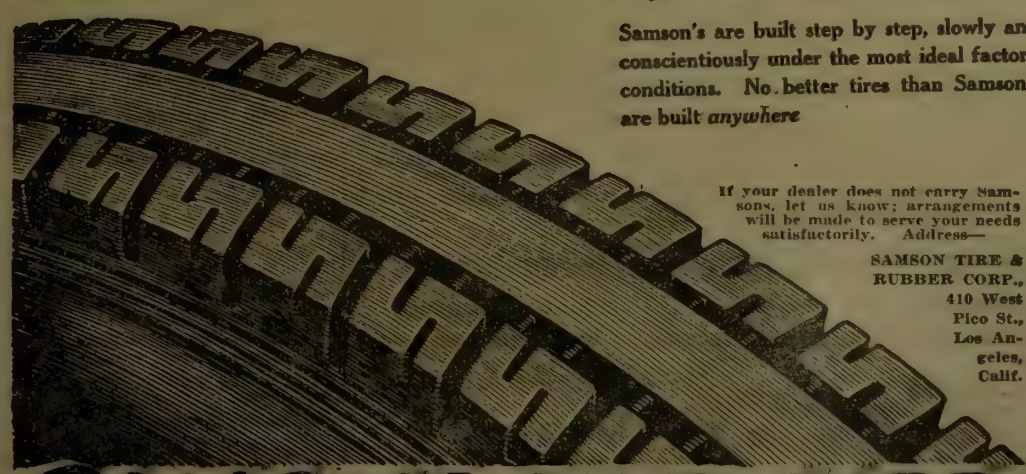
Twenty-four bales of long-staple cotton were recently purchased from Wasco growers by a Bakersfield merchant at 25½ cents a pound, which is considered a very satisfactory price.

"MARY LOTUS" IS CHEAP

Bert Bougher, manager of the Pasadena City Farm, says one reason why citrus orchardists are discarding vetch for melilotus indica —"Mary Lotus"— is because the latter costs so much less for seed.

It is not mere rubber and material alone that make Samson's what they are. True, the materials used in Samsons are the very finest obtainable, and the mechanical principles on which they are built are the most advanced in the entire industry—but it is honest skilled conscientious workmanship that gives to Samson's that inherent stamina for which they are famous.

Samson's are built step by step, slowly and conscientiously under the most ideal factory conditions. No better tires than Samson's are built *anywhere*



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Likes Gaviota Plum

S. A. HOLTON, Elsinore horticulturist, considers the Gaviota plum one of the most valuable varieties grown. Specimens shown at Riverside were of excellent quality and had kept for a long time in good condition. When left on the tree until fully matured, the fruit turns a beautiful pink color. The flesh is very rich and meaty and the pit quite small. The tree bears well, is a strong grower and does not split down easily.

Mr. Holton also raises white Heath cling peaches and many other varieties of fruits. His place is located near the head of Lake Elsinore, where water is obtained from 200-foot wells. It was formerly unnecessary to go down more than forty-five feet for water, but dry seasons have lowered the water level considerably. Some ground is sub-irrigated and used for growing alfalfa, being valued at $1000 an acre, although good fruit land is considerably cheaper.

Rush brothers harvested a big crop of apricots from a twenty-acre grove in that vicinity, where there is 150-acre olive orchard, the Lakeland.—O. H. B.

Picks 2000 Tons of Peaches

FRED MOFFET, manager of the Superior ranch, Stanislaus County, supervised last summer the picking of more than 2000 tons of peaches, 180 acres yielding 1750 tons of fresh fruit and 250 tons of the dried product. The ranch also contains 80 acres of Malaga and Thompson grapes and 40 acres of apricots. It is one of the show places of that part of the country, which is noted for fine fruit farms. The property is owned by E. S. Welch, a Shenandoah, Ia., nurseryman, who learned the art of tree propagation from Frederick W. Taylor, now of Los Angeles, and who sold O. H. Barnhill, assistant editor of ORCHARD and FARM, the trees to plant a 12-acre apple orchard in 1896.

Raising More Almonds

THE tonnage of almonds shipped by the Oakdale (San Joaquin County) Association the past season was about 450 cars, compared to 280 in 1921. Several new orchards came into bearing and a record-breaking crop was harvested. The 1923 crop is expected to total 700 tons.—MATTHEW HAMILTON.

Giving Away Apples

ON Apple Day, October 31, the Southern Pacific made free presents of apples to its dining car patrons during the luncheon period. Hundreds of boxes of Pacific Coast apples were given away. The Mutual Drug Stores of Seattle and other northwestern cities also gave away large quantities on the day named.

Pomegranates Bear Well

FROM 125 pomegranate trees, which form a border to an olive orchard, Gus Spanger, Jasmine nurseryman and orchardist, gathered 25,000 pounds of fruit the past season, hauling it in lug boxes to Los Angeles. He has a twenty-acre pomegranate orchard which is expected to begin bearing next year.

Raises More Peaches

C. N. WHITMORE is one of Stanislaus County's biggest fruit growers, having 120 acres of peaches which the past season produced 1225 tons of fruit and 100 acres more which will come into bearing next summer. He also has 100 acres of grapes and 20 acres of apricots.

SHIPS CARRY APPLES

Ten special steamers are required to carry 600,000 boxes of British Columbia apples to Great Britain. This represents a 20 per cent increase over last year's export crop.

PLANTING 360 ACRES OF PEACHES

Three hundred and sixty acres of peaches are being planted in the Bear River Valley, Yuba County. Apricots and walnuts also are superseding hops and grain in this district.

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Big Seed Catalog Ready for Growers

Morris & Snow Seed Company of Los Angeles Issues Big Annual Book

The Morris & Snow Seed Company of Los Angeles, one of the oldest and largest seed houses in California, has just issued its 1923 catalog. The book contains a vast amount of valuable information to orchardists, ranchers, gardeners and growers generally. The big book is really a manual because of the "Hints on Growing" which present valuable information on spraying, fumigating, fertilizing and use of insecticides. It tells how and when to sow seeds and set out plants for best results, and explains the correct use of tools and implements. Notes on marketing, telling how, when and where to buy and sell to advantage are another feature of the 1923 volume.

The big book contains 64 pages and has more than 150 illustrations. It is said to be the most complete book of its kind ever issued in the Southwest. The company announces that a copy of the book will be sent free to readers of this paper who write for it. The address is the Morris & Snow Seed Company, 439-D South Main Street, Los Angeles, Calif.

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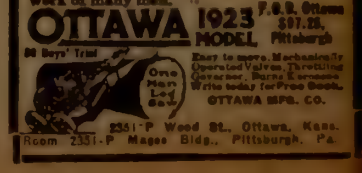

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Breeding for Big Flock Averages

How an Oregon Poultryman Secured a Record of 217 Eggs From 1000 Hens

TWO years ago ORCHARD and FARM readers were told of the remarkable success of J. A. Hanson in building up a flock of high-producing hens. He has since made world records in flock average egg production, in the percentage of 300-egg hens raised, and in breeding the best ten-hen pen of layers. The accompanying article tells more about his successful methods.

By O. H. BARNHILL

PROF: JAMES DRYDEN, premier poultry authority of the Pacific West, and a regular contributor to ORCHARD and FARM, declares J. A. Hanson, of Corvallis, Ore., is one of the best, if not the very best poultryman in the world. Let us see upon what facts this statement is based.

For five years Hanson has had 1000 hens which have laid an average of 212 to 222 eggs each per year, a world record; he has thirteen 300-egg hens, which is said to be a larger proportion than may be found in any other flock. A pen of his birds laid 2440 eggs in one year at the 1920-21 California egg-laying contest, which was a world record for a ten-hen pen of layers. At the '21-22 contest, ten of Hanson's hens laid 2546 eggs.

The superiority of Hanson's hens is not indicated by the prizes they have won in the show ring, but by their egg-laying performances. "By their fruits ye shall know them." When Hanson started in the chicken game ten years ago, his ideal was to produce heavy-producing hens, rather than birds which would conform to an arbitrary standard of perfection.

COMBINES BLOOD LINES

Securing stock from the best egg layers at that time—the O. A. C. flock which contained the first 300-egg hen—Hanson combined the best blood lines in such a manner as to produce pullets which repeated the egg-laying feats of their ancestors. This was the cornerstone of his success. Without good stock—which means heavy-laying hens—the best methods of hatching, brooding, feeding and housing will fail.

Eggs are incubated so successfully that the hatches run from 65 to 87 per cent in a plant which cares for 32,500 eggs at once. The incubator cellar has been excavated on a side hill and walled with cement, to provide good moisture conditions. A natural forest protects the plant from the prevailing winds, while a warehouse above helps keep the temperature uniform.

The eggs are turned automatically three times a day. Fresh air constantly circulates around the eggs. Heat is supplied by hot-water pipes, the temperature being regulated by thermostats. Although 105,000 baby chicks were sold last year, there were not enough to supply the demand for Hanson stock.

Last year 3800 chicks were brooded so successfully that only 3 per cent were lost, which is probably another world's record, number considered.

The little chicks are put out onto the ground as soon as possible after leaving the shell, to prevent leg weakness. They are fed very carefully for the first few weeks, being given buttermilk instead of water, and plenty of green feed after the first week. Hanson believes there are many more chicks injured by overfeeding than by inadequate rations.

PULLETS ROOST IN TREES

When the pullets are seven weeks old they are placed in small colony houses and given the run of a large pasture, where there is plenty of grass and running water. By the time they are four months old the roofs are removed from the colony houses and the pullets encouraged to roost in the trees, as did their ancestors, where there is plenty of pure air and no insects or disease germs. To see the branches of big trees weighted down with thousands of beautiful white birds is an interesting sight.

Hanson is a great believer in back-to-nature methods. He wouldn't use an artificial incubator if it were practicable to have all his chicks hen-hatched. Vim, vigor and vitality are developed, he believes, by keeping fowls out in the open as much as possible. The cockerels are forced to roost in a shed which has one entire side open, but in the mild climate of the Willamette Valley that is no real hardship.

Climate is an important factor in the successful raising and keeping of poultry. The weather of western Oregon is peculiarly well suited to this work, the summers being cool and dry, while the winters are warm and moist. *(Continued on Page 12)*

Incubator plant, where chicks are hatched under unusually favorable conditions, resulting in record production.

Above—Flashlight photo of pullets roosting outdoors. Right—Modern laying house. Residence in distance.

Several Date Varieties Prove Valuable

By O. H. BARNHILL

AMONG trees there is one which is blessed—the palm," wrote the prophet Mohammed. Enthusiastic and successful California date palm orchardists, who find ready sale for their best grade of fruit at $1 a pound, are inclined to agree with the ancient Asiatic, who states further that "The palm resembles animals by its division into two sexes, one of which requires fertilization for reproduction. If the head of a palm tree is cut off, it dies; if its heart is subjected to too great a strain, it perishes. Is it not the same with man?"

For thousands of years the date palm has furnished the chief food of the desert dwellers of Mesopotamia, Arabia and northern Africa. Dates and camel's milk form the sole diet of many barbaric tribes of Egypt and India, constituting a ration which compares favorably in analysis with that of civilized peoples.

Arabs consider their date palms as sacred, and care for them as carefully as they do for their own children. Families which own date palms are considered fortunate. The finer varieties are zealously guarded; such as the Deglet Noor from northern Africa, Khadrawi from Mesopotamia and the Halassi from Arabia. Fruit from these trees is difficult to obtain in outside countries.

The possibilities of date culture in the United States were suggested by the presence of date palms in Palm Canyon, Coachella Valley, the only place in the country where palms grow wild. A few months ago the Government set apart Palm Canyon as a national monument.

INTERESTING IMPORTATIONS

Prof. Swingle, of the Department of Agriculture, visited the great date-producing regions of Asia and Africa and secured numerous offshoots from native trees of the finer varieties. These were transplanted in the Coachella Valley, and when the trees were large enough, new offshoots were obtained for additional plantings.

A date tree will produce only about seven offshoots in nine years, after which it "goes out of the shooting business." This explains the great cost of the finer varieties, which England will no longer permit to be exported from Egypt. A few offshoots still are obtained from French Algiers and transplanted near Yuma, Arizona, until they grow into trees large enough for orchard planting. While these sorts cannot be fruited successfully at Yuma, the trees grow there better than in the Coachella Valley.

Date trees require plenty of room for best results, although in their native oases they grow quite close together. Despite the fact that date palms are commonly associated with the desert, they require a great deal of water. This is supplied from wells pumped by electricity, or from artesian wells in the lower part of the valley. A little alkali seems to have no deleterious effect upon date trees.

At the age of three years the trees often begin bearing, although a full crop is not produced until the palms are ten or *(Continued on Page 13.)*

California Dates
Left—R. H. Postlethwaite and one of his seven-year-old Menakhers. Top—Row of palms in Mecca gardens, photographed December 20. Below—A fine seedling, the "San Joaquin," for which great things are predicted.

For protection, and to insure more even ripening, clusters frequently are protected with bags. Fred Johnson is shown at the right of this Deglet Noor.

Deglet Noor Industry Now Thriving

By MARY E. WALTER

WITH the 1922 date crop of Coachella Valley picked, cured, packed and shipped, the close of the California date season proves that the demand for California dates is ahead of production and that the business has blossomed into commercial security alongside that of walnuts, oranges and prunes.

"This season demonstrates conclusively that the date industry of Coachella Valley has reached the stage where it amounts to something, and is giving actual returns," declares C. E. French, president of the Deglet Noor Association.

Approximately 80,000 pounds of Deglet Noors alone went through the new packing house of the association this year, where only 32,000 were handled last year, and this does not represent one-third of the dates of the valley.

Doubly significant for the future of the business is the fact that of the 10,500 Deglet Noor palms now growing in Coachella Valley—this is exclusive, of course, of the many other varieties that grow there—only some 1500 have reached commercial bearing; in fact, only the first stage of commercial bearing. It is from these palms that the 80,000-pound yield has come.

A PERMANENT INDUSTRY

If 1500 young palms can yield so much and practically establish an industry, and if, as is stated, a date palm is still in prime condition at 100 years of age, then all indications go to fix the California date industry for all time and to establish the best that has been expected of the Deglet Noor variety.

While the oldest date palms of Coachella Valley were planted in 1907, those of most consequence to this year's harvest date from 1912, now ten years old and fully bearing. A still larger number of palms, set out in 1914 and 1915, are not fully productive.

While a few of the date palms are in nursery form, the entire number in the valley represents, at fifty palms to the acre, 225 acres when all set out. These figures do not include palms of other varieties.

The Deglet Noor date, it must be explained, is a much more dignified member of the family than the sticky, "squashy" imported product. In fact, it is often called the "aristocrat of the date tribe." It is a semi-dry date, though not as dry as the Thoory, which is the bread date. It can be eaten without finger bowls, like a delectable bit of confection, has a beautiful amber hue, is fine of flavor and well adapted to keeping. To be sure it is different in texture from the so-called "soft" dates that grow in this region in large numbers and which, especially when fresh and a bit juicy, are a rare treat.

MANY VARITIES TESTED

Of the original importations into this country of some 300 varieties of date palms to be tested out by the United States Government at the date gardens, one at Indio and one at Mecca, in Riverside County, as well as at similar stations in Arizona and Texas, for commercial adaptability to soil and climate conditions, only a small percentage have proved valuable. According to showings of Government experts, the Deglet Noor is one of these especially adapted to Coachella Valley, because of the close resemblance of soil and climate to its native Africa.

Above—A prize Deglet Noor palm, 9 years old. Yielded 320 pounds of fruit, contracted in advance at $1 a pound. Reeves' Garden, Coachella Valley. Left—Dates are handled largely by women. Miss Margaret Allen picks her own. Below—Removing offshoots from 4-year-old tree

An important statement made regarding the dates raised in the West is that they have a larger sugar content than those of the Orient and Africa, some being as high as 60 per cent sugar.

Deglet Noors from Africa are much liked in Europe, where they command higher prices than ordinary dates. Moreover, the region where they grow in Africa is limited, so that the supply there is hardly enough to meet the European demand.

Of the 10,500 Deglet Noors in Coachella Valley, a number are actually imported from Algeria; the rest are offshoots produced here. The largest single importation of 3400 was made by the Gillette-Rosenberger date gardens. This concern has 100 acres in orchard form, partly Deglet Noors, partly Saidys.

The dates are propagated by means of "offshoots." They cannot be budded or grafted. Since each Deglet Noor palm yields about ten offshoots during its offshoot bearing period, and other dates from 10 to 25, it is interesting reckoning how soon the limited date region of Coachella Valley and the rest of the Southwest, may be entirely planted to dates.

The 80,000 pounds of Deglets that went through the packing house at Indio this season does not represent the full bearing capacity of the palms. Where a palm will put on some 300 to 400 pounds if let alone, many of the growers of the valley have adopted the method of clipping off the lower third of the fruiting area of each bunch when in blossom, to encourage the growth of bigger fruit and a larger percentage of "number ones." This leaves about 75 to 125 pounds of fruit when ripe, which, declare growers who have tested the method, is *.(Continued on Page 13).*

Building a Big Breeding Farm

ONE California rancher who is doing his bit towards bringing to the vast grain fields of the great interior valley a more productive and profitable system of agriculture is C. H. Hopkins, of Woodland.

Of 500 acres of rich bottom land near Davis, a large acreage is being leveled and planted to alfalfa. Fine buildings are being erected and the pastures filled with the best specimens of Shorthorn cattle, Hampshire sheep and Poland China hogs. No expense is being spared on stock and equipment, the motto being, "The best is the cheapest."

The transformation of Straloch farm began about three years ago, when J. I. Thompson, former herdsman of the University farm, was placed in charge of the work. Individuals from the best blood lines in the three animal kingdoms mentioned were purchased and increased until now there are nearly 100 cattle on the farm, an equal number of sheep and 50 head of hogs. The number of the latter is to be increased until they outnumber either the sheep or cattle.

The general plan of development is to make the land produce, with a few unimportant exceptions, the feed consumed by the animals. Soil fertility is being restored by the use of manure and the growing of legumes, principally alfalfa. As fields are pastured successively they are fertilized automatically with droppings, supplemented with haulings from lot and barn. The present pasturage is chiefly along the banks of picturesque Putah Creek, which runs across the south part of the farm.

GROW GOOD FEED CROPS

The standard feed crops are alfalfa hay, corn silage, oats and barley. Some splendid fields of alfalfa already have been developed, while a yield of 37 sacks of oats per acre has been secured. Counting the standard weight of Eastern oats, 32 pounds per bushel, this would indicate a yield of 116 bushels per acre.

Two silos, each holding 110 tons, are filled with Indian corn, which is believed to make the best "pickled fodder" for animal consumption.

Forty acres is to be planted to fruit and nut trees, the varieties of which have not yet been decided upon. The land is not needed for provender-producing purposes, and the fact that an old vineyard located on adjoining land has proved enormously profitable led to the decision to include horticulture in the Straloch project.

Three sources of water are available for irrigation—Clear Lake canal, pumping from wells, or pumping from Putah Creek. An electric line half crosses the farm and furnishes current for lighting and power purposes.

ROADWAY SIGNS ATTRACT

The visitor is apprised of the presence of Straloch farm by three large signs set a short distance back from the State highway. These signs are built in the form of an obtuse angle pointing toward the road, each side being lettered, so that the announcement can be read easily by travelers from either direction. "Straloch Farm. Shorthorn Cattle," reads one sign. The other two advertise hogs and sheep. These signs have proved to be good trade-pullers.

The farm buildings are set a half mile back from the highway, in order to be handy to all parts of the ranch, especially the permanent pasture. The private road is surfaced with gravel from the creek and bordered with young olive trees, which are expected to produce profitable crops of fruit in the future.

A nuique feature of the improvements is a planting of ornamentals in crescent form facing a large open space in front of the barn. This is for the purpose of furnishing an attractive background for the animals when photographed or shown to prospective purchasers.

BUILD MODEL BARN

The barn is 40 by 150 feet and holds 240 tons of hay. It is built in a very substantial manner, with concrete ground floor, and mow supported with three-inch planks. The latter are grooved to prevent dirt sifting down onto the animals below. Following the destruction by fire of a large dairy barn at Woodland, the electric wires are all being inclosed in galvanized iron pipes.

The barn was designed and its construction superintended by the owner, who is a graduate of the Boston School of Technology and an expert mechanical engineer. It was found impossible to buy latches and hinges of sufficient strength, and these fittings had to be made by hand.

The new grain elevator and feed mill at Straloch is said to be the largest plant of the kind on any American farm. Three circular bins, each 20 feet in diameter and of the same height, have a combined capacity of 7500 bags of grain. The bins are made of 12 and 14 gauge steel and have funnel-shaped bottoms, through which the contents are emptied onto a belt conveyor. The latter lifts the grain to the top of the adjoining feed mill, where it is cleaned, ground, chopped or rolled.

ELEVATOR SAVES LABOR

Grain is received directly from the threshing machine into the storage bins, or from wagons. The latter are dumped at the feed mill, as at a bulk grain elevator, thus obviating the lifting of sacks. The underground belt conveyor empties the dump bin in a similar manner to which the contents of the storage bins are removed.

The bin nearest the feed mill has eight compartments for holding different kinds of grain and prepared feed. Wagons are loaded for the barn or feed-lot from overhead chutes, thereby effecting a further saving in lifting labor.

The machine shop and implement sheds are of unusual size, the former being 80 by 48 feet and the latter 200 by 24 feet. Both shed and shop are substantially built, with shingled roofs and painted sides, and are provided with commodious sliding doors. At one end of the shed is a large structure with open sides, for handy use. The open and closed sheds form an "L" along side of the shop.

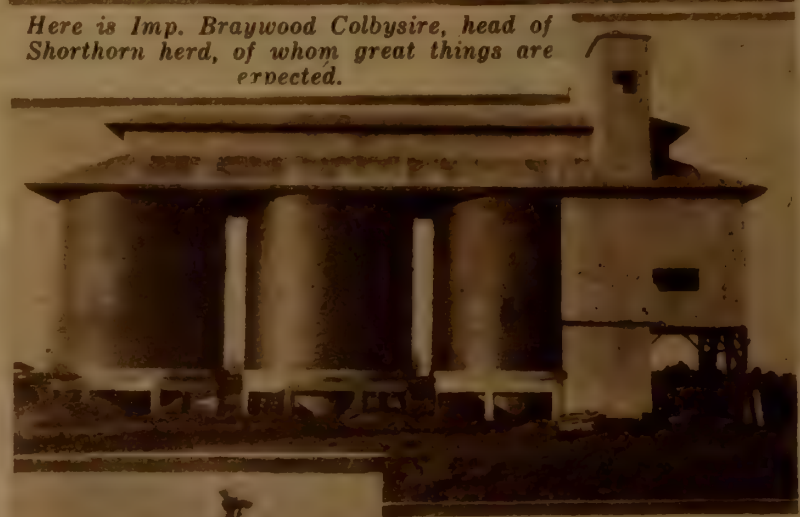
It is planned to construct a similar "L" shed on the other side, leaving a wide opening on the north side, opposite the shop. Permanent living quarters have not yet been built, the owner and manager of Straloch being as yet too busy with the business end of the project.—O. H. B.

Substituting Livestock for Grain

ONE of the most notable individual achievements in California is the changing of a 500-acre Sacramento Valley grain ranch into a model stock farm, where large numbers of purebred Shorthorn cattle, Hampshire sheep and Poland China hogs are being developed on land which previously produced decreasing crops of wheat and barley.

New barn and silos at Straloch Farms. Capacity of loft, 240 tons of hay!

Here is Imp. Braywood Colbysire, head of Shorthorn herd, of whom great things are expected.



Straloch elevator and feed mill, said to be the largest farm plant of its kind in America.

C. H. Hopkins, proprietor, mounted on his favorite saddle horse.

Straloch's champion pen of Poland China barrows, California State Fair, 1922.

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California Leads in Men and Animals

(Continued from Page 3)

the big meets there. Each year, I soliloquized, Pacific Coast football teams make a better showing against those of the East. The echoes of triumphant cheering have scarcely ceased, as a result of U. S. C.'s great triumph over Penn State on the first day of the New Year.

But to return to the animals:

Milk goats have not been long in California, yet Gretel, of the University farm at Davis, has been here long enough to give more milk than any other goat in history—2941 pounds, containing 97 pounds of butterfat.

Remarkable milk-production records by purebred dairy cows of the Pacific Coast are now quite common. Vive La France, an Oregon Jersey, has a record of 4415 pounds of butterfat in five lactation periods. This record is the best in the world for a cow of any breed in five years, exceeding even that of Tilly Alcartra for the same length of time. Tilly, however, has eight years of usefulness to her credit, with a total of 6627 pounds of butterfat. Perhaps Vive may beat Tilly's total.

LARGEST PERCENTAGE OF WINNERS

The Blue Book of the National Holstein-Friesian Association shows that cows which have produced more than 30,000 pounds of milk in a year are more numerous on the Pacific Coast than elsewhere on the globe. At the head of the list is Segis Pietertje Prospect, owned by the Carnation stock farm at Seattle, with 37,381 pounds of milk to her credit, the greatest milk production in a year for any cow.

Other cows of the Holstein breed with annual records of more than 15 tons are Adirondac Weitshke Dairy Maid, of the Bridgeford stock farm, Patterson, Cal.; Tilly Alcartra, owned by Morris Bros., Woodland, and other cows owned by California State Hospital at Napa; Colony farm, British Columbia; Tonyon stock farm, Los Altos, Cal., and the J. S. Gibson Company of Williams, Cal.

While there are on the Pacific Coast but 4 per cent of the Holstein cows of the United States, this small number holds more than half of the records for milk production!

[Note—Mr. Jones' article will be concluded in the issue of January 28.—Editor.]

END THE DAY'S WORK WITH A SMILE

SEIBEL
AIR SPRING SEAT
FOR
TRACTORS, TRUCKS
and Horse-Drawn Agricultural Implements

JUST THINK! A seat that takes you in perfect comfort over the roughest going *without a jolt or jar;* that doesn't sway, but absorbs all vibration.

You *just sit back at your ease* in the comfortable bucket seat, even *while driving over furrows and rough roads.*

No more stiff back and legs. You finish the day feeling like a two-year-old. You protect yourself from spine and kidney troubles, the curse of tractor and truck drivers.

The Seibel pneumatic spring is the secret. There is no other seat that can compare with the Seibel.

Special attachments for every make of tractor. Attached in a few minutes. Lasts for years. Replacement parts obtainable at any time for a nominal price.

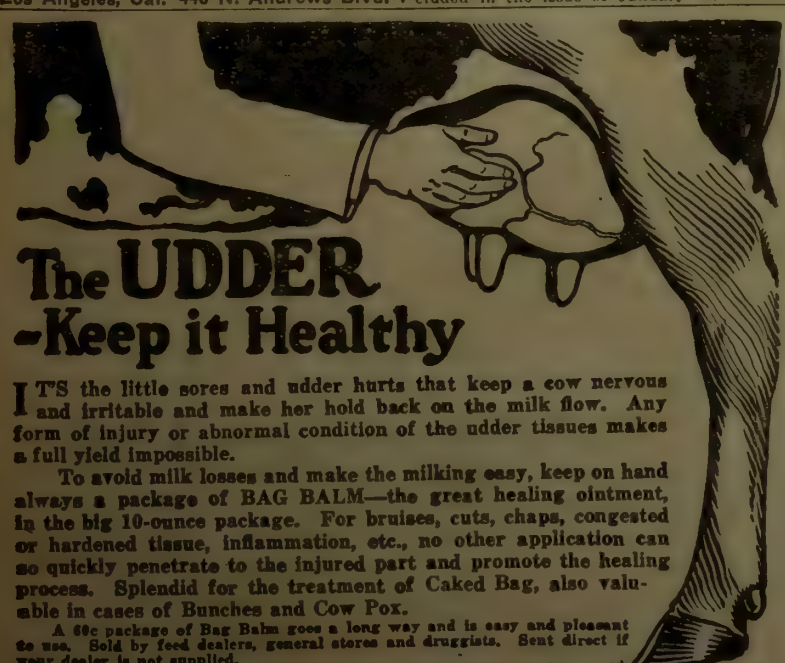
$21 ON TEN DAYS' TRIAL
Tractor attachments $2 extra

SEIBEL AIR SPRING COMPANY
Humboldt Bank Building, San Francisco — 1048 South Olive Street, Los Angeles

I enclose $21 ($2.00 extra for tractor attachments), for which send me, freight collect, a SEIBEL AIR SPRING SEAT for.....

(tractor) (truck), model....., year..... It is understood that if I am not perfectly satisfied with it after 10 days' trial I may return it at my expense and get my money back.
NOTE: 5 per cent Federal tax on seat when used on truck.

Name ..... Address.....



The UDDER
-Keep it Healthy

IT'S the little sores and udder hurts that keep a cow nervous and irritable and make her hold back on the milk flow. Any form of injury or abnormal condition of the udder tissues makes a full yield impossible.

To avoid milk losses and make the milking easy, keep on hand always a package of BAG BALM—the great healing ointment, in the big 10-ounce package. For bruises, cuts, chaps, congested or hardened tissue, inflammation, etc., no other application can so quickly penetrate to the injured part and promote the healing process. Splendid for the treatment of Caked Bag, also valuable in cases of Bunches and Cow Pox.

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Send the coupon below at once. Give your dealer's name and we will mail you a sample of Bag Balm, worth 15c, absolutely free.

Ten Ounce Package 60c

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Dept. M, Lyndonville, Vt.

Dairy Assoc. Co., Lyndonville, Vt. I will give Bag Balm a trial if you will mail me free sample.
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Advertisement must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

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ONE ACRE AND INDEPENDENCE, OR The Fine Art of Earning a Comfortable Living on One Acre in California

For those who desire to dwell in sunny California without giving up hard-earned capital.

Charles Weeks, for 18 years proprietor of the most intensive Egg Farm in the world and founder of the famous CHARLES WEEKS POULTRY COLONY at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles.

Write for literature.

OWENSMOUTH, CALIF.

ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate; fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

FOR SALE—640-acre foothill ranch; wonderful vineyard land; no irrigation; 480 hog-tight; hogs, cattle, grain raising; six-room house; $20 acre. Otto Ecker, Madera, California.

FOR SALE—6½ acres full bearing apple orchard. Yucaipa district. Price $2200. W. T. DE HAVEN, 124 Pearl st., Ventura, Calif.

GOVERNMENT LANDS

SPLENDID timbered relinquishment to 160 acres, cheap. Good hunting and fishing. Thoroughbred Airedales for sale. Mines for sale. The Lion Kennels, Wawona, Calif.

FARMS WANTED

WANT to hear from owner having farm for sale. Give particulars and lowest price. JOHN J. BLACK, 110th Street, Chippewa Falls, Wisconsin.

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNown, 367 Wilkinson Bldg., Omaha, Neb.

NURSERY AND GARDEN STOCK

CHOICE AND RARE BERRY PLANTS—Red Raspberries, Black Raspberries, Purple Raspberries, Blackberries, Cory Thornless, Macatawa, Mammoth, Himalaya, Phenomenal and Red Logan Dewberries, Currants, Gooseberries. Ten varieties of strawberries. Wholesale and retail. Send for free catalogue. Stanford Berry Plant Nursery, Box 726, Palo Alto, Calif.

GIANT ARGENTIEUL Asparagus Roots—Strong, clean, one year; equal in size to average two-year roots. Free samples. Per thousand, $6.75; 10 M up, $6.50; 50 M up, $6; 100 M up at $5.50 f. o. b. Terms, one-fourth with order, rest on delivery. CLAUSSEN NURSERIES, Brawley, Calif.

EXTRA FINE RHUBARB PLANTS—Very profitable crop. Fine intercrop in young orchard. One planting lasts many years. Second crop few months after planting. Rhubarb Association markets crop. Circular free. W. A. LEE, Box 88, Covina, Cal.

CORY'S Thornless Blackberries. Large, early, delicious flavor, few seeds; a good seller, better eating. One year. Strong transplants from heavy producing vines. 12 for $12, postpaid. Wm. Mortenson, R. 4, Box 20, Lodi, Calif.

WONDERFUL POMEGRANATE TREES are hardy, ornamental and profitable. Offer good 2-year-old trees reasonable. For prices write J. W. IRWIN, Lindsay, Cal.

HACHIYA PERSIMMONS—Extra fine trees. Pomegranates. Circular. SHERWOOD PERSIMMON NURSERY, Fullerton, Calif.

STRAWBERRY PLANTS

FOR SALE—Strawberry plants. Improved new Oregon, Magoon, Gold Dollar, five dollars thousand. Progressive Everbearing, $1.50 hundred, f. o. b. Canby. Plants inspected. Sam Morell, Canby, Ore.

CHOICE NEW OREGON and other strawberry plants. Blackberry, blackcap, currant, gooseberry, loganberry, raspberry. Lowest prices. Send for complete list. WARD K. RICHARDSON, 198 Hickory, Salem, Ore.

EXTRA quality. New beds. Gold Dollar, Magoon, Oregon, $4 per 1000; Progressive Everbearing, $1.50 per 100, prepaid. J. W. VINACKE, Aurora, Oregon.

FOR SALE—Carolina Strawberry Plants in large quantities, $5.00 per thousand, postpaid. G. M. Hawley, El Cajon, Calif.

PLANTS AND BULBS

FOR SALE—Millions of cabbage plants of different varieties. L. C. Johnson, Pomona, California.

GIANT WINTER RHUBARB PLANTS—New $1 per dozen. F. R. Walker, Puente, Calif.

TYPEWRITERS

TYPEWRITERS—All makes, $20 up. Payments. Free trial. PAYNE CO., Rosedale, Kans.

POULTRY

THE Schlotthauer Single Comb White Leghorns have been bred since 1908 and all breeding stock has been carefully hoganized to insure heavy laying and strong, hardy chicks. Safe delivery and full count guaranteed. For more information write for free booklet. White Plumage Poultry Farm and Hatchery, Exeter, Calif.

OFFICIALLY Certified White Leghorn baby chicks hatched in the world's largest electric hatchery. Choice free range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Write for prices, literature and booking dates for Spring delivery. Safe arrival guaranteed. Established in 1898. A quarter of a century of constructive and efficient service to the poultry industry.
MUST HATCH INCUBATOR CO., 422 Seventh st. Petaluma, Calif.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. New booking orders for January and later delivery. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch and Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

BETTER HATCHED CHICKS
S. C. W. LEGHORNS
All our breeders are vigorous. They have been carefully selected and mated for high egg production. Hatch each week. Parcel post prepaid and safe arrival guaranteed. Write for prices.
SAN DIEGO CO. HATCHERY, R. I. Box 556C. San Diego, Cal.

BABY CHICKS—White Leghorns, R. I. Reds. Order now for January, February delivery. Early hatched pullets pay. Our breeders are culled closely for laying qualities; no hens molting early are kept. All males from good producers. Safe arrival guaranteed. Write for circular. The J. H. Stubbe Poultry Ranch and Hatchery, P. O. Box 670, Palo Alto, Calif.

BABY CHICKS—Now booking orders for S. C. White Leghorn and White Plymouth Rock baby chicks and hatching eggs. Our stock has been carefully bred for heavy layers and are now mated to males bred from high trapnested stock. Baby chicks, January and February delivery, $18 per hundred; after March 1st, $15. For hatching eggs, write for quotations. HOPLAND STOCK FARM, Hopland, Calif.

BABY CHICKS OF BEST QUALITY—Hatched by experts from Healthy, Vigorous Hens that have been BRED TO LAY—not forced to lay. Wh. Leghorns, 14c each; Barred Rocks and Reds, 20c. Strong, vigorous chicks, the kind that live and thrive. ELEC-CHIC Hatcheries, Roscoe, Calif. (via Burbank), Dept. L.

SANTA CRUZ chicks from our heavy laying flock of two-year-old W. L. hens. Hollywood Farm, Wash., strain. They are hatched right and prices are right. Have been breeding and hatching for twelve years and guarantee strong, vigorous chicks. T. B. Blake, Oak Knoll Poultry Ranch, Santa Cruz, Calif.

HIGHEST QUALITY White Leghorn baby chicks and hatching eggs at reasonable prices. Oregon Agricultural College, Hollywood, Tancred and Eglantine strains; trapnested and pedigreed. Send for circular and price list. JOHN E. KIMBER, Cupertino, Calif.

FREE—1923 Daily Egg Record. Ready for mailing in December. Most up-to-date method of recording daily egg yield. We want you to have a copy. Send a postal today. GOLDEN EAGLE MILLING CO., Petaluma, Calif.

STURDY BABY CHICKS—S. C. White Leghorns, White and Barred Rocks, R. I. Reds, Anconas, Black Minorcas and Buff Orpingtons. PURE BREED HATCHERY, Breeders and Exporters of Poultry Breeding Stock, Route 1, San Mateo, Calif.

WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

BABY CHIX—R. I. Reds, Barred Rocks, Buff Orpingtons, Anconas, Black Minorcas, Golden Buff, White and Brown Leghorns. SANTA CRUZ BEST and Turkeys. Enoch Crews, Seabright, Calif.

THE SANTA CLARA VALLEY HATCHERY, Lincoln Ave., San Jose, Calif., for trapnested White Leghorns, R. I. Red and Barred Rock baby chicks. Shipping days Tuesdays of every week.

SOMETHING GOOD in WHITE LEGHORN CHIX—Best strains at reasonable prices. All popular varieties hatching each week. LINGO-DELL RANCH, 11th and Verdugo Sts., Burbank, Calif.

BABY CHICKS—OREGON'S BEST at reasonable prices. Leghorns, R. I. Reds, Anconas, Minorcas, Barred Rocks, White Rocks. Order early. Catalogue free. C. N. NEEDHAM, Salem, Ore.

WHITE LEGHORN Baby Chicks. Book your orders now. Our successful method of feeding and raising baby chicks is yours for the asking. HICKS' ELECTRIC JUBILEE HATCHERY, Rt. 2, Box 22, Petaluma, Cal.

BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

BABY CHICKS—Thoroughbred White Leghorns, Hoganized. No dead or weak ones charged for. Schellville Hatchery, Schellville, Sonoma County, Calif.

FREE BOOK "Chickens from Shell to Market" on application to COULSON COMPANY, Petaluma, California.

POULTRY

PROFITABLE POULTRY CO-OPERATIVE HATCHERIES—Weekly capacity: 30,000 W. Leghorns, 10,000 each Brown Legs, Reds, Rocks, thousands Anconas, Andalusians, Turks, Ducklings. To date we've quadrupled our bookings over former years. Why? Pleased customers reorder, disappointed ones book ahead to insure choice dates, and our superior chicks, ducklings, turks (every year unable to fill many orders). Price reduced booked ahead. 280-290 egg strain. For quarter century imported, trapnested, selected for vigor, growth, beauty, eggs. Mail address: Box O, 18 N. Fair Oaks, Pasadena.

WHITE LEGHORN BABY CHIX from selected flocks, mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: February, $16; March, $14; April, $12.50; May and June, $12. Safe arrival of full count, live, strong chix guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 418 Sixth St., Petaluma, Calif.

HANSON'S Pedigree S. C. W. Leghorns. Over 200 egg flock average for 6 years. Over 221 egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalogue. J. A. Hanson, Corvallis, Oregon.

50 VARIETIES hardy, vigorous Midwestern-raised purebred poultry; eggs for hatching, baby chicks, incubators and poultry supplies. Everything sold reasonable, with money-back guaranty. Send for big book, 144 pages, only 10c to help cover mailing. BERRY'S POULTRY FARM, Box 43, Clarinda, Iowa.

BABY CHICKS—Hatching eggs from Hoganized flocks, fully matured breeders. Barred Rox, R. I. Red, Minorcas, Brown and White Leghorns. Safe arrival and satisfaction guaranteed. Tobener Hatchery, Route 5, Box 306, San Jose, Calif.

DRYDEN POULTRY BREEDING FARM, Concord, Calif.—High-producing C. A. C. White Leghorns and Barred Plymouth Rocks. Pedigreed cockerels. Eggs for hatching.

BABY CHIX—W. Leghorn, B. Leghorn, Ancona, B. Rocks. All 2-year-old free range stock. Orders taken for pullets. CHOWCHILLA HATCHERY, Chowchilla, Calif.

S. C. WHITE LEGHORN BABY CHIX from our own bred-to-lay stock. Our prices are right. Model Poultry Farm, W. O. Smith, Prop., Corning, Calif. Established 1904.

SPENCER TURKEYS—Half turkey, half chicken. Turkey meat. Average 300 eggs year. Illustrated booklet, 3 stamps. E. T. SPENCER, Rt. 1, Santa Cruz, Calif.

TURKEYS

TURKEYS—PURE-BRED GIANT BRONZE CHOICE YOUNG GOLDBANK-COPPER KING STOCK, from our original matings with such imported sires as: GOLDBANK VIII, first cock Madison Square Garden Show (New York), '21; GOLDBANK BOY (his son), first cockerel same show; GOLDBANK KING (his grandson) first cockerel same show, '22; COPPER KING'S BOY, 3rd cockerel, same show, '22; COPPER KING JR., first cock California State Poultry Association Show, Oakland. SECURE THE BEST BLOOD FROM PRIZE WINNERS OF AMERICA'S PREMIER POULTRY SHOW. Reasonable prices. Send for circular. Bronze King Farm, Merced, Calif.

MAMMOTH BRONZE toms and hens; also eggs in season. Our stock are California State Fair winners and graded from the best Eastern stock procurable. Twenty years of practical experience with turkeys. We offer good opportunity for turkey raising on this 30,000-acre range. JOHN G. MEE, breeder of turkeys and herding Collie dogs, San Miguel, Calif.

WILD TURKEYS
Producers this year show unequaled records for large profits and productivity from WILD BLOOD, many hatching and raising over 95 per cent.
M. A. STUTSMAN, Sales Mgr., All ranches, 532 Bryson Bldg., Los Angeles

AMERICAN and MEXICAN wild strain breeding gobblers and hens, 350 to choose from, $10 to $25 each. We also have eggs and poults in season, starting January 1. Jenkins, Dundee Crossing and San Fernando Road, R. F. D. 3, Box 148, Burbank, Calif.

HART'S MAMMOTH BRONZE TURKEYS. Oldest strain on the Pacific Coast. A fine lot of year-old hens to select from; also will have some fine young stock suitable for breeders this spring. Eggs in season. ALBERT M. HART, Clements, Calif.

GEESE AND DUCKS

GEESE — PURE-BRED TOULOUSE. Two young ganders and two young geese, 1st and 2nd prize winners at recent Oakland Auditorium Show, $12.50 each. Bronze King Farm, Merced, Calif.

CALDWELL'S White Quackless Ducks, Eggs, Ducklings, Breeders. Free circular. Caldwell's Duck Ranch, 1271 Linden Avenue, Glendale, Calif.

RABBITS AND PIGEONS

LEASE EXPIRES—For sale cheap, 100 big gray and steel gray Flemish Giant breeding does and bucks, all ages; weight up to 19 lbs. MIKE DITZEL, 936 Maple Ave., Los Angeles, Calif.

PATENT ATTORNEYS

PATENTS—Prompt, personal, efficient service by an attorney-at-law skilled in all branches of Patent Practice. Over 12 years' actual experience; full information upon request. R. P. Fishburne, 239 McGill Bldg., Washington, D. C.

AUTOMOTIVE INSTRUCTION

AUTOMOBILE owners, garagemen, mechanics, send today for free copy America's most popular motor magazine. Contains helpful articles on overhauling, repairing, ignition, carburetors, batteries, etc. Automobile Digest, 806 Butler Bldg., Cincinnati.

KODAKS, CAMERAS, SUPPLIES

FREE
EASTMAN CAMERA
Have your Kodak finishing done by experts.
Winstead Photo Finishing Co.
Box 116, Los Angeles, Cal.
"We put the snap in snapshots."
Write for our new price list and how to get the free camera.

TOBACCO FOR SALE

NATURAL LEAF TOBACCO. Chewing, 5 pounds, $1.75; 10 pounds, $3; 20 pounds, $5. Smoking, 5 pounds, $1.25; 10 pounds, $2. Pay when received. TOBACCO GROWERS' UNION, Paducah, Ky.

CIGARS AT FACTORY PRICES. Smoke El Largo cigars, $5 for 100, $1.25 for 25, 55c for 10. Five-inch Panetelas, $3.75, box of 50. Genuine cigar clippings, only 60c lb. Frank F. Miller, 1208 W. 8th St., Los Angeles, Calif.

HOMESPUN TOBACCO—Chewing, 5 lbs., $1.75; 10 lbs., $3; 20 lbs., $5. Smoking, 5 lbs., $1.25; 10 lbs., $2; 20 lbs., $3.50. Send no money; pay when received. CO-OPERATIVE TOBACCO GROWERS, Paducah, Ky.

LIVESTOCK

IF YOU WANT TO BUY OR SELL registered or grade cattle of the dairy breeds, or registered cattle of the beef breeds, write to the largest and strongest livestock sale service in the West—CALIFORNIA BREEDERS' SALE AND PEDIGREE CO., 211 Ochsner Bldg., Sacramento, Calif.

REGISTERED SHORTHORN BULLS, Berkshire pigs, Shetland ponies. W. S. GUILFORD, Butte City, Calif.

BUSINESS PERSONALS

FOR SALE—A good, old established real estate, loan and insurance business, with office, modern residence and a fine 13-acre apple orchard; college town. Particulars and references, write HENRY AMBLER, Philomath, Benton County, Oregon.

HELP WANTED

BECOME RAILWAY MAIL CLERKS—$122-$195 month. Men, 18 to 35. Common education sufficient. Sample examination questions free. Write immediately. Franklin Institute, Dept. N 126, Rochester, N. Y.

RAILWAY MAIL CLERKS—Start $138 month; expenses paid. Specimen examination questions free. Columbus Institute, H-7, Columbus, Ohio.

HELP WANTED—Female

WOMEN, GIRLS—Learn gown designing, making at home; $40 week. Big spring demand coming. Learn while earning. Sample lessons free. FRANKLIN INSTITUTE, Dept. N 509, Rochester, N. Y.

MISCELLANEOUS—For Sale

NEW COMBINATION Cement Anchor Post. Light, strong, durable, attractive and inexpensive. Write for free offer and circulars to Patentee, S. W. Hinckley, Lincoln, Calif.

BEES AND HONEY

BEES PAY BIG—Italian bees and queens shipped to any point west of Rockies; pound packages, dollar each; queens, 50c. Satisfaction or money back. SPENCER APIARIES CO., Sawtelle, Calif.

Hanson Poultry

(Continued from Page 7)

Extreme temperatures are very rare, as are strong winds and destructive storms. Chickens are especially appreciative of the absence of wind.

FEEDS SIMPLE RATIONS

The laying houses are provided with double yards, one of which is plowed up and sown to oats or kale—the former for summer pasture, the latter for winter—while the other yard is occupied. This prevents soil infection, which is one of the commonest causes of weak, sickly chickens, and provides for pasture fertilization. As each house has four acres of range, the hens get plenty of exercise and fresh, clean dirt in which to scratch.

No wet mashes, sprouted grains or other "force feeds" are ever used. Instead of artificial, stimulating compounds, the rations are made as simple as possible, wheat, corn and oats being the principal feeds, together with buttermilk, kale and other green plants. These materials are rich in nutrients and vitamines, both of which are essential to health, vigor and productivity.

KALE VALUABLE PLANT

Kale, which grows in great abundance in western Oregon, is considered an ideal green poultry feed for the fall, winter and spring months. It is a gross feeder and responds to the liberal manuring which the soil receives under the double-yard system.

Hanson's hens do not seem to mind the wet weather, but paddle contentedly around in the rain, pulling up

angle worms and anything else which appeals to their feathered fancy, knowing that plenty of dry, clean straw awaits them indoors at all times.

DISPENSES WITH DROPPING-BOARDS

Contrary to the practice of most poultrymen, Hanson dispenses with dropping-boards, believing that it is poor policy to bring the manure—which is apt to contain worms and lice—so close to the roosting fowls. Ed Hauser, manager of the Fontana poultry farms, has a similar idea, and screens off the dropping-board from the roosting-poles by means of poultry netting.

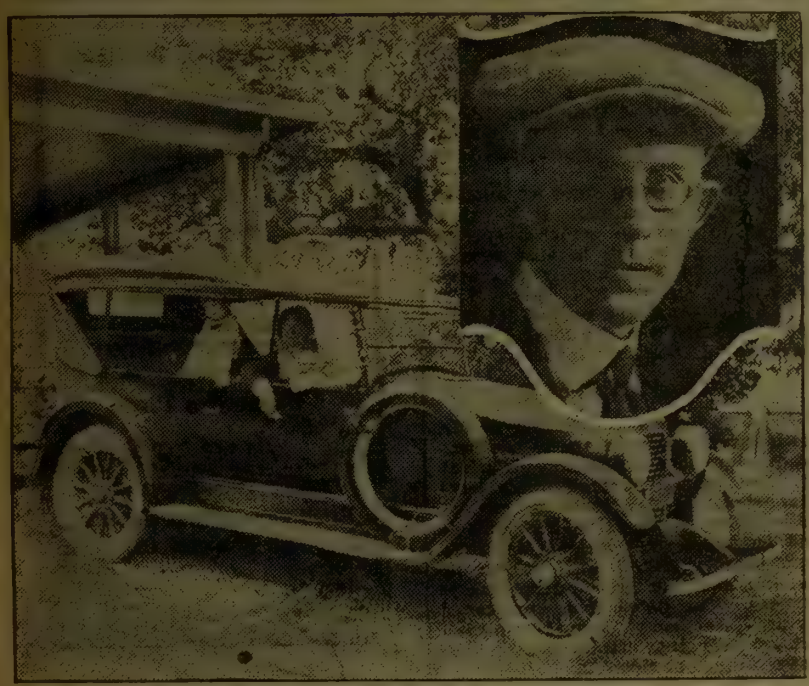
Work should have been Hanson's middle name, for he is always on the job, day and night, taking nothing for granted, but giving every detail of his big business personal attention and supervision, as far as possible. That is another reason why his stock has such a high uniform quality. And yet he is never too busy to talk to visitors or show them around. His place is only a mile from town and is visited by large numbers of O. A. C. students, members of the annual farm bureau poultry tour, and others interested in up-to-date poultry production.

A WONDERFUL RECORD

Starting ten years ago with only $1000 capital, but with a thorough poultry education and much practical experience, J. A. Hanson has by hard work and conscientious attention to detail built up the largest day-old chick business in Oregon. His 30-acre farm, stock and equipment are valued at $40,000, all paid for, a concrete example of what a young man may accomplish today in the industry.

Since the foregoing was written the following has been received from F. E. Bussy, director of the International Egg-Laying Contest at Ipswich, England:

"Whatever may be the cause, one fact stands out prominently, and that is the failure of the foreign contestants to reach anything like the score registered by English birds. There is one notable exception—the pen entered by J. A. Hanson from the United States. This pen produced 1653 eggs, of which only 28 were undersized, 1625 being first-class eggs. In recognition of this excellent performance, the special twenty-guinea silver cup, which is valued at $100, will be presented to Mr. Hanson, whose birds finished 22 places ahead of the next best foreign entrant."



J. A. Hansen, a Leading Oregon Poultryman, and the Family Car.

Date Varieties

(Continued from Page 8)

[Editor's Note—Miss Walter's article, beginning on page 9, artgravure, is continued on page 14.]

twelve years old, when they will bear 100 to 200 pounds each; maximum crops two and three times as large have been harvested.

From the preceding it is easy to figure fabulous profits in the date business—but wait; $1 a pound is the retail price for the very finest specimens, which include less than 10 per cent of the crop, the bulk of which sells for about 50 cents. But even at 25 cents a pound, 100 pounds a tree means a gross income of better than $1000 an acre!

Good date orchards are seldom for sale, but date land can be bought for $40 to $350 an acre, $100 being about an average price. Trees to plant an acre in Deglet Noors will cost $1200—if you can get them—as they are priced at $25 each. Other varieties, which some growers assert are just as good, can be had for $5 to $20 each.

There is an impression that Deglet

Spray—for Quality Fruit

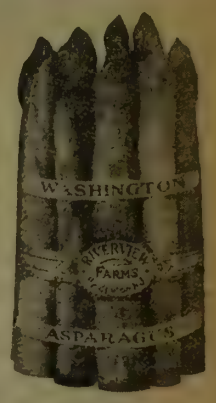
Don't try to get along with a makeshift outfit or a sprayer that's too small for your needs. Get a 1923 Bean, with its big capacity, high pressure, lightweight and sturdy dependability. The new outfits are several inches lower, and have the tank mounted at the rear on drop axles over high wheels, which enables them to clear the lowest-hanging fruit, makes them easier to haul, and gives them a shorter turning radius. Send the coupon for complete details.

The Bean Spray Pump Co.
101 W. Julian St., SAN JOSE, CAL.

We built the first high pressure spray pump 38 years ago

BEAN SPRAY PUMP CO. 101 W. Julian, SAN JOSE, CAL.
Please send me your New Sprayer Catalog
Name
Street
Town State
Kind of fruit grown
No. of acres
(30-S10)

You, too,
can grow this wonderful asparagus



THINK of putting in a big bed of giant Washington Asparagus for $1.00.

Washington Asparagus is rust-resistant, insuring heavy yields of stalks from one to two inches in diameter. Growth is clean and straight. The shoots are dark green with a heavy purple tinge. The bud does not branch until well above the cutting height.

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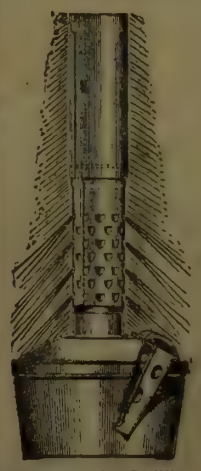

Shows how the DUNN radiates heat to the side and to the ground—with more intense heat waves coming from bottom of the improved stack with perforations depressed to INSIDE. Also shows permanent asbestos lighting wick.

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Our hen No. 550 was THIRD in twelve months' laying; hen No. 548 was NINTH. No other entry showed TWO hens laying standard eggs among the first 10 high hens.

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PACKERS OF AIRLINE HONEY.

Noors are vastly superior to all other varieties, but R. H. Postlethwaite, manager of the Dos Palmas Date Growers' Association, reports equal success in selling several other varieties. "It is merely a matter of taste," says Mr. Postlethwaite. "Some people prefer a dry, bread date, while others choose the soft, waxy Khadwrawa. The latter is more difficult to preserve, but for years we have been shipping them successfully to distant markets, where they keep in perfect condition." [The Deglet Noor is described by its adherents as a "semi-soft" date.—Ed.]

Like all pioneers, the people who have developed the date industry in California have had many discouraging experiences and difficulties to overcome. In 1913 over a million seeds were planted. There was no way of telling whether the resultant trees were male or female until they came into bearing, which means a great loss of time and labor in producing unprofitable specimens. Most of the female seedling trees bore inferior fruit, resulting in further waste.

There were many other problems to solve besides those of sex, reproduction and pollination. Rain proved a great enemy, for although the Coachella Valley is about the driest place in the United States an occasional rain will sometimes come during the ripening season and greatly injure the date crop. Paper bags often are tied over the bunches of fruit to protect it from rain, birds and other enemies. This treatment also results in evener ripening.

In order to secure dates at just the proper stage of maturity, it is necessary to go over the bunches several times during the fall harvest season. After fruit of high quality has been successfully grown and gathered it must be prepared and packed for market, which involves the most difficult operations of the date industry.

EL MONTE PLANT

Under the capable direction of Mr. Postlethwaite, himself one of the largest date growers of the Coachella Valley, five prominent orchardists have established at El Monte a modern date-packing plant. Here the fruit is first subjected to treatment in a vacuum chamber to kill any possible insect life, and then graded according to ripeness. The dates then are placed in an electrically heated ripening room, where they attain exactly the proper degree of ripeness.

The last process consists of grading the fruit for size and quality and packing it in various kinds of packages, after which it is subjected to a final sterilization.

Deglet Noor Dates

(Continued from Page 9.)

enough for a palm to carry.

T. H. Rosenberger, partner of King Gilette in Coachella Valley date gardens, declares that the best grades of dates can be made to pay $2000 per acre a year, or 10 per cent on $20,000. The poorer grades should do about half that, he says. These figures are based, he adds, on a net of 25 per cent per pound for fruit.

However, indications this year show that growers are netting at least 50 cents, and fancy Deglets last year netted 81 cents and $1.

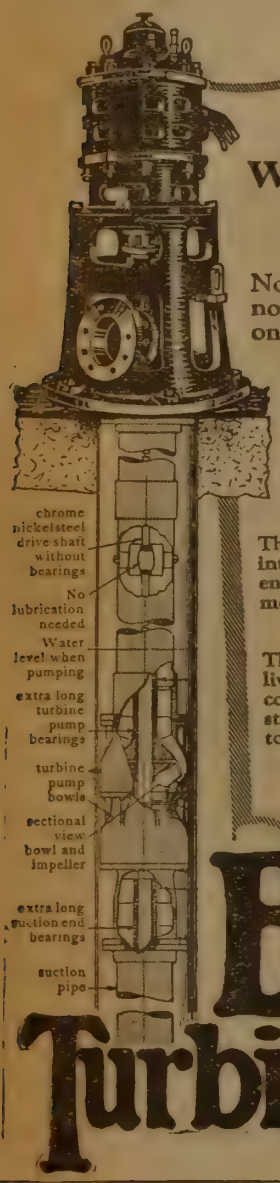
In addition to the fruit, each date gardener counts either on increased acreage from his offshoots or on a sale of them. The price of offshoots ranges from $3 to $25. In the case of Deglet Noors they have been selling at $25.

COST OF ESTABLISHING

Responsible growers reckon that it takes at least $1700 to start an acre of dates and $800 more to bring it to five years of age, when a small yield may be harvested.

According to Prof. Bruce Drummond of the Government gardens at Indio, the reason American dates are superior to those that come out of the Orient is because of our methods of pollinating, ripening, picking and packing. Moreover, cleanness and sanitary conditions attend the handling of every date grown in the Southwest. In many instances dates are picked and packed by women.

Government experts and growers have had to work fairly without precedent in methods of date cultivation, since they have applied to it American scientific practices and American ingenuity, both quite non-Oriental. They have had to work out as well the application of curing, fumigating, grading, standardizing and marketing to this infant industry.



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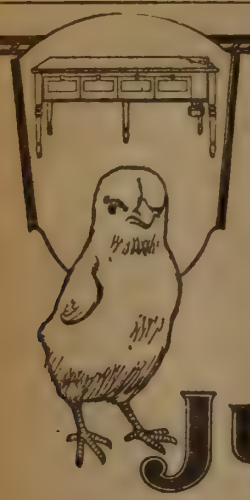

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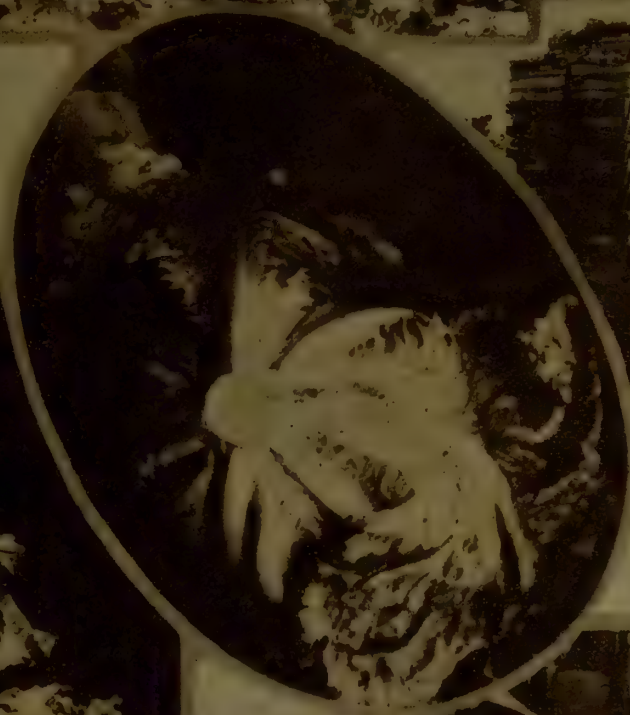
You Haven't Read the Paper Until You've Read the Ads.

Ahead With Head Lettuce—From Field to Market With California's Wonder Crop

THE immensity of the lettuce industry in the Golden State may be judged by the fact that more than 9500 cars were shipped during 1921, an increase over 1920 of approximately 3000 cars, according to F. B. Reynard, general manager, California Vegetable Union, by whose courtesy these photographs are published. From 12,000 to 16,000 acres annually is the estimated area devoted to head lettuce in California. The Imperial Valley season now is under way.

Lettuce field in San Fernando Valley, Los Angeles County, photographed in December, while harvest was in progress.



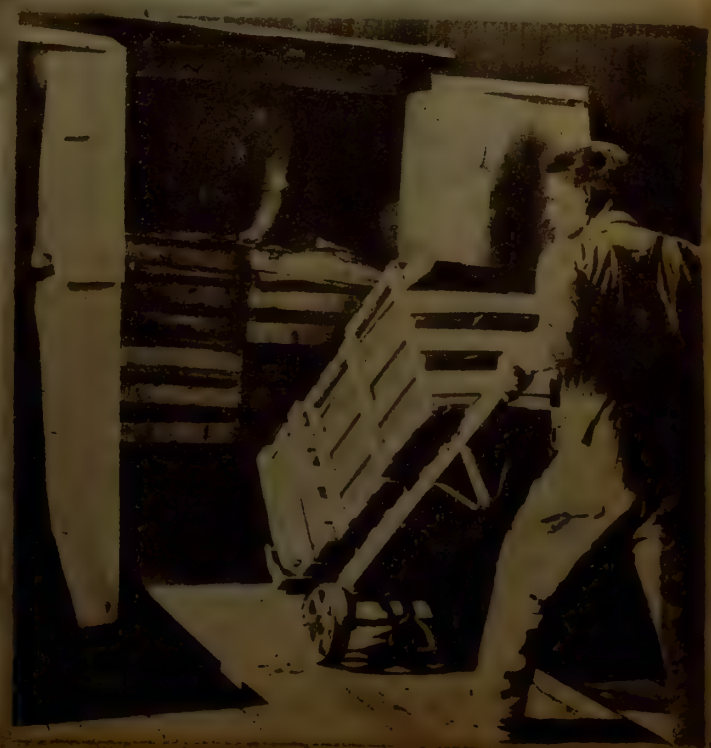
Hauled from the field with a team, the lettuce, in crates, is transferred to a large truck for transportation to the packing house.

Clipped, trimmed and ready to be packed for shipment to the frozen East.

A trimmer clips off the stem and part of the outer leaves; the lettuce then appears as in the oval above.

Sorters grade the lettuce and remove any heads that are below the high standard set by shippers. The man at the left in the background is packing a crate. Ice, taken from bin at right, is placed between layers.

Next the crate is delivered to the press, where top is nailed on. Truckers convey the ice-packed crates immediately to refrigerator cars, which, in addition to the ice in the compartments, are provided with chunks of ice, placed in the spaces between crates. The doors are sealed with building paper to prevent freezing en route.



A Glimpse of Grapeland

Harvesting scenes in the great raisin empire, of which Fresno is the acknowledged "capital"

Clusters of Gold Nuggets

THE romance of the California grape includes many amazing chapters, not the least thrilling of which is the post-prohibition boom which sent prices skyrocketing. This year's reaction makes next season's prices problematical, with thousands of acres of new vineyards coming into bearing. But producers and marketing organizations are laying plans to sell profitably the greatest crop in the history of the State.

Stacking raisins in the field. While the trays are piled up, contents are partially protected from occasional rains

Sorting Muscats. The finest bunches are carefully selected and packed separately for the fancy trade

A modern raisin grower's residence is shown at the left. Many such fine homes have been built with "Sun Maid" profits

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER

The Early Worm is out of Luck

JANUARY 28, 1923

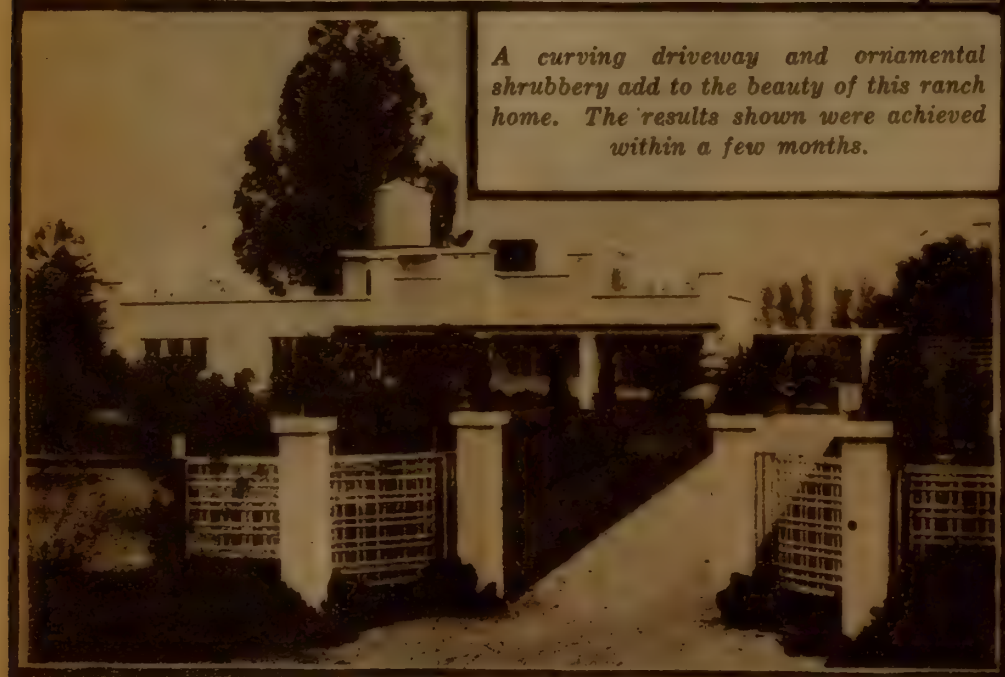
Photograph by G. L. Goodmanson, ORCHARD and FARM staff photographer—Courtesy Lyon Hatchery, Gardena, Cal.

California Country Homes

Golden State Leads in Fine Farm Houses

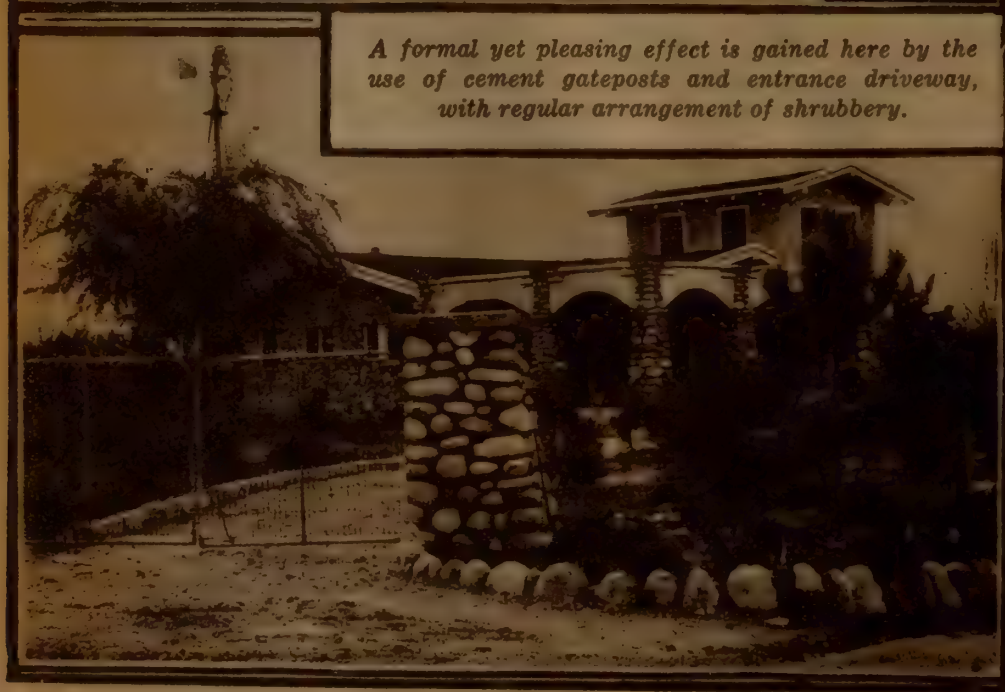
BEAUTIFUL country homes, which are not necessarily expensive, add materially to the commercial value of rural property, in addition to making life pleasanter and more enjoyable. On this page are shown five typical California farm and suburban homes, which have been made more attractive by simple methods. One good example of this sort in a neighborhood often results in other homes being beautified. And in California pleasing effects are obtained so quickly that even the newest home may have its greenery.

Nothing helps more than an attractive entrance in favorably impressing a visitor. Neat and serviceable are these steel gates attached to ivy-covered stone posts.



A curving driveway and ornamental shrubbery add to the beauty of this ranch home. The results shown were achieved within a few months.

A formal yet pleasing effect is gained here by the use of cement gateposts and entrance driveway, with regular arrangement of shrubbery.



Since this house was set back some distance from the highway, a good opportunity was afforded to line the driveway with graceful palms. Left—Stones picked up on the farm helped save the cost of building material and beautified this suburban residence. Thus two problems were solved with one operation.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JANUARY 28, 1923

Practical Pointers on Planting Fruit Trees

Timely Instructions for Preparing Orchard Ground and Setting Out Trees —Planting Methods Largely Determine Future Production

By W. S. KILLINGSWORTH

Executive Assistant, California State Department of Agriculture

IF weather conditions are unfavorable for planting when trees are received from the nursery they should be "heeled in" until ready for setting in the orchard. This is done by digging a trench at least 18 inches deep in moist, well-drained soil near where the trees are to be planted. Before the nursery stock is placed therein, the bunches should be opened, in order that the soil can be sifted in among the roots, thus preventing their drying out. All packing material should be removed.

When the trees are set in the trench, the tops should all slope the same way and the roots should be covered carefully with fine, moist soil. When thus heeled in, trees will keep in good condition during the winter season for several weeks.

Before the trees are placed in their permanent location the ground should be plowed deeply and the surface pulverized thoroughly. Any small irregularities should be leveled down, whether or not the orchard is to be irrigated, for convenience in trucking and cultivating. If the land is not in good tilth and there is no necessity for immediate planting, it will pay to cultivate the land for a year in order to get it in good condition.

PATRONIZE RELIABLE NURSERYMEN

It is also important to select stock grown under local conditions by reliable nurserymen, as such trees are much more apt to give satisfaction than those which are imported from distant dealers.

In deciding the distance apart to plant, the character of the soil and the variety of tree both should be taken into consideration. Trees may be planted closer together on a hillside than on level land, because the former affords better air drainage and usually does not produce as large trees as the heavier bottom soils.

Varietal differences are especially important. Royal Anne cherries, for example, require considerable more space than Bings and Tartarians, as the latter have a tendency to grow tall, rather than to spread out. The same rule applies to plums and prunes. The Wickson is an upright grower, while the Tragedy must have room to spread out. The apricot, like a setting goose, is a great spreader and should have at least 30 feet each way when planted on rich, sandy soil. This may look like a shameful waste of land, but in time the branches will cover the land completely.

As a rule, too early interplanting is false economy, because the crops grown between the trees not only rob the latter of moisture and fertility, but interfere with their proper cultivation. A young orchard needs all the nourishment and encouragement it can get during the period when the trees are recovering from the shock of transplanting and getting established in their new homes.

"LAYING OFF" THE ORCHARD

Unless the acreage to be planted is large enough to warrant the employment of a professional surveyor, the orchard should be "laid off" with a measuring wire which is of annealed steel, one-eighth inch in diameter and of sufficient length to cover the ground conveniently. A wire 210 feet long will reach across an acre. A bit of solder on the wire indicates where each tree is to be planted.

A marking board one inch thick, four inches wide and five feet long, with inch holes two inches from either end and one in the middle, also is needed. A notch is sawed from one side of the board into the center hole. A small stake should be driven at the exact spot where each tree is to stand. Before digging a hole, place the board on the ground so that the notch in the middle will fit around the stake. Then place stakes in the end holes, remove the board and the center stake. After digging the hole, replace the board over the two end stakes. This will bring the notched hole in the center exactly where the tree should stand. For convenience, some saw a notch into one of the end holes, which permits the board to be swung around out of the way without removing it from the other stake.

Carelessness in setting trees is responsible for many initial failures in fruit growing. A tree may be considered a machine for the manufacture of fruit, and its installation, therefore, should receive the same care which a millwright exercises in laying the foundation for mechanical apparatus. Always aim to dig the hole considerably larger than will be needed, as the roots sometimes extend farther than was expected. Plenty of hole room is essential for proper planting. Surplus space is filled with surface soil, which stimulates root growth.

LOOK FOR ROOT PESTS

Avoid planting when there is a north wind blowing, as this dries out the tree roots quickly, especially the small fibers, or "feeders." If compelled to plant in this kind of weather, keep the roots covered with wet sacks from the time the trees are lifted from the trench until they are placed in the holes.

Examine the roots carefully for disease and pests, such as black peach aphis, borers and root knot. Avoid planting trees with roots which have been "puddled" in the nursery, unless the soil has been washed away carefully, as dirt in this place sometimes covers a multitude of horticultural sins.

Cut away all bruised and broken roots, using a sharp knife, which is less apt to injure the bark than pruning shears. Only live, plump roots should be left on the trees, as others hinder more than help.

RESET TREES SAME DEPTH

As a rule, trees should be planted the same depth they stood in the nursery. It should be borne in mind, however, that ground which has been plowed and cultivated will settle considerably; hence allowance should be made for this in determining depth to plant.

The roots should be placed in their natural position and the soil carefully worked in among them, to establish close growing contact. Tamp the earth firmly with the foot—not with the shovel handle—aiming to see that no open spaces are left between or beneath the roots. The soil, which should be damp, but not wet—needs to be paced solidly around the roots, to insure quick growth.

Well Planted Is Half Grown

FEW persons realize the vital importance of getting good trees and setting them out under favorable conditions. In the accompanying article Mr. Killingsworth, widely known horticultural authority, gives detailed instructions regarding this phase of fruit growing, based on years of experience and observation.—*The Editor.*

Utah Specialty Farmers Are Forging to the Front

Inter-Mountain Growers Becoming Important Factor in Wholesale Fruit and Vegetable Market

FARMERS of Utah are waking up to the fact that in Eastern fruit and vegetable markets they have overlooked one of their best bets. Seeing the thousands of cars of California melons, lettuce, grapes and peaches passing through their State on the way to Eastern consumers, they decided to capture a part of the returning checks by having the shipments originate in Utah.

The possibilities of their strategic position, 500 to 1000 miles nearer Eastern markets than California, with high mountain valleys which produce to perfection a great variety of fruits and vegetables dawned upon them. And although Utah's big sister on the Pacific has got a good, running start in the race to capture the consumer's money, Beehive State growers are fast forging to the front and forcing buyers to sit up and take notice.

CELERY MAKES HIT

Take celery, for example. Lovers of this fine vegetable used to think in terms of Kalamazoo, but later learned the good points of the California product. Last year, having received a 100-carload taste of Utah celery, they are demanding ten times as much the coming season. Probably no one thing has done more to popularize Utah vegetables than this crop. A celery growers' association has been formed to standardize the pack and look after the marketing end of the product.

Another Utah vegetable which made a decided dent in the gastronomic consciousness of outside consumers was the cantaloupes, of which 150 cars were shipped the past season. Many more could have been sold, in spite of enormous shipments from Imperial, Turlock and Rocky Ford.

LETTUCE AND ONIONS SUCCEED

Another way in which Utah farmers scored heavily was in the growing and selling of Spanish onions, of which nearly 100 carloads were shipped by a co-operative association and very favorably received by consumers. Owing to the high altitude and dry climate, Utah onions are proving remarkable keepers, while for mildness of flavor they are almost in the apple class.

Lettuce growing is a new thing under the Utah sun, but so profitable was the spring crop of 50 cars that a fall crop almost as large was planted and successfully sold. Great expansion is expected in the production of this standard salad plant.

The sauerkraut barrel got most of the Utah cabbage crop, while 10,000 tons of cucumbers filled millions of pickle jars. A remarkable tomato crop was grown, the production from 2500 acres amounting to 40,000 tons, which filled 750,000 cases of cans, in addition to the large tonnage shipped fresh.

One-third of the million bushel peach crop was lost for lack of cars in which to send them to market, yet 600 carloads were sent out and great quantities canned. The garden pea crop amounted to 5500 tons, which were grown on 3700 acres. It is claimed a good share of this crop is going to consumers in cans bearing the label of another State, which our growers properly resent, more particularly because peas are their special pride.

Potatoes were a record crop, amounting to 4,000,000 bushels. The size of the crop was due partly to the fact that spuds have been supplanting beets, owing to the low prices recently received for the latter. The change was not a lucky one, because the 1922 potato crop over the country generally was quite large, resulting in such low prices that Utah growers suffered considerable loss.

Despite the fact that the sugar beet acreage in Utah fell off 30 per cent the past year, the total crop amounted to 800,000 tons, due to a 12-ton yield. The price averaged around $7 and it is expected that there will be good money in the beet business this year.—VERNON E. ALLEN.

Tulare Farmers Organize

WITH a present membership of 1950, which represents a 100 per cent gain during the past year, the Tulare County Farm Bureau is putting on a membership drive which is expected to bring the total number of farmers who belong to this enterprising organization up to 2500 or 3000. If the latter goal is attained it will mean that half the farmers of Tulare County belong to the Farm Bureau.

With a fund of $25,000 or more, which the $10 membership fee is expected to yield, an extensive program of work has been outlined for 1923. This includes testing cover crops, subsoiling, demonstrations of fig and vine pruning; field meetings for the control of the leaf hopper and coccidiosis; testing 1000 cows; completion of eight pig clubs; holding four poultry field meetings and an equal number of culling demonstrations; conducting school of farm management. It is likely that other work will be added. The activities of the Tulare bureau during the past year are considered very satisfactory. Auction sales have been held twice monthly, at which over 10,000 hogs were sold, bringing producers $189,000, which is perhaps $18,000 more than they would otherwise have realized. Many valuable experiments and demonstrations have been conducted by what is conceded to be one of the most active and successful farm bureaus in the Pacific West.—FLOYD BYRNES.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of the
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LOS ANGELES SUNDAY EXAMINER
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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

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ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and enclose stamp for reply.

Pithy Paragraphs

THE PROFESSOR'S PROBLEM

"It is not a question of convincing California farmers of the profit in pig production," points out Prof. E. H. Hughes of the animal husbandry department of the State University, "but of finding a method of hog husbandry whereby pigs may be planted like a field of grain and harvested a few months later, permitting the owner to spend the remainder of the year at some less exacting employment. The press of present economic conditions is forcing one-crop farmers to the wall, where they must surrender to fertility conservationists and other advanced agriculturists."

BEWARE THE NEMATODE!

"The nematode threatens Imperial Valley agriculture more seriously than soil exhaustion," declares L. G. Gore, director of the experiment station at Meloland. When it is considered that the yield of Imperial Valley cotton in some instances has shrunk from a bale per acre to a quarter of a bale on account of the depletion of soil fertility, the significance of this statement is apparent. The way to control the nematode, which may be called the hookworm of the plant world, is to grow resistant plant varieties, it is pointed out. Intercropping young orchards with vegetables often results in the fruit trees becoming infested with this pest, authorities now maintain.

BETTER YIELDS AND PRICES

It has been estimated that farmers of the United States will receive 50 per cent more money for the 1922 crop than for the one produced the previous year. This means an increase in gross revenue of $1,250,000,000. Part of this added income is due to higher prices and part to larger yields. The chief increases were in oats, 195,000,000 bushels; apples, 108,000,000 bushels; potatoes, 101,000,000 bushels; tobacco, 277,000,000 pounds. In addition to higher prices and better yields, production costs were less, on an average, and the purchasing power of a dollar greater, both of which help the farmer. While there is much cause for congratulation in the present agricultural situation, apple and potato prices in the Pacific West were so low the past year that large quantities of these valuable foods were allowed to go to waste, which also was the fate of an immense tonnage of grapes, tomatoes and cantaloupes.

More News About Contest

THE judges announce they have almost completed their work of selecting the winners in the "Suggestion Contest." Final announcement will be made in the issue of February 11. Who will be the lucky subscribers? Who will win the $25 first prize and the smaller but attractive awards? In case of a tie for any prize, the full amount will be paid each contestant. —*The Editor.*

"What's New?"—Keeping Abreast of Agricultural Progress

Study Dairying Here

SOUTH AFRICA, which has a population of a million and a half, has 200 students in the United States, 30 of whom are studying agriculture at their Government's expense.

Where Sulphur Succeeds

THE use of lime and sulphur as an alfalfa fertilizer is most successful on sandy and sandy loam soils, according to James F. Grass, Merced County farm adviser, who reports 100 per cent gains in yields as a result of applying these materials.—W. S. TYLER.

Peanut Gets Seed Barley

A GOOD illustration of one way in which the parcel post system helps the farmer is found in a recent shipment of 1000 pounds of barley from Anderson, Shasta County, to Peanut, Trinity County, by mail. The postage was only $10.60, while it would have cost $30 to forward the grain by truck.

Selling Many Herefords

FOUR THOUSAND more purebred Herefords were sold last year than in the previous 12 months, the total number being 69,800, which is 30,000 more purebred animals than were sold of any other beef breed, according to the American Hereford Association. At the Chicago Hereford sale during International week 49 animals were sold for an average of $869, one bull bringing $9100 and two females $2750 each.

This Is Big Orange Year

HALF the 1922 navel orange crop will run 126 to the box or larger, according to the California Fruit Growers' Exchange. Not since 1918 have such large oranges been produced in the Golden State. Small fruit was the rule in 1920 and 1921. It is expected that the present season's crop of big oranges will find favor with both dealers and consumers. The large size of the fruit is attributed to favorable growing weather during the latter part of the season. A temperature of 90 degrees January 8 was the highest known in Los Angeles for 45 years, according to weather-wise observers.

Hoover Planting Peaches

HERBERT HOOVER, Secretary of Commerce, is planting 220 acres of fruit, mostly peaches, on his 1200-acre ranch between Wasco and Shafter, Kern County. Some apricots and plums also are being set. Ultimately the entire 1200 acres is to be set to fruit, it is announced. The extensive planting operations are in charge of W. T. Kirkman, president of the California Bud Selection Association. The expressed purpose of the latter is to see that nursery stock is true to name and propagated from trees bearing large quantities of high-class fruit.

Oregon Raises Corn

TEN years ago there was hardly any corn grown in Oregon, where the climate was considered too cold properly to ripen this crop. Last year a single Willamette Valley county, Marion, harvested 1,400,000 bushels, besides 1000 acres of corn silage.

The introduction of this profitable crop was largely due to the efforts of the extension department of the Oregon Agricultural College and "Farmer" Smith, agricultural agent of the O. W. R. & N. Railway Company.

In spite of the immense amount of corn now grown in Oregon, Prof. Hyslop, of the college named, estimates that 2000 cars of corn, valued at $1,500,000, were shipped into Oregon and Washington during the year ending September 1.

Puyallup Pulls Through

A NEW company has recently been organized to take over the old Puyallup (Wash.) fruit growers' co-operative association. The latter enjoyed a period of marvelous prosperity under the management of W. H. Paulhamus, but had hard sledding when the bottom dropped out of the berry market two or three years ago.

The new concern is called the Pacific Consolidation Company. It is capitalized at $3,000,000 and is financed principally by Washington, Oregon and California stockholders.

The canneries of the company were leased and operated last year by the Pacific Northwest Canning Company, which expects to keep them in operation the present year. Very encouraging results were obtained the past season, due partly to good growing and ripening weather and partly to the new company's constructive policy.

The entire crop of the Puyallup Valley, which is principally berries, was marketed and the growers paid cash for their fruit. The pack was the largest in the history of that favored section. It is the intention to resume the manufacture of the well-advertised "Paul's jams."

"Puyallup berry growers are beginning to see that it is poor policy to force the price of their product so high that they kill their own business," says A. F. Pfeiffer, sales manager of the new company.

Orchardists Try Wire Bracing

THE purchase last year of 20,000 screw eyes by Ventura County farmers indicates the extent to which they are supplanting wooden props with wires for bracing fruit trees. Permanency and non-interference with cultivation are two advantages of the new method.

Incubators Use Electricity

ELECTRICITY is supplanting oil for heating Sonoma County incubators. J. H. Holt of Grafton is one of the commercial chick hatchers who has lately added electric incubators to his equipment, which is now sufficiently large to take care of 50,000 eggs at one setting. Electricity is said to produce an evener heat than any other agency used for hatching eggs and to reduce the fire hazard to the minimum.—G. B. R.

Like Two-Pound Prune Pack

THE California Prune and Apricot Growers' Association has been working a double shift since September 1 in an effort to catch up with back orders for two-pound packages of prunes. This organization is packing 143,000,000 pounds of the 180,000,000 pounds raised in the State last year.

Plant "Robust" Beans

A NEW strain of navy bean, known as the "Robust," which is popular with New York and Michigan growers, made such a good showing in tests conducted at the University farm the past season by Prof. George W. Hendry that demonstration plantings will be made throughout the small white and blue pod bean districts of California the coming season. Five million dollars' worth of navy beans are grown annually in this State.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

VI—W. S. GUILFORD

BILL GUILFORD (whose name appears as "W. S. Guilford" on the books he has written), contributing editor of ORCHARD and FARM, livestock breeder, prune and pear grower, agricultural expert, practical farmer, man of affairs, eligible bachelor and general distributor of sunbeams, was a follower of Coue before Coue was heard of.

W. S. GUILFORD

It is hard to tell all about him here, in such a small box, but this is a try: Guilford came West—to California—as an agricultural expert for certain Pittsburg financiers about fifteen years ago. His introduction made him a Californian, and his only trips East have been to the Chicago International Livestock Show and as a member of the California legislative commission to investigate agricultural colleges.

Guilford is co-author with Eugene Grubb of "The Potato," and author of "The California Hog Book" and "Irrigation Practice," published while he was connected with a big irrigation development in Idaho. He was the subject of the famous article by Freeman Tilden on "The Farm of a Thousand Doors," which is Butte City Ranch, Glenn County, owned by Guilford with W. P. Dwyer and operated by himself.

Guilford was born in Iowa, educated in Wisconsin Agricultural College and in practical farming in Colorado, Idaho and California. He knows fruit and livestock and reads Plutarch's Lives, Pliny, the Cosmopolitan, Wells' "Outlines of History" and mystery stories. He likes people and he lives like the fine, high-caliber, broad-gauged Westerner he is.

He is president of the American Shetland Pony Registry Association and a director of the American Shropshire Registry Association. He practices what he preaches, and can drive a flivver at 45 miles an hour, which is faster than most of them go. Guilford has done a great deal to awaken the Pacific Coast to a realization of its agricultural possibilities.

His articles are from life. He puts the human touch into his stuff, as we say in the writing game. He's so human himself he can't help it.

NEXT WEEK—"BOB" JONES.

Home Farm Happenings

By One of Us

CARING FOR LAME LAMB

This season we have a fine lot of ram lambs which we are keeping for the May and June ram trade. They are a mighty playful lot and sometimes they play pretty rough.

The other day one of them got such a bad crack on the shoulder that he had trouble in getting around. At feeding time he was at such a disadvantage that he soon began to lose weight rapidly. Noticing this, we brought him over to a place near the house, where he has a pen all by himself and nothing to bother him. When spring comes he will be just as good as the remainder of the lambs.

MANURING THE YARD

We have just finished coating the house yard with barnyard manure. We piled it on thick, a foot or more around some of the trees and upon some of the flower beds. We have always had trouble in holding moisture in the lawn during some of the hot, dry spells, when the trees were apt to wilt in spite of all our efforts to assuage their thirst. When the ground gets real dry it is difficult to soak in enough water from an ordinary faucet to do much good.

The manure was applied more for mulching and moisture-holding than for fertilizing, although the latter would make the work well worth while. We know by experience about the good effects of manure mulching.

A few orange trees in the yard used to have lots of split fruit, in addition to plenty of good navel oranges. Last summer we applied a heavy coating of barnyard manure to the ground around them, then gave the soil a good water soaking.

What was the result? Only a few oranges split, while the trees made a wonderful growth, being covered with glossy, dark-brown leaves. The new leaves are quite large, but the old ones are pretty small. Some suckers are starting. Should these be rubbed off? We'll ask a citrus expert.

"BREAKING" A COLT

We have a big colt coming four this spring. He is out of a 1700-pound mare and was sired by a registered Belgian stallion that weighed considerably over a ton. John says this colt will weigh 1800 pounds. He—the colt—is certainly immense, big and powerfully strong.

John is a great "hand" with horses. The way he made friends with this big, awkward colt and mastered him was good to see. When the colt was about a year old we had great difficulty in halter-breaking him. At first he just didn't want any one at all to handle him. We had to throw him and keep him tied up with a slipnoose around his back girth and up through his halter for awhile—to sort o' show him who was boss.

Now the colt and John are great friends. When the latter goes into the pasture the colt will come up to him to have his ears rubbed and will follow John around until the latter leaves the field.

The colt is at last getting "bridle wise" and used to harness. Every day for a couple of weeks he has had the bridle put on him and has been turned loose in the corral. Whenever John has a little spare time he puts the harness on the colt and drives him around a while.

As soon as the weather clears up a little we shall hitch up the colt with Old Dollar, a steady old horse who knows more than some folks. The colt may go along just like he himself was an old horse—or he may do something else. If he doesn't behave we'll tell you about it afterwards.

Meanwhile, it is a real pleasure to see John and the colt together. They seem to understand each other perfectly and are great chums. This "way" with animals which some persons have is an inborn trait—like the ability to write poetry or move the ears—and cannot be acquired.

Chimeras—Interesting Variegated Plants

By J. L. COLLINS

Instructor in Genetics, University of California College of Agriculture

(See Illustrations in Artgravure, Inside Back Cover)

CHIMERAS constitute a group of attractive and interesting ornamental plant novelties which always attract attention because of their variegated color patterns. Many of them lend themselves best to outdoor planting, being placed to advantage in shaded or otherwise dark places; while others can be grown equally as well as house plants.

An unusual and very attractive member of this class is the bowstring hemp (Sanseviera zeylonica), a plant of very accommodating habits, for it will flourish in the shade, while the dust and dry air of the living room, so fatal to many of the more delicate plants, seems to have little effect upon it.

The plants have long, narrow, sword-like leaves, the ground color of which is a dark green, curiously mottled with grayish white cross striations. Such a plant can give to a situation as graceful a touch as a piece of shapely statuary.

The propagation of new plants from an established one easily can be accomplished by cutting one of the long leaves into sections, which are placed with one end in damp sand or soil until they have rooted.

"HAND-IN-GLOVE" ARRANGEMENT

We are all acquainted with the geraniums, which have the dainty, white-bordered leaves, and some have observed that there are other geraniums which have the reverse arrangement—white-centered leaves with green borders. This condition, where one type of cells forms a complete covering for another type, has been aptly referred to as a "hand-in-glove" arrangement. In the case of the white-bordered leaves the "glove" is composed of one or more layers of colorless cells, while the "hand" is composed entirely of green cells. In the leaves of some plants, Euonymus japonica, for instance, the non-green cells contain a yellow pigment, while in some few cases other colors occur, as in coleus.

Plants having this type of variegation are known technically as periclinal chimeras, because of the cells on the surface being different from those composing the inner portions of the plant. The colorless layers of cells of a white-edged leaf of geranium or of Euonymus can be seen if the cut edge of the leaf be examined with a small hand lens. The diagrams of leaf sections give an idea how they should appear.

There are also variegated plants which do not have the green and non-green portions in a definite pattern typical of the periclinal chimeras, but a distribution such that some leaves are entirely of one color, while others contain various fractions of green areas. This type of variegation is known technically as a sectorial chimera, for it has been found that the stems as well as the leaves of such plants contain sectors or streaks of colored and non-colored cells growing side by side.

BEAUTIFUL "THIEF" BRANCHES

Chimeras of this type occur in a great number of different plant species. Sectorial chimeras can produce periclinal chimeras when the edge of a streak or sector of cells of one kind grows over the adjoining edge of the cells of the other kind at the point where a bud pushes out from the stem. They can also give rise to branches in which chlorophyll, the green coloring of plants, is entirely absent. Such branches act as parasites upon the plant, for without the chlorophyll they cannot produce their own carbohydrate food material from the air and must draw this nourishment from the supply elaborated by the green portions of the plant.

When these parasitic branches produce flowers, as they sometimes do, the flowers are in no way different in color from the flowers borne on the green portions of the plant. This is due to the fact that the change effects only chlorophyll and flowers, as a usual thing, do not contain this green pigment.

There is another type of variegation which should be mentioned. A typical example is found in the yellow spotted or calico-leaved flowering maple (Abutilon). This type of variegation results from a diseased condition of the protoplasm of the plant cells, resulting in a condition sometimes referred to as chlorosis. This chlorotic condition is readily transferred by grafting to about fifty species and varieties of Abutilon. Two species, Abutilon arboreum and Lavatera arborea, are considered immune and do not become variegated when grafted to the variegated variety.

> ***Plant-Crossing Explained***
>
> RECENTLY ORCHARD and FARM reported some unusual claims made by R. B. Holcomb, Tulare vineyardist, who stated he had succeeded in crossing grapes by grafting. This grower's assertions provoked much comment among scientists and others interested in plant breeding. The accompanying article throws additional light upon this interesting subject.—*Editor.*

PLANTS FOR SHADY LOCATIONS

The original spotted Abutilon (Astriatum Thompsonii) was introduced about 1868 from the West Indies. By grafting it on green plants of other species, spotted variegation has spread widely through the genus.

Both the Abutilons and the Aucuba are used extensively as ornamentals. The latter, being very tolerant of shade and drip water, is used largely on the north side of buildings, hedges and between buildings and with other plants in mass plantings to break the monotony of the solid green. They also serve to throw light into dark corners of any nature. They are, however, used much more extensively in England, where the need is felt of something to dispel the dull darkness produced by solid green masses during the foggy and rainy season.

It would be interesting to know the cause of the sectorial and periclinal chimeras, but in part we are denied this pleasure, for it is not known why some cells cannot produce green color. On the other hand, we can demonstrate how certain chimeras can be produced.

Plants of quite different kinds can be grafted together. When the cion is cut off at the point of union with the stock, after the union of the two is well formed, a number of adventitious buds appear, some of which will be composed partly of cion and partly of stock tissues.

Winkler, a German botanist, produced a tomato nightshade chimera in this way, using the cleft (or saddle) grafting method. When the cion was well established it was cut back to the point of union with the stock. Among the buds issuing from the region of the decapitated graft, some were composed of tomato cells on one side, producing typical tomato leaves and fruits, while the other side, composed of nightshade cells, produced leaves and fruits of the nightshade.

Some of the leaves on this stem arising from the line of union of the two kinds of cells were part tomato and part nightshade.

Some other buds were produced which bore leaves not typical of either of the two species used in grafting. One, which more nearly resembled the nightshade, was found to have an inner portion of nightshade cells, with a covering of a single layer of tomato cells. Another, which was much more tomato-like in appearance, was found to have a center of nightshade cells, with a double layer of tomato cells on the outer side.

These were periclinal chimeras. Others were produced in which the conditions were reversed, the tomato cells on the inside and the nightshade on the exterior. The fruits of these periclinal chimeras were neither tomatoes nor nightshade berries, but somewhat intermediate. The seeds, however, gave rise to only one kind of plant, either pure tomato or pure nightshade, depending upon the kind of cells in the first layer beneath the epidermis, for it is from this layer that pollen grains and ovules are produced.

[Professor Collins' article will be concluded in next week's issue of ORCHARD and FARM.—Ed.]

Your child appreciates

—Pleasant Surroundings

Do you know the effect of bright or subdued colors on your children?

Just as a change of climate or environment is beneficial, so a change in interior decoration improves the home life. Correct color harmonies make for greater accord in the home.

A color suggestion for the living-room

Mathews Wallpaper of a quiet gray is used on the walls. Mathews Permolite (French Gray) Enamel covers the woodwork. A medium hued rug is on the floor—and bright blue drapes hang in the windows. A canary yellow lamp shade adds a touch of sunshine to the effect already created.

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The P & O No. 11 Orchard Tractor Disk Plow—3-disk size. Note narrow, low-down construction and sturdy simplicity.

McCORMICK-DEERING tillage implements are made in many varieties and they include orchard harrows of most satisfactory design and proved efficiency. The lower illustration shows the famous *McCormick-Deering Leverless*, the strong, double disk harrow operated entirely from the tractor seat. Special sizes for orchard work available; smooth gang ends avoid barking trees. The regular horse-drawn orchard harrow has low frame and levers. The gangs, which are covered with broad shields, may be extended from 4 ft. to 11 ft. width for flexibility under trees and bushes.

The McCormick-Deering P & O No. 11 Tractor Disk Plow is a practical implement that will get close to trees and handle the heaviest growth of weeds or cover crop. It is built low, narrow, and sturdy. Frame and control rod act as guards or fenders, carrying low hanging branches over without damage to trees or fruit.

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Herdsman Tells of Wide Experience With Kow-Kare

Paul A. Chadwick of Corona, Cal., writes us a typical letter on the results of his use of Kow-Kare in the dairy. He says:

"I am a herdsman for the Jameson Estate and I am having difficulty to convince the manager of the value of KOW-KARE. We are troubled with abortion, retained afterbirth, and barrenness, all of which I can prevent with KOW-KARE and I have had 100% results with barrenness, never in sixteen years with several thousand cows in several states failed to get cows with calf after three months' continuous use. I have used about a ton of your product and some Garget Remedy as well as Bag Balm. My father used KOW-KARE when I was very young and never had a case of abortion, and only one case of retained afterbirth in over twenty years."

That KOW-KARE can and does accomplish such wonderful results is not strange. The medicinal properties of the remedy build up and put into healthy operation the digestive and genital organs. It is in these organs that most diseases of cows are centered—and it is these same organs that regulate the flow of milk.

During the months of winter feeding the milk-making functions need outside support.

BOOK FREE

KOW-KARE furnishes this help. Just a tablespoonful in the feed twice a day for one week in each month will show a big increase in the yield of milk. The use of KOW-KARE before and after calving assures more robust cows and healthier calves.

We have a thirty-two page book that tells just what to do in case of cow illness. It is called "The Home Cow Doctor" and is yours for the asking. Thousands of cow owners ask for it each year.

Feed dealers, general stores and druggists have KOW-KARE—$1.25 and 65c sizes. If dealer is not supplied we will mail, postpaid, on receipt of price.

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YOU HAVEN'T READ THE PAPER

UNTIL YOUV'E READ THE ADS

Potatoes $1 a Sack

SOME Sonoma County farmers sold potatoes this winter as low as $1 a sack. As a result of unprofitable prices, many parts of fields and some entire patches were not dug. Because of these discouraging conditions, many ranchers will likely leave the potato business alone, which will inur to the benefit of those who remain in the game. A corn belt farmer says he made it a rule never to plant many potatoes except when they were so cheap that he could get the seed for nothing. His idea was not to save seed money, but to grow a crop which would likely command good prices because it would be abandoned by many producers on account of unprofitable returns received for the preceding year's output.

Lettuce Production Costs

THE cost of putting a crate of Imperial Valley lettuce on the Eastern market is estimated at $3.88 by F. W. Waite, horticultural commissioner for that district. This amount is divided as follows: Growing, 75 cents; cutting, 15; hauling, 10; crating, 70; freight to Chicago, $1.84; cartage, 9 cents; commission, 15 cents.

"Counting 150 crates to the acre and the price at $5 a crate, this leaves a net profit of $150, which is equal to the price of the land in many instances," states Mr. Waite. "We do not need to exaggerate the amount of money to be made by gardening in the Imperial Valley, when the truth shows that the land can be made to pay for itself in six months."

Manuring Potatoes Pays

WALTER HECOX, former railway clerk, was called crazy by his neighbors for hauling barnyard manure three miles up a stiff grade to his Nevada County ranch to enrich potato ground. The ground was already fertile, there was plenty of water for irrigating—what more was needed? But without additional fertility only moderate yields could be secured; therefore in order to make real money in the farming game, Hecox decided the manure hauling was necessary. He also came to the conclusion that it would pay to sack only the finest potatoes, which he sold to customers at fancy prices. As a result of these methods the former figure juggler has achieved signal farming success.—E. G. KINYON.

Growing Grimm Alfalfa

THE superiority of Grimm alfalfa, under certain climatic conditions, has long been known, but the high price of seed has prevented it from coming into general use. In spite of this drawback, practically all the alfalfa sown in Des Chutes County, Oregon, last spring was of this variety.

Lake and several other Eastern Oregon counties within the past few years have made large plantings of Grimm, and have found it a great improvement on all other sorts. It is hardy, will not winter kill and yields heavily. In localities where the climate is severe, farm advisers recommend Grimm alfalfa for testing.

San Joaquin Short on Hay

THERE is a shortage of hay in the San Joaquin Valley, due to a decrease in acreage and an increase in dairy cattle in that region. Baled hay is selling at $17 a ton and promises to go considerably higher. The Imperial Valley, which normally produces a large amount of forage for export, is reported to have no surplus this year. There was a shortage of hay in the San Joaquin last spring, and the lack of forage this year promises to be more pronounced.—W. S. TYLER.

Sugar Beets Pay Well

SUGAR beets in the delta section east of San Francisco Bay yield fourteen to twenty-five tons an acre and carry a sugar content of 15 to 25 per cent. Some sales were made the past season at $10 a ton. The sugar factories are encouraging larger plantings of beets, the chief hindrance to which is the difficulty of renting small sized tracts.—DESALONE HOLLABAUGH.

CANADIANS BUY BEES

During a single month of the past year Canadians bought of United States apiarists 1000 packages of bees.

Grasses to Save Ocean Lots—How to Control Drifting Sand

By DR. P. B. KENNEDY

University of California College of Agriculture

IT happens frequently that land adjacent to the ocean becomes valuable residence property. Tracts are laid out and the sand drifting from the ocean extends inland year by year until the lots or valuable farm land are rendered undesirable. This can be prevented by the systematic planting of Beach or Marram Grass (Ammophila arenaria).

Provincetown, Cape Cod, Massachusetts, owes its existence to the compulsory use of Beach Grass. A committee was appointed with power to plant Beach Grass wherever the moving sand was threatening the town. Similar success has been brought about in Holland and in France.

IN GOLDEN GATE PARK

As an example of the utilization of this grass in our own State, we may mention Golden Gate Park, San Francisco. Much of the area originally consisted of sand dunes. Beach Grass was used extensively in the reclamation process. It still covers miles of territory along the ocean front, the result of original plantings carried on with the recommendation and supervision of Mr. John MacLaren, the able superintendent of Golden Gate Park. Behind these dunes which have been stopped by the grass, there are fertile, sheltered areas now growing crops of vegetables.

GRASS HOLDS SAND

The grass usually grows from two to four feet above the sand, producing dense clumps of rather long, rigid leaves. It has a somewhat similar effect to that of brush or bushes in stopping snow from drifting. The creeping roots, or, strictly speaking, underground stems, penetrate the sand for long distances, twenty-five or thirty feet, binding the sand and holding it in place.

In addition, the grass spreads out a lacework of very slender roots, which creep over the surface and extend for long distances from the grass clump over the open areas. These also contribute their share to the holding process. The sand collects around the clumps of grass and as it accumulates the grass keeps growing above it.

METHOD OF PROPAGATION

Beach Grass is best propagated by transplanting. By dividing up the clumps, taking care to have some of the root attached to each division and then cutting back about half of the leaf growth, the pieces may be transplanted successfully in the sand.

This may be accomplished by plowing a furrow and placing the plant divisions in the furrows about two feet apart, as shown in the illustration. The furrows should be about two feet apart. The first plantings should be done on the leeward side, gradually working over the dune to the windward side.

HAND TRANSPLANTING

The transplanting also may be done by hand. Force a long-handled spade into the sand and press is backward. At the same time have a man, carrying an armful of the plant divisions, place one in the opening. Then withdraw the spade and press the sand firmly around the clump. The planting should be done in the fall or winter, in order to take advantage of the rains.

Seed may be sown, but it is difficult to keep the sand and seed in place long enough to insure germination, even with the use of brush or other material.

The roots are utilized in Europe for hope making, and coarse mats are woven from them for household use.

The leaves have been used in the manufacture of coarse paper, and also make an excellent and durable thatch.

The grass is of no value for fodder. Fortunately, it does not spread to other lands and become a pest.

Drifting sand is a menace to much valuable property in California.

Showing how Beach Grass is planted in furrows.

Above—A newly planted sand dune.

Below—Appearance of grass above sand.

Above, right—showing horizontal root growth, which binds soil. (This plant placed in vertical position for photographing.

Develop Big Seed Farm

A 1245-ACRE tract of land in the Sacramento delta district is being developed by the Morse Seed Company of San Francisco. Nearly $50,000 will be spent on this project.

Three hundred acres will be planted to seed crops, 200 to asparagus and a Bartlett pear orchard enlarged from twenty-two to fifty acres. The remainder of the land will be planted to beans and onions.

Irrigation water will be pumped through a 10-inch and two 8-inch pipes from Sutter slough, a navigable arm of the Sacramento River. Drinking water will be obtained from three wells 219, 253 and 275 feet deep.

Women Succeed With Milk Goats

How Two English Ladies Found Contentment in Sunny California

WHICH are best suited to feminine farming, goats or hens? Miss Violet Kirby and Miss Rose Saunders, enterprising English farmerettes, discarded the latter in favor of the former on their forty-acre ranch in Live Oak Canyon, San Bernardino County. Their experiences form a picturesque chapter in California agriculture.

By O. H. BARNHILL

IT'S a far cry from the Pacific States to London and Egypt, but in order to get the proper perspective of an interesting experiment in California farming the reader must imagine himself in those far-away places; from there came the principal characters in this little story. Like Moses, Miss Violet Kirby came up out of Egypt, where her father was a government official.

Journeying to England, she entered a gardening school, as an agricultural college is called there. While studying productive husbandry she met Miss Rose Saunders, daughter of a London barrister. The new friends found they had a common ambition—to see California. Ten years ago they realized their dream by visiting an acquaintance who lived near Los Angeles.

The English ladies liked the Land of Sunshine so well they soon decided to remain here and engage in the poultry profession. The prospective chicken ranches which they were shown by enterprising real estate dealers looked so barren and desolate to the newcomers, however, that purchasing was postponed.

FIND IDEAL LOCATION

Finally, while visiting the famous milk goat farm of Winthrop Howland, near Redlands, the future farmerettes found a region which suited them so well they bought 44 acres of raw land near by. Exchanging their traveling dresses for work clothes, they proceeded to dig in and dig out.

The visitor to this little stock farm leaves the highway a half dozen miles east of Redlands and for two miles follows lovely Live Oak Canyon. Stopping his motor in front of the roadside ranch sign, he hears the musical tinkle of many little bells. Across the canyon a herd of brown milk goats, looking in the distance for all the world like a flock of deer, comes into view around a grassy knoll.

Accepting the lettered invitation to "drive over," he follows a winding track down the precipitous banks of a 50-foot chasm, which is crossed—and the cliff on the opposite side climbed to the farmhouse. An autoload of visitors is enjoying a picnic dinner in the warm winter sunshine, entertained by a conversational lecture on goat culture by Miss Saunders. The latter is considered an authority on this subject and has been invited to talk to Redlands audiences.

PIONEERING IS PLEASANT

"These beautiful live oak trees and the surrounding hills, undefiled by the hand of man, are what brought us here," explained Miss Saunders when asked why she and her friend, who had always lived among many people, chose an out-of-the-way mountain retreat for a home.

"We do not find it lonesome," added Miss Kirby, who had arrived from the goat corral with a book in her hand. "Many people pass along the road across the canyon and neighbors are not far away. Yes, it was a bit 'scary' at first, with coyotes howling in the hills at night and wildcats and rattlesnakes to kill in the daytime. But we found pioneering really pleasant, on the whole, and now we have an auto and a comfortable home, with many interesting visitors."

The farmhouse is surrounded by a profusion of trees, vines and shrubs, with fruit and flowers everywhere, divided by neat, stone-bordered walks. A thousand-gallon tank is filled from an underground irrigation pipe which crosses the upper end of the ranch. This reservoir supplies water for home and stock use and for the houseyard and garden. No field crops are grown, as it has been found cheaper to buy what little hay and grain are needed to feed the herd.

A half hundred hens are all that are left of the large flock to which the owners first pinned their income hopes. *(Continued on Page 14.)*

Above—Buck sheds made of piano boxes. Miss Kirby is shown with two of their fine does.

Live Oak goats love their mistresses. Right—Miss Saunders, one of the partners

Legumes to the Rescue—How Imperial Valley Is Solving Fertility Problems

Henry Field, famous seedsman, inspecting a crop of Hubam, new and valuable sweet clover. At bottom of page—Fine field of cow peas.

THE Imperial Valley, which comprises a half million acres of the richest land in the world and is blessed with a twelve months' growing season, is facing an agricultural crisis. In many sections the soil, which was supposed to be of inexhaustible fertility, is thought to have been depleted of its nitrogen and humus. Meetings are being held for the purpose of encouraging rotation and the growing of legumes, such as peas, beans, clovers, vetches and alfalfa.

Typical of the experiences of many growers is that of Clark Adair. He, like many other Imperial Valley ranchers, thought he'd made a "killing" in cotton a few years ago, when all conditions seemed favorable for turning this trick.

Bumper crops were being produced and prices rising like a cat's back. Adair's first planting yielded a bale and a quarter per acre and returned a nice profit. One man picked eighty bales from forty acres.

The second crop grown by Adair made only two-thirds of a bale to the acre, but he was not worried, as the weather had not been very favorable. The third year only a half bale of lint per acre was harvested. Adair decided he must have planted poor seed. Many other growers whose yields were disappointing came to the same conclusion. The following year Adair's cotton made only one-third of a bale to the acre and the fifth year one-quarter bale, which now is said to be the unprofitable average in his neighborhood.

What was the matter? Was the soil wearing out?

Perish the thought! Why, no fact was more firmly established than that Imperial Valley soil was of inexhaustible fertility, the richest in the world. Furthermore, it never could wear out, because irrigation water deposited upon it each year a quantity of life-giving silt, perennial restorer of pristine fertility.

At least, that's what had been said. But Adair finally became skeptical. One poor crop could easily be accounted for, possibly two or three. But when the best seed was planted, the weather was good and all other conditions favorable, and still yields kept dropping down to bedrock, some other explanation must be found.

Even alfalfa, the pride of the valley and the firm basis of her prosperity, began to weaken under the continued onslaughts of omniverous mowers, which sheared the meadows six or eight times a year, season after season. Millions of plants gave up the ghost and were replaced by Bermuda grass and other intruders.

Other explanations besides soil exhaustion were not wanting to account for the sickly condition of alfalfa fields. They were pastured too close, some said, or were improperly irrigated, needed subsoiling to break up the plow sole, etc. How could the reason be lack of fertility when—as everyone knows—alfalfa itself is one of the greatest of soil enrichers? Perhaps the ground needed plowing up and reseeding. This was tried, but with disappointing results.

Instead of alfalfa being one of the chief export crops of the valley, there is now not *(Continued on Page 13.)*

Above, left—Mowing alfalfa, standard Imperial legume. Below—Vetch, a favorite for green manuring.

Hens and Hares Produce Profits

How a Former Eastern Livestock Farmer Is Succeeding on One Acre in California

WHEN T. D. Weaver transferred his abode from New England to the Golden State he left behind a large diversified tobacco and stock farm and other business interests. Applying the knowledge gained from his agricultural college training and 15 years of successful farming, he has created an intensively organized one-acre establishment. The methods and principles contributing to his success are set forth clearly in this article.

Greens are good for hens, thinks Mr. Weaver's small son.

WOULD you have the nerve to undertake to make a living on a one-acre rabbit and hen farm where 700 chickens were sick and dozens were dying every day?

T. D. Weaver, a new arrival from the Nutmeg State, had that essential qualification. He realized that his predecessor's failure was the result of unfavorable conditions which were susceptible of improvement.

Therefore Weaver started to weave the pattern, "Success," into his 160-rod Inglewood stock farm. Starting with a sackful of rabbits and a bunch of sick and ailing hens, he has within a year built up a profitable egg and meat business. His first experience consisted chiefly of filling a chicken graveyard, 50 daily interments being made in the beginning.

Cleanliness and comfort were demanded by the hairy and feathered stock, decided Weaver, who at once set about to provide these essentials. Since the ground was wet at that season of the year, midwinter, he kept the hens indoors and bedded them down with clean straw a foot deep, first giving the building a thorough cleaning.

Improved type of rabbitry, with covered center aisle flanked on either side with hutches, affording convenience, ventilation and protection from rain and fog. Left—Mr. Weaver and his prize buck, Julius.

MANURE PAYS FOR STRAW

"Suppose straw does cost a cent a pound? Should chickens, therefore, be forced to feed in their own filth and pick up grain from muddy ground? What little is saved in straw money is lost in hens dying or failing profitably to fill the egg basket."

Thus reasoned the newcomer, who figures that chickens will make enough manure to pay for bedding straw at $20 a ton, provided the fertilizer is carefully saved and intelligently marketed. But Weaver saw no reason why he should be caught short on the straw market. At threshing time he got busy and procured a year's supply at $10.50. At this price he figures the manure will net $15 a month, after paying for the bedding.

The manure market is so active at Inglewood that Jap gardeners will sometimes clean out a poultry plant for the privilege of buying the fertilizer, paying 12 cents a cubic foot for that which is scraped off the dropping-boards and 4 cents for scratch manure.

FEEDS CORNELL FORMULA

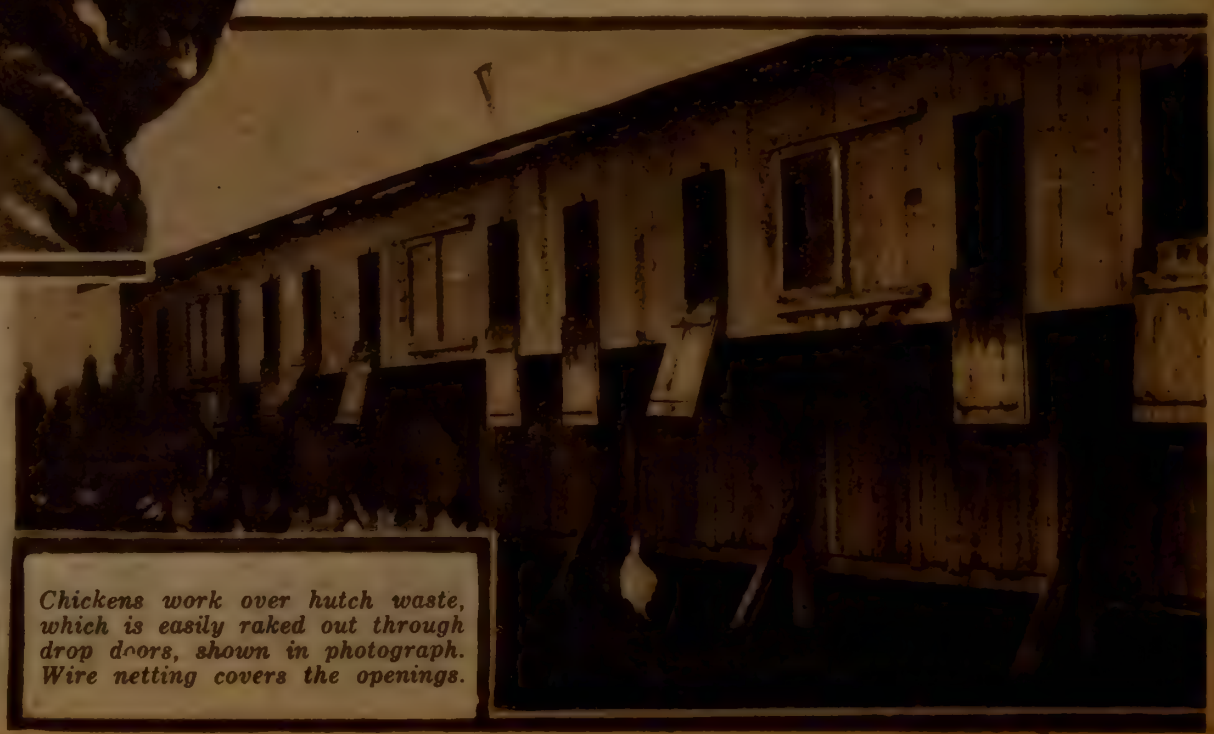
Twelve hundred healthy hens now are dropping eggs at a profitable rate, the pullets averaging a little better than one every other day and the old hens one egg every third day. Seven hundred two-year-old hens were sold recently at an average price of 72 cents. The price was small, but not so tiny as the money to be made in keeping aged layers, so they were sold to the meat man.

Dry mash is mixed according to the Cornell formula: Cornmeal, 100 pounds; mixed bran and middlings, 400; ground oats, 200; ground barley, 200; oyster shell meal, 100; beef scrap, 120; chick-sized charcoal, 40; salt, 1 pound.

The scratch feed consists of four pounds of barley, two of wheat and one of cracked corn. The proportion of the latter is varied according to the season, using less in hot weather; or kaffir and milo are substituted.

GREEN FEED IMPORTANT

Kale is the principal green feed grown, barley being a close second. Swiss chard is considered good, but the leaves *(Continued on Page 12)*



Chickens work over hutch waste, which is easily raked out through drop doors, shown in photograph. Wire netting covers the openings.

Climate, Men and Animals

(Part Two of Robert E. Jones' Article Commenced Last Week.)

ULA MAYFLOWER, beef prima donna, was born and raised at the University farm at Davis. e opened and closed her season at e Chicago International Livestock position, 1921. The Scotch judge clared her the grand champion beef imal of the show—which means of e world. It was the highest honor beef cattledom. California's tri iph was repeated in 1922.

This is the record of California at e Chicago International:

1917—California Favorite adjudged and champion.

1918—California Model, grand cham- n.

1919—California Jock adjudged re- rve grand champion—after the ige had spent a half hour wavering tween Jock and his nearest com- itor.

1920—No California exhibit.

1921—Lula Mayflower, grand cham- n of the show, the first female ever arded this honer.

1922—California Topman, Short- rn-Angus crossbred steer calf, first d reserve champion.

These California beef animals were competition with the best product old-established livestock breeding ates of the corn belt, where there e hundreds of herds, compared to zens on the Pacific Coast.

t is not only with beef animals that have been victorious at Chicago. r other animals exhibited there ve won surprisingly, also. In 1919 r sheep were the sensation of the lege classes, making a better rec- d at the show than those of any ier institution in America. And ain, in 1922, both sheep and swine ded to the laurels won by the cattle ibits.

"We must credit the great out-of- ors, which we enjoy to the fullest re, with the premier position which r men and animals occupy in the ysical world," declared my compan- n, after we had discussed these va- us triumphs. "It gives us more life d vigor than is possible elsewhere. owth toward intellectual as well as ysical perfection is most rapid ere natural conditions result in a e balance between labor and ure.

"Where food grows abundantly and h little care, man becomes indo- t, as in the tropics. This begets ease and dullness of mind. On the other hand, where food, fuel and clothing may be had only at great effort and risk, as in the arctic regions, man is forced to devote nearly all his time to the battle for mere existence. There is no surplus left to promote greater physical growth nor time for intellectual development.

"The Pacific West is the golden mean between these two extremes, preserving the nice balance between the tropics and the arctics. Here Nature is kind, but not too kind. We are forced to work, and work hard, but have sufficient leisure for maximum development of both minds and body. The climate is congenial to both plants and animals, which here reach their greatest growth and most efficient development, as proved by contests with the products from less favored regions."

The Pacific Coast is comparatively a new country. What has been accomplished already is but an indication of the great achievements which the future holds for the Land of the Setting Sun.

Thus I concluded my musing. And now Virginia was impatient to be home. "I'm hungry, Daddy," she insisted.

"What, again?" I asked in mock surprise, not confessing that I was equally interested in the waiting dinner. And why, again, should we who enjoy so many other blessings be endowed also with the ability to enjoy our food and to sleep soundly?

It must be the climate!

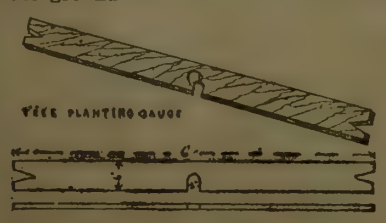
Planting Gauge

IT is easy for a farm engineer to stake an orchard so accurately that the stakes will line up perfectly. But when the trees are planted there are never more than two trees standing in a straight line. What is still more important, no two trees are planted the same depth.

To remedy this defect, this tree planting device was invented and has been used to advantage in many different fruit districts. When it is carefully and intelligently used, it regulates both the line and the depth of planting.

The drawing shows the gauge. The lower drawings give the detail plan and dimensions. When finished, the stake hole or notch in the center should line with the two V-shaped notches at the ends of the planter, and they should be equi-distant.

In use, the planter is laid flat on the ground with the tree stake in the



center notch, the stake against the round part of the notch. Next, two stakes are set in the V-shaped notches at the ends. The planter is then removed, the tree stake pulled and the hole dug for the tree. The planter then is replaced in its position, with the two outside stakes in the V-shaped notches as before.

We are now ready for the tree. And now we establish the right depth for planting. The gauge rests flat on the surface of the ground, which gives us the ground level without any guesswork. By placing the tree in the round notch against the round of the notch we have the exact line as it was marked by the original stake. Then by holding the tree a little lower than it grew in the nursery row, as indicated by the lower side of the planter, we get the proper depth.

The iron hook shown on top of the planting board is for use when one man is working alone. It will swing around and hold the tree while the man is working with the roots. Care is needed to prevent injuring the bark.
—HERBERT A. SHEAKER

DEER HAS SWEET TOOTH

The Shasta County sweet potato crop is a failure, so far as J. C. Shurford's two acres are concerned, due to deer eating off the tops.—DONALD ASHTON.

~1923~
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are profit makers by nature. Every chick comes to you with sterling, robust vitality. They are busy-bodies right from the start. Busy growing then later busy laying and paying. This is insured by the ELEC-CHIC scientific method of hatching, and their healthy, robust, heavy laying parentage. Hatches off every Monday. Order direct from this ad, saying when you want them, and save time and disappointment on getting delivery when you want it. Leghorns, 15c. Reds, 19c. Rocks, 20c. Wyandottes, 25c. Charges prepaid. Add 1c each in less than 100 lots. No C. O. D.'s. ELEC-CHIC HATCHERIES, Dept. L, Burbank, Cal. Visit our plant at Redondo. Reference, First National Bank of Burbank.

PROFITABLE POULTRY CO-OPERATIVE HATCHERIES—Weekly capacity: 30,000 W. Leghorns, 10,000 each Brown Legs, Reds, Rocks, thousands Anconas, Andalusians, Turks, Ducklings. To date we've quadrupled our bookings over former years. Why? Pleased customers reorder, disappointed ones book ahead to insure choice dates, and our superior chicks, ducklings, turks (every year unable to fill many orders). Price reduced booked ahead. 180-290 egg strain. For quarter century imported, trapnested, selected for vigor, growth, beauty, eggs. Mail address: Box O, 13 N. Fair Oaks, Pasadena.

OREGON AGRICULTURAL COLLEGE White Leghorn baby chix from 1500 selected hens mated to males with 260-290 dams record. Also from 300 trapnested two and three-year-old hens, none of which with record of less than 200 eggs either in their pullet or SECOND year. Breeding cockerels, sires, dam, 298-307. Write THE CHIEF BIRD for free catalogue. RUSCH POULTRY FARM, Junction City, Oregon.

WHITE LEGHORN BABY CHIX from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: February, $16; March, $14; April, $12.50; May and June, $12. Safe arrival of full count live, strong chix guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 418 Sixth St., Petaluma, Calif.

50 VARIETIES hardy, vigorous Midwestern-raised purebred poultry, eggs for hatching, baby chicks, incubators and poultry supplies. Everything sold reasonable with money-back guaranty. Send for big book, 144 pages, only 10c to help cover mailing. BERRY'S POULTRY FARM, Box 43, Clarinda, Iowa.

BABY CHICKS—Hatching eggs from Hoganized flocks, fully matured breeders. Barred Rex, R. I. Red, Minorcas, Brown and White Leghorns. Safe arrival and satisfaction guaranteed. Tobener Hatchery, Route 3, Box 306, San Jose, Calif.

BABY CHIX—W. Leghorn, B. Leghorn, Anconas, B. Rocks. All 2-year-old free range stock. Orders taken for pullets. CHOWCHILLA HATCHERY, Chowchilla, Calif.

S. C. WHITE LEGHORN BABY CHIX from our own bred-to-lay stock. Our prices are right. Model Poultry Farm, W. C. Smith, Prop., Corning, Calif. Established 1904.

FREE BOOK "Chickens from Shell to Market" on application to COULSON COMPANY, Petaluma, California.

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TURKEYS—Purebred Giant Bronze. Choice young Goldbank VIII, Goldbank King, Goldbank Boy, Copper King Jr. and Copper King's Boy stock, all of our original matings and sired by our prize winning Madison Square Garden (N. Y.) champions mated to 20-lb hens. The same imported sires winning again at recent Oakland Auditorium Show. These two shows are the largest poultry shows East and West. Our birds were not exhibited elsewhere. Why not secure the best blood of America's champion birds at reasonable prices? Circular mailed on request.
BONNIE KING FARM,
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MAMMOTH BRONZE toms and hens; also eggs in season. Our stock are California State Fair winners and graded from the best Eastern stock procurable. Twenty years of practical experience with turkeys. We offer good opportunity for turkey raising on this 90,000-acre range. JOHN G. MEE, breeder of turkeys and herding Collie dogs, San Miguel, Calif.

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Producers this year show unequaled records for large profits and productivity from WILD BLOOD, many hatching and raising over 85 per cent.
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AMERICAN and MEXICAN wild strain breeding gobblers and hens, 250 to choose from, $10 to $25 each. We also have eggs and poults in season, starting January 1. Jenkins, Dundee Crossing and San Fernando Road, R. F. D. 8, Box 148, Burbank, Calif.

HART'S MAMMOTH BRONZE TURKEYS. Oldest strain on the Pacific Coast. A fine lot of year-old hens to select from; also will have some fine young stock suitable for breeders this spring. Eggs in season.
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BEES PAY BIG—Italian bees and queens shipped to any point west of Rockies; pound packages, dollar each; queens, $1. Satisfaction or money back. SPENCER APIARIES CO., Santa Ana, Calif.

LIVESTOCK

IF YOU WANT TO BUY OR SELL registered or grade cattle of the dairy breeds, or registered cattle of the beef breeds, write to the largest and strongest livestock sale service in the West—CALIFORNIA BREEDERS' SALE AND PEDIGREE CO., 218 Ochsner Bldg., Sacramento, Calif.

REGISTERED SHORTHORN BULLS, Berkshire pigs, Shetland ponies. W. S. GIFFORD, Butte City, Calif.

GEESE AND DUCKS

CALDWELL'S White Quackless Ducks. Eggs, Ducklings, Breeders. Free circular. Caldwell's Duck Ranch, 1271 Linden Avenue, Glendale, Calif.

Hens and Hares

(Continued from Page 10)

break off easier than kale, which will stand much rough treatment. Some plants are two years old and still pushing out good green leaves.

The double-yard system is followed in growing greens, alternating the cropped areas in order to purify the ground of disease germs and insect pests. All green feed is first run through a feed mill. Six or eight crops of barley are cut while the plants are young. The last crop is allowed to mature, then mowed and used for bedding, without threshing. The more hens have to work for their feed the better, believes Weaver, as long as they have a clean place to scratch.

There are four poultry houses on the place. All are 12 feet wide, the length ranging from 40 to 80 feet. They will accommodate in comfort 3000 hens, which—with the rabbit department—is enough to keep one man busy. A unique feature of the roosts is the use of six-inch spikes, which are driven in the poles seven inches apart, in order to keep the pullets from crowding when first placed in the laying houses.

KEEPING RABBITS HEALTHY

Health and sanitation also was the first problem solved in the hare-raising division of the back-lot breeding establishment. It used to be thought that a rabbit, having a muzzle something like a camel, was able to sail through life with as little water, proportionately, as a double-humped "ship of the desert." "Slobbers," a common ailment, was supposed to result from too much water-drinking.

It is now known that a rabbit needs a great deal of water, say a pint a day. Weaver waters his bunnies twice a day, using deep earthen jars, which are scalded out twice a week. "Slobbers" are prevented by sprinkling lime in the hutches every day, and scours are headed off by placing a teaspoonful of cooking soda in the drinking water twice a week. A spool of salt is kept nailed in each compartment. The hutches are cleaned out every other day.

"Another commonly accepted idea which has been found erroneous is that green feed is an essential rabbit food," Weaver points out. "Wild rabbits thrive on this kind of provender, but when kept in confinement it does not agree with them."

FEED COST IS SMALL

Rolled barley and alfalfa hay are the standard feeds used. Four does each month eat 200 pounds of the former, costing $4.30, and a 12-pound bale of hay, worth at present prices $4.85, a total of $9.15, or about 20 cents each. This includes the feed consumed by the young rabbits, being the monthly hutch allowance.

The rabbitry is 60 by 10 feet, but

of 1 by 4 boards, and has the roof covered with tarred paper. A four-foot aisle extends through the center of the building, flanked on either side with hutches. The latter are about four feet above the ground and are supported by the middle portion, the floor of which is about 18 inches above the ground. This brings the floor of the hutches about even with the attendant's waist, a convenient height for cleaning and feeding.

Each hutch, which is 30 inches square and 3 feet high, has the inside wall covered with poultry netting and is provided with outside doors 14 by 18 inches, hinged at the bottom so that they can be opened during hot weather. These openings also are covered with netting, permitting the free circulation of air. The latter is said to be very essential, as many rabbits are lost during hot spells when sufficient ventilation is not provided.

FEEDING MADE EASY

The V-shaped hay mangers are made of netting and have one end opening into the aisle, to permit of easy filling. Grain is fed in small, shallow earthen jars. The manger are kept full of hay, but grain is give only once a day.

A box 12 by 12 by 30 inches is se in the partition between each pair o hutches, and small openings are cut in either side, to permit of its being used by two does for the rearing of young, which are separated by a partition in the middle of the box. The hutches and boxes are constructed of half-inch material. It would be an advantage to have the ends of the boxes attached with hinges, so that they could be opened for examining or removing the contents.

"A doe will produce four litters of seven to nine baby rabbits each in the course of a year," says Mr. Weaver. "The will produce an even larger number of young if reproduction is not restrained, but should be allowed to rest a couple of months during the hot summer weather.

STRONG DEMAND FOR MEAT

"Young does are bred when only three weeks old and bring forth young a month later. When six weeks old our Flemish Giants weigh two to two and one-half pounds each and bring 21 cents a pound, live weight. We never have any trouble in marketing our meat animals at wholesale. We sold 80 last week and have a dozen more ready for the block.

"We also keep New Zealand Reds, but consider Flemish Giants the best breed, because of their large size and quick growth. Our prize buck, Julius Caesar, weighs 19 pounds and is valued at $50."

HAD COLLEGE EDUCATION

The reader may wonder how Mr. Weaver was enabled to make a success from the start with hares and hens under unfavorable conditions. An agricultural education at Cornell University and 15 years of successful farming in Connecticut furnish a clew to the answer. Managing a large farm, of which he is the part owner and which is now rented, provided the practical experience necessary to handle profitably a single acre devoted to intensive stock husbandry.—O. H. B.

Legumes to Rescue

(Continued from Page 9)

enough to supply local needs. Hay is scarce and high, and there is insufficient pasture for dairy cows. This scarcity of feed is in part due to the fact that many fine alfalfa meadows have been plowed up by vegetable growers, but the remaining fields do not yield as of yore.

Wheat, barley, milo maize and most other crops grown in the valley have declined in much the same manner as cotton and alfalfa. The unwelcome fact was forced upon Adair and his neighbors that the soil really needed enriching.

"I noticed," relates Adair, "that I always grew a good crop after sour clover—melilotus indica. That set me to thinking and I began to experiment with this crop, sowing it in cotton fields late in the season, so that it could grow during the winter and early spring. Noting the good results, I increased the clover acreage until practically all my half section of land is now seeded to 'Mary Lotus' and alfalfa.

"My cotton crops began to increase until last year 29 acres produced 26 bales. My 180 acres this year would have made a bale to the acre had it not been for the terrible hot spell late in the summer, which caused much of the cotton to 'throw its bolls.'

"I am just beginning to reap the benefit of my soil-building work during the past three years. In that time I estimate my legumes have taken from the air and stored in the soil 400 pounds of nitrogen per acre on 200 acres, besides immense quantities of valuable organic matter in the shape of humus.

"This soil improvement is worth at least $75 an acre, or a total of $15,000. I figure that this capital invested in the soil will do me more good than if it were lying in a bank, because in the former case it can be used to create additional wealth in the shape of bumper crops."

FROM OUR CUSTOMERS

San Gabriel, Calif., Nov. 26, 1922.

"The 5000 baby chicks which you delivered to me are the huskiest ones we have ever placed under our hovers. Enclosed please find check covering deposit for 6000 more to be delivered on or about December 21."

FRED GROFF & CO.

12-23-22.

"Under your 100% fertility guarantee plan I purchased 200 hatching eggs. You sent 227 eggs; 203 were fertile. The chicks hatched from those eggs are now one week old and a finer looking, energetic bunch never came into our community. Our neighbors who have seen them are going to you for their next hatching eggs. Please save me 200 more eggs on December 27."

J. S. MILLER, Van Nuys, Calif.

"Out of 50,000 eggs I have hatched on this farm during the past two years we never had as good a hatch as from your eggs purchased December 6. Please reserve us 1620 additional eggs for last week in February."

CURTISS POULTRY FARM, East San Gabriel, Calif.

If you are seeking the best in White Leghorns, we have them, but please don't delay in booking your order. Mail 10% deposit NOW!

HATCHING EGGS: 15 for $2; lots of 100, 12c each; lots of 500, 11c each; lots of 1000, 10c each.

BABY CHICKS: Lots of 100, 25c each; lots of 500, 24c each; lots of 1000 or over, 25c each.

The California White Leghorn Breeding Farms

R. R. 1, Box 277-M, Lankershim, Calif.

POULTRY—the GRAND PRIZE MONEY MAKER FOR *you*

Whether you live on a City lot or a thousand acre Ranch

When it comes to producing real American dollars, the little old hen wins first prize. The 1920 census showed $1,047,323,110.00 as the value of poultry products in the United States. MORE THAN A BILLION DOLLARS. The money obtained from the sale of poultry products is greater than the combined value of the wheat and tobacco crops. It is almost equal to the value of beef cattle in the entire United States.

Yet there is not half enough poultry produced to supply the increasing demand in the Southwest. The American public are just beginning to realize the superior food value of poultry products. The consumption of poultry meats and eggs is increasing every day. The next five years will be big *profitable year* for poultry producers.

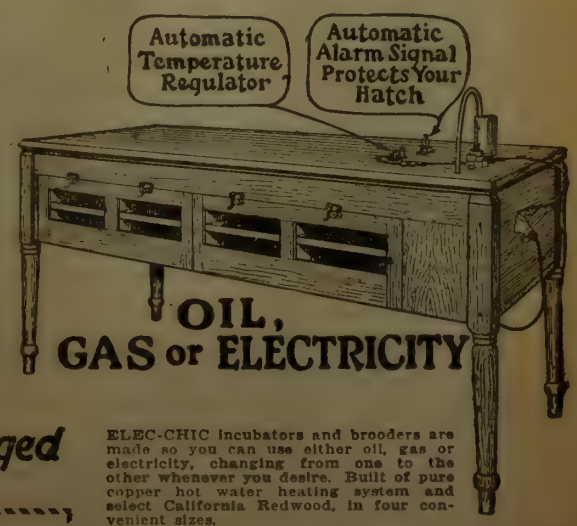
Why not get your share of these profits NOW?

LET OUR SERVICE DEPARTMENT EXPERTS ASSIST YOU IN PLANNING FOR GREATER POULTRY PROFITS IN 1923. This service is always at your command and is entirely free. These experts will help you lay out your plant, furnish plans for your laying houses, brooder houses, incubator cellar, etc. They will be glad to offer suggestions as to what might be the most profitable branch of the industry for your particular circumstances and location. This service will also aid you in finding the most profitable market for your products, whether it be eggs, broilers, fryers, baby chicks, pullets or breeding stock. In fact, it does not stop at helping you to find the good markets. IT ACTUALLY HELPS YOU TO CULTIVATE THEM.

ELEC-CHIC INCUBATORS & BROODERS

Will Add $500.00 to $5000.00 a Year to Your Income

They will do it because they are practical machines, designed and built by practical, experienced poultrymen. The type of machine we build has been in constant use on the Pacific Coast for more than twenty years. Thousands of tests have proven it to be the most successful of any ever used in this climate. The many years' hatching experience of our experts—right here in this climate—has enabled them to make a great many wonderful improvements, such as an absolute, dependable automatic temperature regulator and AUTOMATIC ALARM SIGNAL. These exclusive features make hatching with the ELEC-CHIC INCUBATOR positively accident proof. Never any worry about overheating or chilling your eggs. No staying up nights. No time lost sticking around the incubator cellar. Just set the automatic heat controller and alarm signal and go on about your other work. The ELEC-CHIC will take care of itself. So simple a child can operate it. Our improved ventilation and moisture system is assurance of fine, big hatches of strong, sturdy chicks that are easy to raise. Our triple insulation makes ELEC-CHIC the most economical in fuel consumption of any incubator built. Write today for your copy of catalogue 1-M. It is brim-full of valuable poultry information.



ELEC-CHIC incubators and brooders are made so you can use either oil, gas or electricity, changing from one to the other whenever you desire. Built of pure copper hot water heating system and select California Redwood, in four convenient sizes.

Easy Payment Terms can be Arranged

POULTRY EQUIPMENT CO., Dept. M, Burbank Calif.

Factory located at Roscoe, 4 miles northwest of Burbank.

Please send me your catalog 1-M and information about your free poultry service.

Name .....

Address .....

Town ..... State.....

I now have.....hens of.....breed.

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BABY CHICKS

Order from us and be sure of getting the best high quality stock, properly hatched. Hatches every Monday and Tuesday of all popular breeds. White Leghorns, 15c; R. I. Reds, 19c; Barred Rocks, 20c; White Wyandottes, 25c. We guarantee full count live chicks on arrival and prepay charges. Order today, sending check or money order.

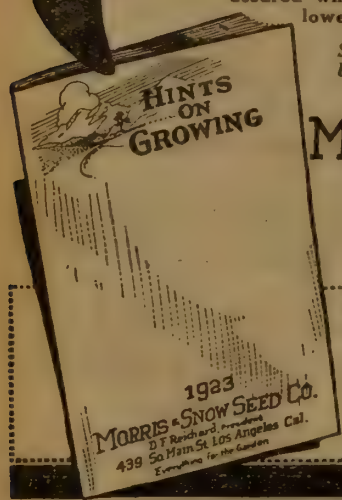
THIS BOOK SHOULD BE IN THE HANDS OF EVERY GROWER

Our big 1923 Catalog has just been issued. It is one of the largest and most complete books of its kind ever issued in the West. It is beautifully illustrated and gives you hundreds of helpful suggestions and timely tips on planting. The best of each variety of flower, fruits, shrub, vegetables and ornamental plant is fully described.

For Best Results Plant NOW

The planting season is from now until April. When you purchase seeds or stock from Morris & Snow you get the best the market affords. This old, reliable house has always stood for highest quality and best results are assured when you buy here. We sell direct to you at lowest prices. No delays.

Sign and mail the Coupon below and our big 64-page Catalog will be sent FREE.



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Gentlemen: Please send me a copy of your 1923 Catalog and "Hints on Growing."

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The Charles Weeks System

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One Acre and Independence, or
The Fine Art of Earning a Comfortable Living on
ONE ACRE IN CALIFORNIA

For those who desire to dwell in sunny California without living up hard-earned capital.

For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California.

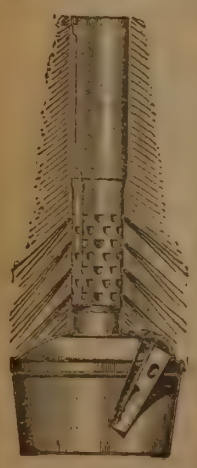
The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 25 miles from Los Angeles.

Write for Literature

CHARLES WEEKS

Owensmouth California

The DUNN Orchard Heater



Shows how the DUNN radiates heat to the side and to the ground—with more intense heat waves coming from bottom of the improved stack with perforations depressed to INSIDE. Also shows permanent asbestos lighting wick.

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NO SMOKE!
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PACKERS OF AIRLINE HONEY.

Women Succeed With Goats

(Continued from Page 8.)

"Why do we prefer goats to hens?" Miss Saunders considered the question a moment. "Well, their keeping means a good deal less work and worry. Under the conditions which prevail here they are practically immune to disease, while hens have to be handled very carefully to keep them healthy and free from insect pests.

"Every condition must be made and kept just right to make poultrying profitable. It is close, confining work, and not the cleanest, either. About all we have to do now is to watch the goats graze, water and shut them up at night, give the milkers and breeding stock a little grain and hay occasionally, and supply customers with mature animals."

A characteristic odor was compared with that which usually emanates from a hencoop. "The bucks do smell rather strong during the rutting season, which lasts about four months," admitted the goat lady, "but the does never have any odor about them—which is more than can be said of cows and some other domestic animals."

OVERCOME PREJUDICE

"We find a great deal of prejudice against goats," announced Miss Kirby, who had come in from the pasture, leading a docile doe. "The average person thinks of a goat as 'the poor man's cow,' having in mind the scrub billy goat which inhabits the Irishman's backyard and is supposed to live on tomato-can labels and other kitchen refuse.

"The Toggenburg is as superior to that kind of an animal as a purebred Berkshire hog to an Arkansas razorback. Our goats are clean, gentle and affectionate, giving an immense amount of the richest kind of milk. Canyon Kibelleo here gave an average of six and one-half quarts a day for four weeks, on official test."

The "little sister to the Jersey" has a great advantage over her bovine relative—in addition to the superior nutritive value of her milk—it was explained, for while tuberculosis is sometimes transmitted from cows to human begins, this dread disease is said never to be contracted by drinking goat's milk.

KILL SNAKES AND WILDCATS

The somewhat isolated location chosen was afterwards found to possess peculiar advantages for goat raising, having in the hills behind a large acreage of unfenced land, which affords much free pasture. Herding goats is considered pleasant pastime by Miss Alice Mackie, a half-sister of Miss Kirby, who is visiting the goat ranch this winter. Miss Mackie also was born in Egypt, but for several years has lived in leisure near London. All three ladies possess much culture and refinement, despite their rude surroundings.

More than a dozen wildcat pelts and a great rattlesnake skin are tangible evidence of the presence of wild animals in the immediate vicinity and of the ability of the fair goat-herders to vanquish them. The rattlers are dispatched with rocks, proving that some women can throw straight, while the wildcats are first treed by a dog and afterwards shot with a rifle. The coyotes are more difficult to cope with, but do not make much trouble.

Piano boxes are used to make miniature stables for the bucks, which do not mind cold weather, but are injured by rain. To make a shed, two boxes are placed back to back, two feet apart, and covered with one of the back boards, the other being used to cover the space between on the north side. A sheet of tarred paper covers the roof board. The two-foot opening on the south side is left open and the space on the ground between the two boxes is uncovered.

Two bucks occupy each shed, one sleeping on either side on the board floor. Goats like dry, clean sleeping quarters. A fence made of six-foot woven wire, which the animals can not climb or jump, incloses a small lot around each stable.

STOCK BRINGS HIGH PRICES

There are 21 animals in the Saunders-Kirby herd, nearly all purebred Toggenburgs, some of which have been imported. A few grades are being sold at $20 to $30, but the purebreds bring $250 to $300. A few years ago prices ranged from $100 to $500, but—like most farm products—goats are cheaper now than they were during boom times.

Nine Toggenburgs belonging to A. B. De Haan of Sioux City, Iowa, are also being kept on the Live Oak ranch. Four of these fine animals are all that are left of 100 which were imported two years ago from Switzerland, together with an equal number of Saanens.

GOOD CARE PAYS WELL

The tameness of Live Oak Canyon goats and their entire freedom from fear of human beings impresses a visitor favorably. Evidences of kindness and good care are everywhere apparent, as are indications that the goat ladies enjoy their work and life in the open.

"Snow covers England at this season of the year," remarked Miss Mackie, stooping to pluck a long-stemmed blue violet. "The London fogs which come so often in the winter make me shiver even to think about. See these beautiful red roses! Don't they know it is the dead of winter? My sister Violet and friend Rose are surely fortunate to live in such a lovely land."

Morse's SEEDS

OUR NOVELTIES FOR 1

New Sweet Corn
"Carmel Golden"

New Table Pea
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New Table Pea
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To prove that the Conow Burner is exactly as represented, the manufacturers agree to send a outfit on 30 days' trial and let you see how it works before deciding to keep it. Write today for free literature, which explains all.

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FRUIT TREES budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince; Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Dewberries, Logans, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Catalog paid. Satisfaction guaranteed.

Salesmen everywhere. More wanted.

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You Haven't Read the Paper Until You've Read the Ads.

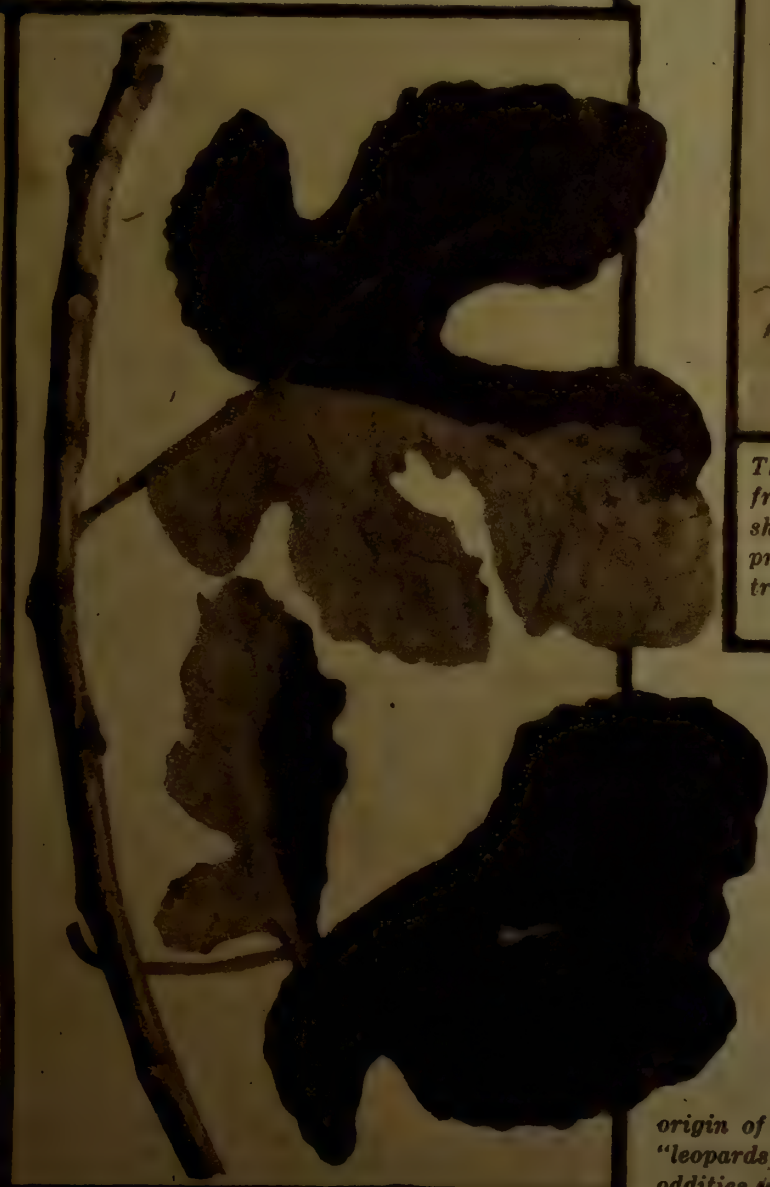
Mixed blood in plant life

Your "fancy" geraniums may be "periclinal chimeras" such as these. The relation between the normal plant and chimeras with white centers or borders is explained by Professor Collins

Leaf cuttings of a chimera produce normal plants. The cutting itself does not continue to grow, but produces a new shoot from the covered end.

A potted Sanseviera chimera, showing the cross striations (irregular stripes) which give the plant an interesting personality.

The soil washed away from the leaf cutting shows the new shoot is produced from the central green core of the chimera.



A sectorial chimera in the leaves and twigs of the fig (Bourjassote Panachee). Fruit chimeras in commercial production are rare, although interesting effects in foliage have been obtained by experimenters.

Man Upsets Nature

Have you ever stopped to consider the probable origin of some of the "zebras" and "leopards" of the plant world—those oddities with which so many gardens are embellished? Professor Collins of the University of California has written especially for ORCHARD and FARM a most interesting article on this subject, which is published elsewhere in this number.

A sectorial chimera in the Canna Lily. The leaves are purple and green variegated. One flower is yellow, one red and two partly yellow and partly red.

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Auto Mechanic—$35 to $45 a week.
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Complete Training at NATIONAL in ALL this work for one tuition fee. National GUARANTEES to qualify you for ANY of these Big Pay Jobs.

Sam Garvin, who learned automobile work when 12 years old.

Instructor showing student use of Universal Electric Testing Bench, only one of its kind in any school.

Students overhauling Packard Twin-6 Motor.

Trained Men Wanted

Big Pay Jobs Open Everywhere in Auto Work

Don't let another day go by before you find out all about the auto business. A million automobiles in California now. Sales of new cars show tremendous increase. Jobs waiting for men who know work in any branch of auto industry—mechanics, electricians, demonstrator-salesmen, shop foremen, battery experts and service station managers.

Get Ready in Few Weeks to Fill a Big Job

LEARN NOW! Get into this wonderful, interesting, fascinating, money-making business at once. Start building a future that means success and money. A few short weeks' training at National Automotive, then YOU can fill a big-pay job. You can do it. No matter what your age, no matter what your education—National method of practical shop training gives you thorough, working knowledge of autos and auto construction. You learn from actual experience. Make tests, repairs and do construction work. Use tools, not books. You KNOW autos when you finish National training.

Reduced Rate in Fine, New, National Automotive Building—Larger Departments—New Equipment—Many Other Advantages

Tremendous demand for National trained auto experts made necessary this bigger, finer and greater National Automotive. Thousands and thousands of dollars have been expended to make it the finest auto school in the West. Just like college life at National—located across the street from 130-acre Exposition Park. Ball grounds, gymnasium, swimming pool, world's largest stadium, amusements, everything FREE to you. Right in the heart of a big, busy city—Los Angeles. Special reduced rates during month of February.

Do Actual Training Work on High Grade Cars

National Automotive has the finest training equipment of any school in America. You do actual repair work and "trouble shooting" on Packards, Cadillacs, Fords, etc. Construction and repairs on all types of motors, generators, storage batteries; real practice on high-grade lathes; vulcanizing equipment; testing of all kinds of electrical repairs. NO TIME LIMIT in any department. You learn RIGHT at National Automotive. Thousands of visitors come here every year just to see the hundreds of men at work in the splendidly equipped training departments. National is the only school that PUTS YOU ON THE JOB when you graduate.

10,000 Successful Graduates Prove Great Value of National Training

They'll tell you of the splendid training they received. One of them writes: "I have increased my earnings 100 per cent." Another says: "I have built a wonderful garage business, and owe it all to National." And another writes: "I am well satisfied with National training; am sending my brother to take the course." You should read the story of Paul Briggs, Sixth and Madison streets, Portland, Ore., who is now making $4000 a year in auto work. Mail the coupon for full information. Mail it TODAY without fail!

Instructor showing student proper handling of big lathe.

Ralph Martinez, who started school when only 16

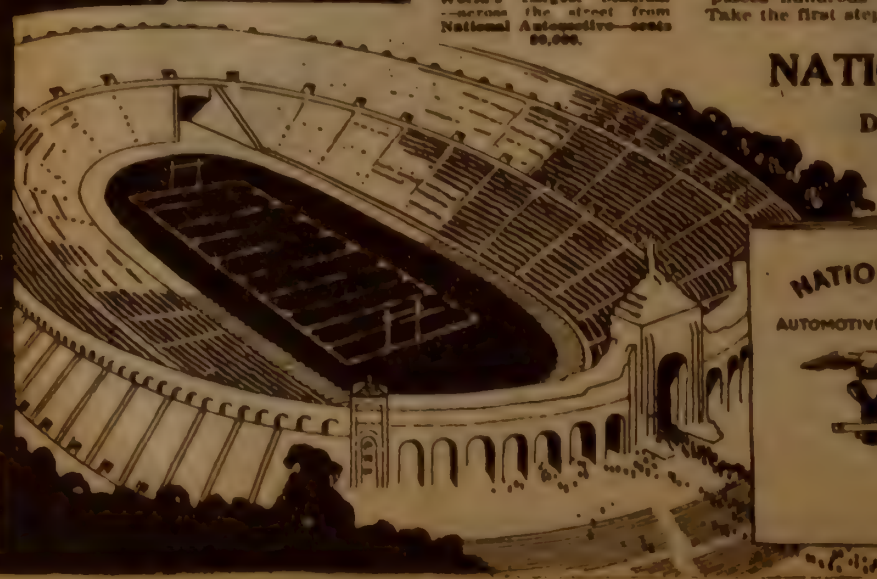
Earn Room and Board While You Learn

Jobs guaranteed to earn your room and board while learning. Think of it. You can become a big-pay auto expert at practically no expense except small tuition cost; no extras; no tools to buy, no books used. Unlimited FREE employment service.

Send NOW for Big FREE Illustrated Auto Book

Mail the coupon for big FREE illustrated auto book. Explains everything—72 pages of auto facts. Scores of photo illustrations of auto construction. Tells why any man of any age can learn at National. How National special employment service finds your job for you. Send for this wonderful FREE book today—NOW. Learn how National places hundreds of men just like you in big-pay auto jobs. Your job is waiting now. Take the first step to fill it—mail the coupon below. Send it TODAY for quick results!

World's Largest Stadium—across the street from National Automotive—seats 80,000.



NATIONAL AUTOMOTIVE SCHOOL

Department 73 - - - - Los Angeles, Calif.

NATIONAL AUTOMOTIVE SCHOOL

Mail the Coupon for Free Auto Book

NATIONAL AUTOMOTIVE SCHOOL,
DEPT. 73—811 S. FIGUEROA ST.,
Los Angeles, Cal.
Please send me your 72-page illustrated auto book, absolutely FREE.

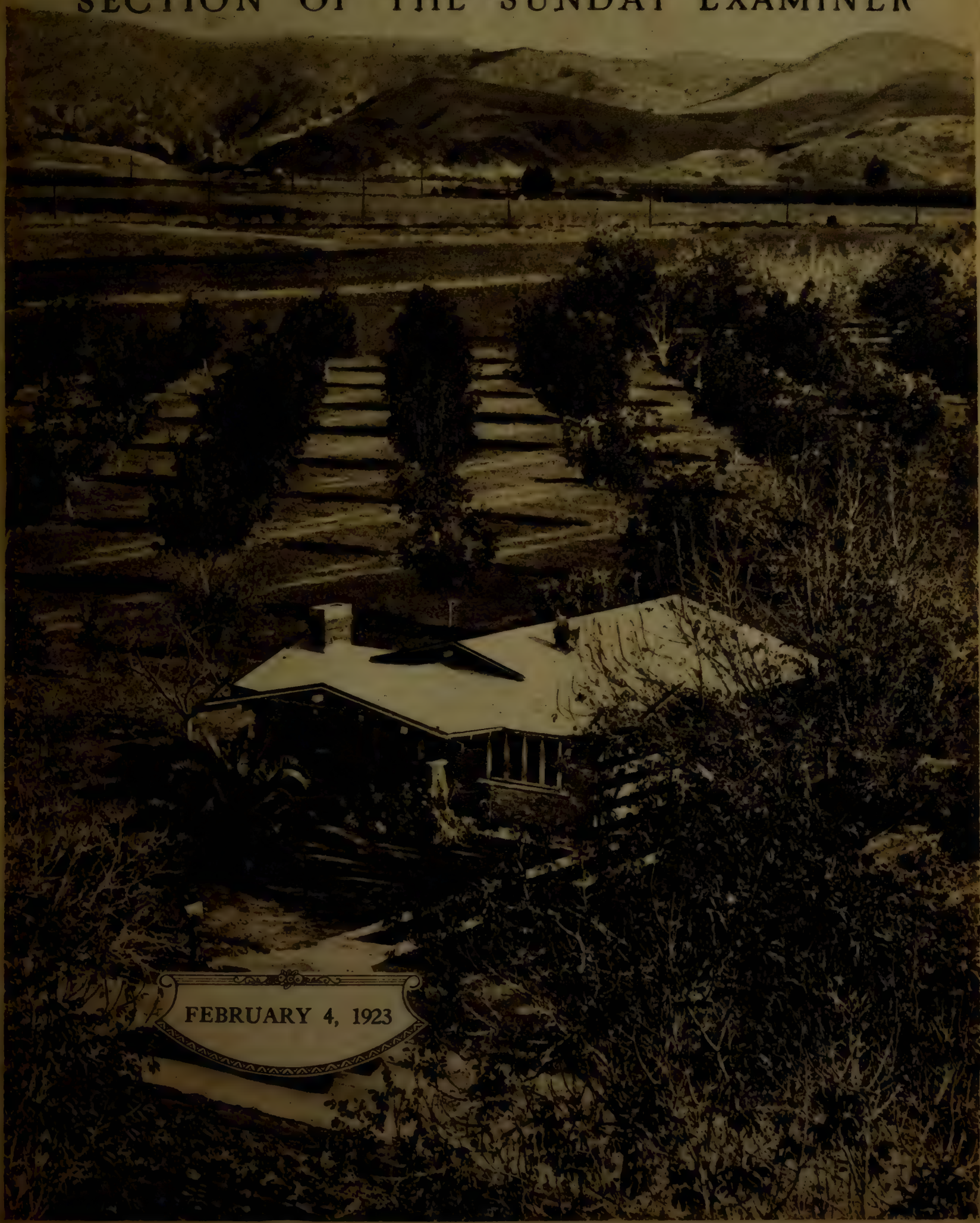
Name .....

Street No. ..... State .....

City .....

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER



FEBRUARY 4, 1923

The Nut Tree

By WILLIAM REYNOLDS BUTLER

Roadside Retailing Proves Profitable

THE remarkable rise of the roadside market—one of the results of California's splendid system of paved highways—is well illustrated by the fine farm store of E. I. Power, Solano nut and fruit grower, who not only successfully sells his own crop, but disposes of a large quantity of additional supplies as well. Read of the merchandising methods of this ranch retailer.

—*The Editor.*

A YEAR ago last summer a hot wave ripened so rapidly the fruit and nut crop of E. I. Power, Solano County rancher, that it was impossible to market the produce profitably by the usual methods. A severe spring frost had materially reduced the yield, and wholesale prices were low, so it looked like the Powers were going to lose out all around.

Then Mrs. Power had a bright idea: Why not open a front-door store and sell the crop at retail? The farm was situated on the paved State highway between Sacramento and Vacaville, over which thousands of autos passed daily. Many of the passersby stopped to ask if they couldn't buy some of the fine fruit and nuts which they saw ripening in the Power orchard. Why not supply these and other customers right at the farm and thus save transportation costs and middlemen's profits?

The plan found favor in the family council and resulted in the immediate establishment of an attractive food store beneath the wide-spreading branches of a giant walnut tree which stands by the side of the road near the house. This tree is one of the landmarks of Central California, having a history which dates back to the romantic days of '49.

ROMANTIC LOCATION HELPS

The Powers wisely took advantage of the sentimental value of this location, knowing that people would go out of their way in order to do business beneath a tree which had grown from a nut planted before the Civil War, 74 years ago, by Josiah Allison, a forty-niner whose grandchildren now wait on customers at this interesting roadside market.

The store was opened July 3. The next day sales totaled $50 and the success of the venture was assured. Mr. and Mrs. Power are assisted in the management of the market by the latter's sister and mother, an enthusiastic family group, which is aided by other workers who produce and pick the fruit.

Allison, original owner of the ranch, was a grain and stock farmer, but his son-in-law, L. J. Harbison, took a deep interest in horticulture and planted a great variety of fruits and nuts after he had purchased the place. Having so many different kinds of products proved a serious selling handicap when the crop was turned over to dealers by Harbison's son-in-law, Mr. Power, the present owner of Nut Tree Ranch.

SELLS GREAT VARIETY

When, however, Power went into the retail business he found it a distinct advantage to have a wide variety of fruits and nuts with which to supply the multitudinous demands of customers. In fact, he is adding to his large assortment of varieties by planting still others—jujubes and pistachio nuts, for example. In making these plantings Power does not need to take chances on the market, for he knows in advance what his customers want and will buy.

Conceived in the mind of an enterprising farm woman, this profitable roadside market has become famous throughout the West.

An established trademark and attractive packages have aided in increasing and holding trade.

Dried fruits and nuts constitute a large percentage of the goods sold.

Mrs. Power is shown packing confections under her own brand. An enthusiastic family group assists in the many duties incident to the operation of the big project, which has been a success from the start.

TRADE MARK ESTABLISHED

Cherries, apricots, plums, pears, figs, prunes, peaches, nectarines, grapes, apples, persimmons and melons are sold fresh, while figs, apricots, pears, prunes, peaches and raisins are disposed of in dried form. Almonds and walnuts are sold in bulk and in handy 2½-pound burlap bags. The latter are sewed, ready for mailing, with an attached tag bearing a stenciled picture of the big walnut tree and history of same, together with name and address of the market. This has been found a good advertising stunt, bringing new customers.

Dried fruit, raisins and other nuts are also put up in attractive gift boxes of various sizes and shapes, both for mailing and conveying by hand to the ultimate consumer. It has been found possible to obtain package prices far in excess of those charged for bulk goods.

In order to keep his helper profitably employed every month in the year, Power developed a side line, "California Fruit Confections," which is making a great hit. This product is prepared by a secret process and contains figs, *(Continued on Page 12)*

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
FEBRUARY 4, 1923

We Must Increase the Consumption of Eggs

Now the Great Problem Is Selling, Not Producing—Experiments in Advertising and Publicity Prove Effective—More Work Needed

By JAMES DRYDEN

Written Especially for ORCHARD and FARM

THE breakfast egg, for the first time in poultry history, is getting the service of printers' ink. A start has been made in advertising the food value of the great American breakfast staple. Every large industry has used this medium to create a demand for its product, except the poultry industry, although it now is a billion dollar "baby." What might it not have amounted to if advertising had been as liberally employed as in other lines of production?

Now, it has come to pass there is a large increase in egg production. The surplus in storage during 1922 was larger than ever before. As early as the first of September the storage holdings in New York, Boston, Chicago and Philadelphia amounted to 4,372,327 cases of 30 dozen each. On the same date a year ago the holdings amounted to 3,335,770 cases, or a million cases less than the amount in storage this year! In round numbers the increased holdings amounted to 2000 carloads in those cities, or a total of 30,000,000 dozen.

INCREASED CONSUMPTION NEEDED

That meant that the egg eaters of the Nation would have to consume an average of one egg a week more than they did the year before if these surplus eggs were to be eaten.

There is no doubt but they will be eaten. The only question confronting the producers was what inducement would have to be given the consumers. The city egg eaters believe their row is just as hard to hoe as that of the tillers of the soil, and the mere fact that there is a surplus will not create a greater demand for the eggs. They will not eat more eggs just because the cold storage operators and the farmers have been caught in the egg avalanche.

Before some 30,000,000 dozen surplus eggs will be eaten one of two things must happen. Either the eggs must be sold at a price to encourage consumption or the consumers must be better educated to the real food value of the egg.

CREATES ECONOMIC PROBLEM

If the inducement is lower prices it will mean the loss, in the first place, of several million dollars to the holders of storage eggs. Also, it will mean there will be less storage demand for the eggs next season and the producers will receive a low price.

The price of storage eggs reacts on the price of fresh eggs, and should the storage stocks be dumped on the market at a low price the producer will have to take a low price for his fresh gathered eggs. Both the storage people and the producers will stand to lose.

But the consumer does not feel any perceptible urge to make good the losses of the storage folks who speculate in eggs, nor of the farmer who produces them. His advantage is temporary, however. In the end he will pay the losses. Cheap prices now will precipitate a slaughter of hens on the farms, and the sitting hens and incubators will not run at capacity. The production will be decreased in another year. Then the prices will go up and the consumer will pay the bill.

The other inducement to increase the demand for eggs by enlightening the public as to their real food value should appeal to all classes. The consumer is eager for information about food values. If baking powder or cornstarch is worth as much as hen fruit he wants to know it. The consumer is seeking food values. People are starving for facts as much as for food; foods of high value are wanted.

With this idea in mind, different agencies have been co-operating in a campaign to increase consumption of eggs by placing before the public, facts concerning their nutritive value. This campaign is something new under the sun. No great amount of money has been spent in advertising; the amount is infinitesimal compared with the amount at stake.

The campaign originated in New York City, the great egg market of the country. The New York Mercantile Exchange and the State Department of Farms and Markets have waged a publicity campaign with satisfactory results. First, a committee of the Exchange made the computation that there must be a Nation-wide increase in consumption to the number of one egg a week per capita "if the increased holdings in all markets and the heavier current production are to be disposed of without serious financial loss." This increase, it was estimated, would clean up the surplus.

It should require no tonic to increase the appetite to this extent; in fact, it does not mean an increase in appetite at all; nor does it mean an increase in the board bill. Rather the egg may be substituted for other foods without any change in the appetite or family allowance. The Exchange had printed and posted in stores thousands of posters reading: "Eat More Eggs. Save Money—Insure Health." When the housewife went to the store this poster confronted her and reminded her that she could save money and health by buying eggs, and she did so.

The Exchange published also a circular which was widely distributed to the trade, urging every effort to stimulate consumption and proposing a slogan as follows: "Two Eggs Per Day Will Clean Up the Lay—and More, Too."

The Department of Farms and Markets of the State of New York took an active interest in the campaign. In a letter to the writer, Director Herschel H. Jones said that he had been expecting for the last year that it would be necessary to undertake such a campaign because of the apparent increase in production of eggs. The heavy storage stocks, combined with the unusually large current receipts, he points out, were the immediate cause of undertaking the campaign. He stated further that the press has given fine co-operation, and the consumption of eggs has been increased considerably.

RADIO TO RESCUE

The radio service was called upon. Director Jones inaugurated the service by a personal talk over the radio, and the slogan, "Two eggs per day will clean up the lay," was carried to thousands of homes in this way.

Further, the Department of Markets and the Mercantile Exchange printed and sent out to the housewives a folder which included a discussion of the general situation, giving reasons why consumers now can eat more eggs. This folder also told how to judge the quality of eggs, and gave about 50 novel recipes for egg dishes, furnished by the head of the domestic science department of Columbia University.

As to the results of the campaign in New York the consumption of eggs increased immediately following the beginning of the campaign some 50,000 cases a week. Of course it cannot be known positively just what the result was in terms of cases, but there is no question but that it had a splendid effect. Shortly afterwards the price of eggs took a decided jump, which, of course, had a retarding effect on consumption.

Statistics furnished by the United States Department of Agriculture, Bureau of Agricultural Economics, show, however, that the surplus stocks have been disappearing at a rapid rate. The surplus of a million cases in August in New York, Boston, Chicago and Philadelphia was reduced to 469,851 cases in December. In other words, between August and December the consumption of storage eggs was more than half a million cases greater than in the same period of the preceding year.

SITUATION LOOKS BETTER

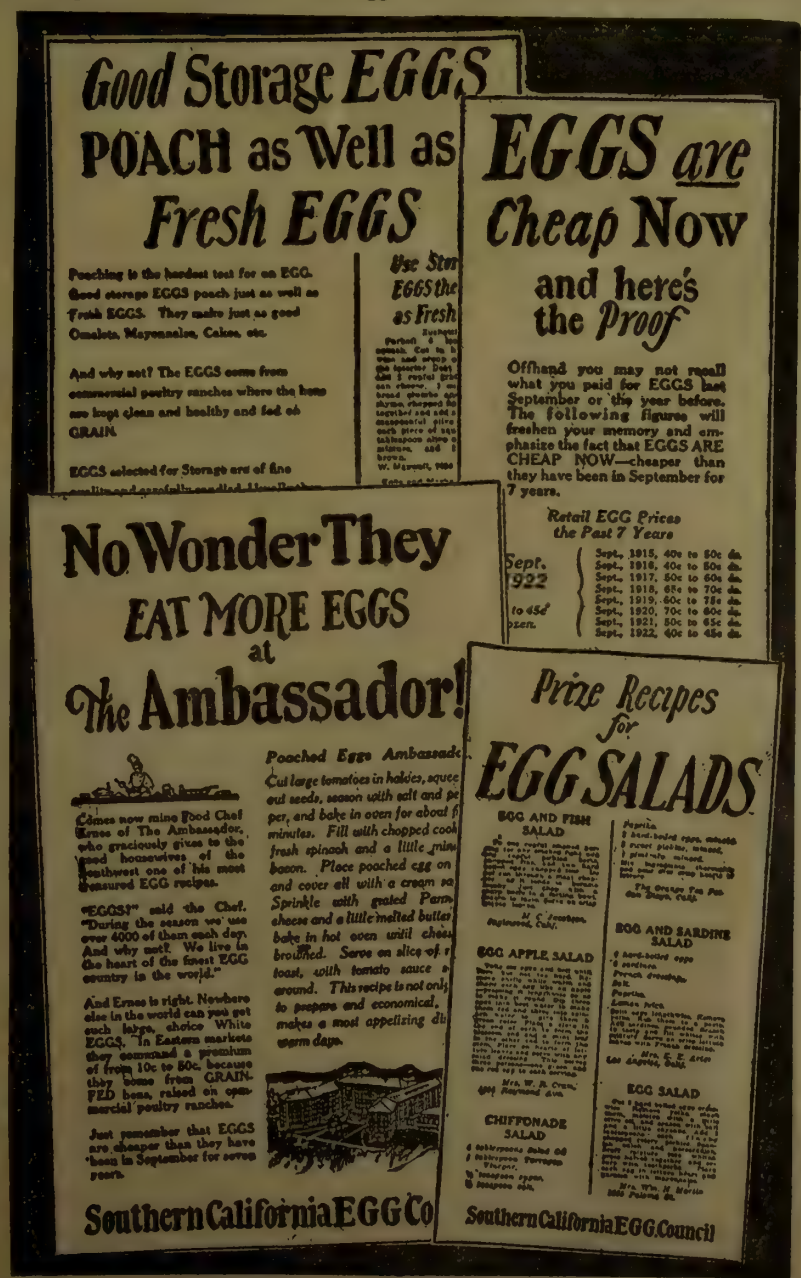
The situation looks decidedly better than it did several months ago. The consumer's appetite has risen to the occasion. With normal weather conditions from now on, the cold storage holdings will be well cared for, and there need be no serious slump in prices.

In San Francisco the eggs in storage on December 11 amounted to only 18,525 cases, against 35,288 cases in 1921. In Los Angeles there were 19,394 cases in storage on December 11 and 19,581 on same date in 1921.

The campaign has extended to other cities. The Chicago wholesalers subscribed liberally to an advertising fund. San Francisco and Los Angeles each raised about $10,000. The co-operatives in these latter two cities, being the largest handlers of eggs, were the largest subscribers to the fund.

CALIFORNIA ADVERTISES EFFECTIVELY

Very effective newspaper advertising has been resorted to in the two California cities. *(Continued on Page 14)*



Courtesy Ramsey Oppenheim, "Western Advertising."

Facsimile of Producers' Advertisements

The striking announcements reproduced above were prepared by Jaffe & Jaffe for the Southern California Egg Council. The campaign extended from August 15 to December 9, 1922. About $9000 was appropriated for this purpose by representative producers, dealers and organizations. Results were very satisfactory. The quantity of eggs moved exceeded by more than 110,000 cases the sales during a similar period of the previous year. The advertising was prepared from week to week, advantage being taken of news events, such as the railroad strike. The Egg Recipe Contest brought such a deluge of letters that the contest was called off after one week. The latter phase of the campaign emphasized the desirable qualities of storage eggs, with a view to overcoming public prejudice against them. Comparison with other foods was studiously avoided in all of the copy, as well as any suggestion of possible prejudice against the stored product.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of the
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LOS ANGELES SUNDAY EXAMINER

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.

O. H. BARNHILL, Assistant Editor.
GEORGE GRANT, Art Director.

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS

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Luther Burbank — W. S. Killingsworth
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Walter H. Gardner — Helen Temple
W. S. Guilford — George P. Weldon

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

THE COST OF CRUELTY

A representative of the American Institute of Meat Packers estimates that 3,716,000 pounds of beef are discarded every year because of bruises to cattle, while the pork losses on account of injuries to hogs amount to 15,256,000 pounds annually. Packers and railroad companies are carrying on an expensive campaign against cruelty to meat animals, purely from a dollars-and-cents standpoint. "Stop abusing livestock," is their slogan. "Every blow means a bruise. Every bruise means wasted meat." All good citizens rejoice with the society-of-the-long-name that kinder treatment of animals will result from this commendable campaign.

GROWERS WANT WATER SHIPPING

A California company has been formed with the expressed purpose of building a dozen refrigerator ships. These are to be used to help transport fruit and vegetables to Eastern markets. When the Panama Canal was built it was supposed this great waterway would afford relief to Pacific Coast shippers, but no considerable amount of farm crops have yet been marketed by this route. One reason why farmers have been unable to take full advantage of water transportation has been the fact that in most cases two rail hauls also are necessary—one to get the goods from ranch to river or ocean and another from ship to consumer. These two rail freights are apt to offset the advantage of low water rates. "It will be only a matter of time," declares G. H. Hecke, director of the California Department of Agriculture, "when the farmers of the Sacramento and San Joaquin valleys will call upon Congress for aid in building a deep-water channel from San Francisco Bay to both Sacramento and Stockton."

ARE SALARIES TOO HIGH?

One of the chief bones of contention in many agricultural co-operative associations is the question of salaries paid the officers. It seems to go against the grain for a hard-working farmer who is poorly paid for his labor to contribute to what seems to him a princely income, even if the latter be received by someone who is trying to help the farmer make more money.

J. H. Barber, general manager of the Poultry Producers of Central California, has some interesting remarks to make upon this subject.

"During the past year," says Mr. Barber, "the association paid its general manager $500 a month, the assistant manager $600 and the Petaluma manager $475. The member with 1000 hens contributed about 3 cents a day to these salaries, or 1 cent for each man. This amounts to about one-tenth of 1 cent per dozen eggs.

"The Southern California Poultry Producers' Association pays its manager $833 a month for handling a business one-fourth the size of ours. The secretary of another California co-operative marketing association receives $1000 a month, while another producers' organization pays its manager more than $2000 a month."

Mr. Barber feels free to speak upon the subject of salaries, since he has resigned as manager of the poultry association. The executive business of the latter is to be handled by the present assistant manager and the Petaluma manager, who will not have their salaries of $600 and $475 a month increased, it is said.

"What's New?"—Keeping Abreast of Agricultural Progress

Sell 19,000,000 Grape Stakes

HUMBOLDT COUNTY is shipping south more than 300 carloads of grape stakes to support California vines this year. Approximately 19,000,000 stakes will be contained in these shipments. —G. B. R.

Cleaning 32 Eggs a Minute

A NEW sanding machine, which cleans 32 eggs a minute, has been installed by the Poultry Producers of Central California at their Petaluma plant. Two men are required to feed eggs into the machine and take them away. A washing machine is used to cleanse the "heavy dirties."—G. B. R.

Paint Kills Trees

THE painting of wounds made by digging borers out of apricot trees is condemned by L. R. Cody, horticultural commissioner of Santa Clara County, who reports that several young apricot trees were killed last spring by asphaltum paint, which, he says, is as deadly as ant paste when applied to the trunks of young trees.

California Cows Lead

FIVE California cows led the list of high producers among the 23,894 animals on test in seven Western States during November. The first of these is Cricket, a grade Holstein, owned by C. S. Walker of Santa Ana, with a record of 114.5 pounds of fat for the month. Other owners of high-producing cows are A. B. Comfort of Hanford, J. L. Sebastian of Wasco, James Biffa of Petaluma, and J. Chapman of Salida.

Receipts From 17 Acres

JOSEPH NIBLER, Willamette Valley rancher, reports the following sales during the past year from his 17-acre Oregon farm: Raspberries, $750; strawberries, $638; walnuts, $128; filberts, $438; evergreens, $694; gooseberries, $378; filbert plants, $1600; apples, $60; blackcaps, $7; honey, $7; tomatoes, $6; gooseberry cuttings, $35; raspberry plants, $30; strawberry plants, $32; evergreen tips, $12; corn, $9; kraut, $8; miscellaneous vegetables, $40; total, $4879.32.

The Delicious Whitten Apple

A LARGE, red-striped, sweet apple, firm-fleshed and juicy, possessing the aroma of the Delicious, is the result of a hybrid between the Ingram and Delicious made by cross-pollination under the direction of Prof. J. C. Whitten at the Missouri Experiment Station 13 years ago. The new apple has been named the Whitten, in memory of the late well-known horticulturist by that name, who did much for Missouri and California fruit growing.

Too Many Cows in Tulare?

THERE are too many cows in Tulare County, considering the amount of butterfat which they produce, in the opinion of Sam H. Greene of the California Dairy Council, who says that 32,000 Tulare cows produced only 5,441,000 pounds of butterfat last year, while 22,000 Humboldt County cows produced 6,840,000 pounds of butterfat in the same period. In other words, the coast county cows, although 10,000 less in number, produce more than a million pounds more butterfat in a year than do the San Joaquin Valley cows. The Tulare Board of Trade and the Rotary Club have started a campaign to eliminate "boarders" from local dairies. Butterfat testing associations are to be organized.

Wool Growers Gain 10 Cents

A STRIKING illustration of the advantages of co-operative marketing is afforded by the experience of the 2200 members of the Pacific Co-operative Wool Growers' Association, which received an average price of 43 cents for all grades of wool last year, while independent shippers obtained but 33 cents. The association covers Oregon, Washington and Idaho, its influence extending into California. The organization is managed by R. A. Ward, whose offices are at Portland.

One Seedless Apple—$1,000,000

S. M. LUKE, Montreal nurseryman, offers $1,000,000 for a seedless apple, which Prof. F. C. Seers of the Massachusetts Agricultural College at Amherst believes A. W. Buzzell of Abbottsford, Quebec has discovered. Professor Seers examined a number of Famuese (Snow) apples grown by Mr. Buzzell which were entirely without seeds or core. Instead of the usual depression and calyx leaves at the blossom end of the apple, there was only a slight mark.

These peculiar apples were produced by one or more of 100 young trees which bore last fall for the first time in the orchard of Mr. Buzzell. The seedless and coreless feature of the fruit was not noticed until the apples were being graded, when there was no means of determining which tree produced them, but plans have been laid to apprehend the source when the next crop is harvested.

Eats Orange a Day

JUNE CELESTE BRUSH, a healthy three-year-old Michigander, eats an orange a day for vitamines, having consumed already 1000 golden globes of health. Probably June's parents or physician took their cue from the advertising of the California Fruit Growers' Exchange.

Long-Tongued Bees Best

LONG-TONGUED bees make the most honey, according to B. A. Slocum, Washington bee specialist. "Cull your bees," advises Mr. Slocum, by selecting the queen of your best producing colony for breeding purposes. Requeen poor colonies with daughters of this queen.

Dehydration Saves Raisins

THE dehydration of raisins in five or six plants in Sutter County the past season proved an entire success. A large quantity of fruit which would otherwise have been lost was put in marketable condition by this method. It was found possible to turn green grapes into raisins in from 19 to 22 hours. Partially dried raisins which had been caught in the rain were finished off in a few hours.

Similar good results were obtained in dehydrating green and partially dried prunes, especially the Imperial, which is difficult to dry in the sun.

Dehydration was forced onto grape growers last fall by an unfavorable combination of circumstances. Lack of drying equipment and late ripening resulted in thousands of tons of Sutter County raisins and prunes being still on the trays when the fall rains came. Large quantities of grapes had not even been picked, because there were no trays in which to put them. Similar conditions prevailed in other parts of the grape belt.

Dehydration may prove to be good dried-fruit insurance.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

VII—ROBERT E. JONES

THERE is just one Bob Jones, and that is "Our Bob." He is one of the leaders in the upbuilding of California agriculture, and others who are interested also in this work are proud to be counted co-laborers with him. He is one of California's most popular younger agricultural workers—warm-hearted, cordial and able to find the human-interest element in every situation.

BOB JONES

It is difficult to overestimate the value to an industry of such a man as Bob Jones. He sees the possibilities and opportunities of the various branches of the farming business from a wide angle and a long perspective.

His thorough newspaper training and keen "nose for news," his practical knowledge of farming, and rare ability to tell a story clearly and entertainingly, make him a particularly valuable writer on farm topics.

He has contributed to many periodicals, including magazines of national circulation.

Bob put the Country Life section of the Sacramento Bee on the map, was connected with the Sutter Basin Company for a while, and is now with Sam H. Greene and the California Dairy Council, with headquarters in San Francisco, doing a big work for the dairy interests of his own State and all America.

"Bob Jones' Corner," which appears exclusively in ORCHARD and FARM, is considered one of the most interesting and unique features ever carried by any farm paper, and he writes also many important articles on topics of live, human interest.

NEXT WEEK—WALTER H. GARDNER.

the all-in-one chocolate

—as a food-beverage

Most people know Ghirardelli's Ground Chocolate as a fine, full-flavored chocolate drink. But that's only *half* the delicious Ghirardelli story. For Ghirardelli's is the all-in-one chocolate—the chocolate that rises to *every* chocolate occasion. Our new recipe booklet shows how—and it's free!

—for baking and cooking

Ghirardelli's has taken the bother out of baking by putting a *can of convenience* into it. No fussing with bar chocolate. Already ground, ready for cakes and custards, for pies and puddings, for chocolate dainties and chocolate desserts. D. Ghirardelli Co., San Francisco. Since 1852.

Ghirardelli's Ground Chocolate

SAVE $3 by Equipping Your Tractor and Truck NOW!

DEALERS WANTED

Who Are Now Handling Tractors, Farming Implements or Trucks.

SEIBEL AIR SPRING SEAT

DO YOU finish the day on your tractor *completely done up*—with stiff legs and aching back—*fit for nothing but bed?*

ARE YOU taking a chance of *injuring your spine and kidneys*—by constant jarring and jolting on an ordinary seat?

DO YOU want to drive in *perfect ease and comfort* on a seat that *eliminates all jolting, jarring, swaying and back-slapping* and that absorbs all vibration?

DO YOU want to protect your health, to *finish your day's work feeling fresh and untired*—to be able to drive your tractor hours longer without fatigue?

Get a Seibel Air Spring Seat on 10 DAYS' TRIAL

Using the seat will tell you more of its wonderful ease and comfort than can we.

A LETTER FROM STANFORD UNIVERSITY. "Inclosed find order for one of your seats for our Cletrac Model F tractor. The seat ordered several months ago from you which we applied to our Cletrac W Tractor, *has given satisfaction in every way.*" By V. Widman, Purchasing Agent.

GEORGE H. WELDON, POMOLOGIST of Chaffee Junior College, writes: "The Seibel Air Spring Seat has been used on the '_____' Tractor at the Chaffee Deciduous Farm for the past year and has been *given a thorough test under conditions that are most trying for the driver.*

"It has given perfect satisfaction in every way."

"Mr. Thomas White, who has operated the tractor, considers it to be *as nearly perfect as a tractor seat could be*, and finds that the work of running the '_____' is robbed of much of the disagreeable bouncing about and shaking attendant upon the use of the ordinary type of seat.

"We *take pleasure in recommending this seat* to tractor operators."

$21—Tractor Attachments $2 Extra

PRICE ADVANCES SOON! Increased cost of rubber and steel will make it necessary to advance the price of the seat to $24 (tractor attachments $2 extra) when present supply of raw materials is exhausted. *Buy now and save.* The great demand for these seats is overtaxing our factory capacity.

EASILY AND QUICKLY ATTACHED

SEIBEL AIR SPRING COMPANY

Humboldt Bank Building, San Francisco — 1048 South Olive Street, Los Angeles

I enclose $21 ($2 extra for tractor attachments), for which send me, freight collect, a SEIBEL AIR SPRING SEAT for _____ (tractor) (truck), model _____ year _____. It is understood that if I am not perfectly satisfied with it after 10 days' trial, I may return it at my expense and get my money back. NOTE: 5% Federal Tax on seat when used on truck.

Name _____ *Address* _____ O-2-

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AVOID disappointment. Make your desire for a big harvest of luscious fruit come true—by spraying with Pyrox. It keeps plants and fruit free from bugs, rot, mildew. It invigorates the foliage; holds the fruit on until it has fine flavor and high color. On potatoes, it lengthens the growing season, thereby producing more and better potatoes. It controls potato rot.

Pyrox is a smooth, firm paste—a powerful chemical blend of poison and fungicide, with poison in excess of U. S. standard requirements. Extra high in copper. Because Pyrox is milled like paint, it goes through finest nozzles without clogging. This means that Pyrox covers more foliage. It sticks like paint when dry. Used successfully for truck, HOME GARDENS, and flowers for 24 years.

Why bother with messy home-mixing of sprays when you can get Pyrox that's always fresh, always ready? Get your supply in now.

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An unbiased, authoritative discussion of insect pests and plant diseases and how to control them. Admits that Pyrox is not a cure-all, and lets users tell you in their own words how Pyrox saves them time and money. You won't have the latest spraying data until you get this finely illustrated, authoritative hand-book.

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Will produce from

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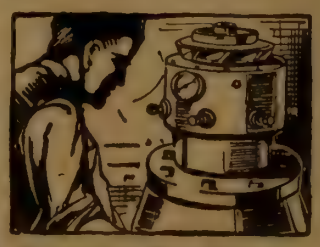
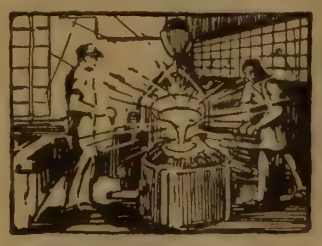
When you, as an irrigator, acquire a Layne & Bowler Pump, you get more than a mere assembly of so much steel and bronze. You secure a product that 35 years of experience and experimentation have wrought. You have the assurance of knowing that the pump is designed to scientific accuracy, that the materials are the finest, that the workmanship reflects the highest standard of excellence.



Balancing The Runners

The most vital parts of the pump—the runners—are moulded from smooth metal patterns, then scientifically counterbalanced and tested on a special-built balancing micrometer that detects the slightest variation.



Pouring The Metal

Every operation in the building of Layne & Bowler Pumps is done within our factory, according to highest standards. The castings are poured in our own foundry from metals mixed to special formulae and constantly analyzed by chemists to assure uniformity. Every casting is tested and retested. Each unit is inspected during the process of manufacture and assembly. Our factory standards are rigid and exacting, for the determination is to build a product as perfect as mechanical skill can make. We assume the obligation to provide the finest product on the market—and the records of performance of 7,000 or more Layne & Bowler Pumps attest to the high value of our product.

Machining The Parts

Every operating part is machined to the finest accuracy—as carefully finished as an aeroplane engine, yet with the ruggedness of a battleship. Bearings are of bronze, properly seated and aligned according to the most approved engineering standards.

If you need a pump you cannot afford to be without a GOOD one.

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900 Santa Fe Ave.,
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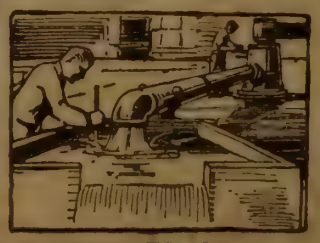

Testing The Pump

Each pump is tested in our factory well under the identical conditions with which it must operate in your well. This predetermines the efficiency of the pump. Each pump must register a perfect score in many rigid tests or will not be released for delivery. Complete information and descriptive literature will be mailed upon request to any prospective irrigator.

Layne & Bowler Turbine Centrifugal Pumps

FROM OUR CUSTOMERS

San Gabriel, Calif., Nov. 26, 1922.

"The 5000 baby chicks which you delivered to me are the huskiest ones we have ever placed under our hovers. Enclosed please find check covering deposit for 6000 more to be delivered on or about December 21."
FRED GROFF & CO.

12-23-22.

"Under your 100% fertility guarantee plan I purchased 200 hatching eggs. You sent 227 eggs; 203 were fertile. The chicks hatched from those eggs are now one week old and a finer looking, energetic bunch never came into our community. Our neighbors who have seen them are going to you for their next hatching eggs. Please save me 200 more eggs on December 27."
J. S. MILLER, Van Nuys, Calif.

"Out of 50,000 eggs I have hatched on this farm during the past two years we never had as good a hatch as from your eggs purchased December 6. Please reserve us 1620 additional eggs for last week in February."
CURTISS POULTRY FARM, East San Gabriel, Calif.

If you are seeking the best in White Leghorns, we have them, but please don't delay in booking your order. Mail 10% deposit NOW!

HATCHING EGGS: 15 for $2; lots of 100, 12c each; lots of 500, 11c each; lots of 1000, 10c each.

BABY CHICKS: Lots of 100, 25c each; lots of 500, 24c each; lots of 1000 or over, 25c each.

The California White Leghorn Breeding Farms

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New Bulletins for Farmers

who are interested in maintaining or increasing the productiveness of their soils.

These bulletins will be written in plain, understandable language for farmers who grow

Productive Fruit and other Crops

They will contain the latest developments of methods for growing larger and better crops.

They will be issued at intervals and will be mailed *free* to farmers.

Your address on a Post Card asking for my Bulletin Service will bring them to you as issued, covering a period of a year or more.

They will make an interesting and valuable addition to the farm library.

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Chilean Nitrate Committee
25 Madison Avenue, New York

You Haven't Read the Paper Until You've Read the Ads.

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50 pages chock full of information about the feeding and rearing of chicks, culling of hens, etc. Tells how to keep chickens healthy and how to make them pay. Whether a beginner or a professional, Conkey's Book is worth dollars to you. Send for 6 cents in stamps to pay postage.
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Have water on your own farm. In spare time make wells for your neighbors. It means $1000 extra in ordinary years, double that in dry years. No risk—no experience needed.

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Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*

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The New BULLETINS

AMONG the new bulletins issued by the United States Department of Agriculture the following are of interest and may be obtained free on application to the Division of Publications, Department of Agriculture, Washington, D. C. Order by number.

	NUMBER
Portland Cement Concrete Roads	1077
Seedling Blight and Stack-Burn of Rice and Hot-Water Seed Treatment	1116
Farm Lands Available for Settlement	1271
The Effects of Inbreeding and Cross-breeding on Guinea Pigs	1090
The Hard Red Winter Wheats	1280
One Variety Cotton Communities	1111
How to Candle Eggs	568

A special bulletin, "Cost Data for Farm Products," No. 876, has been compiled by the Bureau of Agricultural Economics, Washington, copies of which may be procured from the Government Printing Office, Washington, D. C., at 10 cents per copy.

BOOK REVIEWS

The Home Vegetable Garden. Published by the Macmillan Company, New York City. Written by Ella M. Freeman and edited by L. H. Bailey.

Miss Freeman writes in an interesting and informative way of growing vegetables, either for exclusive home use or with a view to selling a surplus. Soil, location, tools, insect pests and fungus diseases, choice of varieties, planting and care of the crop, harvesting, canning and storing are all treated in detail, leaving little to be desired by the beginning gardener.

Productive Farm Crops. Published by J. B. Lippincott, Philadelphia. By R. G. Montgomery, professor of farm crops, Cornell University.

This is a standard text-book, designed for student taking a general agricultural course. Being of a practical nature, it is of value as a farmers' reference book, covering all farm crops. There are 220 illustrations and over 500 pages in the text, which covers in a simple yet comprehensive manner the entire field of American agriculture. The scope of the work is illustrated by the following chapter heads, of which there are a total of 45: How Plants Grow; The Production of Seeds; Cropping Systems; Grass Mixtures and Seeding Methods; Millets; Legumes; Clovers; Cow Peas, Soy Beans, Field Peas, Vetches and Peanuts; Root Crops.

Women Save Hours

AMONG the 463 labor-saving devices which the members of the "testing circles" of Washington farm women purchased last year, the 60 pressure cookers alone will effect an annual estimated saving of 32,445 hours of work, or nearly ten years of ten-hour days. A testing circle is composed of six women, who take turns in testing home conveniences. These women bought 105 fireless cookers, 75 dish drainers, 70 utility tables, 60 steam cookers, 24 gasoline irons, 20 bread mixers and 13 vacuum cleaners. It is claimed a dish drainer saves time equal to 18 days of 10 hours each in the course of a year.

Import Potato Flour

THIS country buys from Germany each year $24,000,000 worth of potato flour, with which many bakers adulterate bread 10 to 20 per cent, claiming that it is necessary in order to give the dough proper consistency, according to statistical records. It is estimated 400,000 sacks of cull potatoes are thrown away every year in Southern California and that most of these could be profitably converted into flour, starch and other potato by-products.

Women Fill Canning Orders

THE farm women of Greenwood County, S. C., are filling an order from a wholesale grocery company for 1500 cases of tomatoes, 300 of sauerkraut, 65 of beets, 300 of soup stock, 275 of blackberries and 300 of pie peaches. This kind of co-operative canning furnishes a home market for surplus produce and helps solve the problem of how farm women can make money at home.

Happy Solution of the Labor Problem

How a Placer County Olive Grower Has Solved the Human Equation

BUGS and blight, spring frosts and water shortage—these are momentary farm problems. All are solved sooner or later; not so very long ago there were those who predicted the end of pear growing as the result of blight. But man's inventive genius found a way out and today more pears than ever are being shipped from the Coast.

But there is one problem (How we tire of that word!) which is perennial in its persistence. It is the human equation—the problem of labor on the farm. It is the mother of a lot of other difficulties—notably the Japanese problem, with its whole litter of problemettes. Luncheon clubs, parlor lecture clubs, farm bureau centers and corner grocery store gatherings all have taken a hand in the discussion.

By ROBERT E. JONES

NOW and then we travelers in the farm field run across an isolated producer who has taken the labor problem into his own hands to work out in his own way.

Not always is his method applicable to others. But usually there is a hint of encouragement in what he is doing.

Up in the Placer County hills, where the sagebrush and scrub pine have been scraped off, and a thousand orchards at fruiting time present an undulating field of green, we found a man who has worked out the labor problem for himself. This man is Francisco Frazoni, known locally as "The Italian Count." The appellation is repeated through no disrespect for Frazoni, but merely to identify him to those who do not recognize his real name.

Frazoni is a highly educated, refined Italian horticulturist, who came to California because he likes the country, and here found a desirable place to invest his money and energy.

He purchased the holdings of the old Sacramento Olive Company, hidden away on a back road in the sagebrush southeast of Rocklin. The property was badly run down and needed rehabilitation. When I visited the place the work was well on its way. The cutting out of dead wood, the pruning of the trees to let in the sunshine, and the liberal use of manure all played a part in "bringing back" the orchard. But all this required labor.

NEEDED READY HELP

Frazoni was not long on California soil before he realized that his greatest need was for reliable helpers. He had need of ten to a dozen men and their families at the "flush" season. Having been engaged in horticulture across the water, his mind naturally drifted back to Sicily, where he knew there were many families, at the head of which were men trained in olive growing, who were eager to come to California. But he would need them only at the busy season, and it would be altruistic, he thought, to make it possible for them to be better than mere farm laborers.

Frazoni, therefore, acquired several hundred acres of the hill land about him. It was mostly covered with brush, just as was the land of the olive orchard before being cleared. This land he proposed to sell to his fellow countrymen who came with their families to work for him. He made the terms so easy that they could establish homes here, grub the land and begin to develop it while making the major portion of their living on his farm.

When I visited the Frazoni place several of the little adjoining farms were cleared, small homes had been built and the workers on the ranch already were established on their home places. The olive grower had a reliable, trained crew of workers always at his call; yet they were on their own farms, where they had ample use for their leisure time, and with ownership ahead of them.

Italian immigrants pruning trees on the Frazoni ranch.

RELIABILITY EMPHASIZED

I went with Frazoni through his great olive grove and watched the men at work. They were pruning at the time, some of them using the knives common to Sicily and rarely seen in California. But they certainly knew how to prune, and each one of them was a reliable, hard-working, skilled man, their employer assured me.

The olive branch signifies to this grower real peace—of mind

Thus Frazoni has solved his labor problem. It is a simple story, with nothing mysterious about it. His workers are happy in their ownership. Perhaps the suggestion for this plan in California came from the old feudal system of Europe. But certainly it is advanced and in keeping with American ideals.

It is a practical application of the "farm laborer allotment" feature of the California land settlement plan. It means a better citizenry for California, for it brings to this State a kind of people who can be assimilated. Perhaps Frazoni's method will afford a way out for some other producer who is worrying about this one big problem.

"The Italian Count" showing where an old olive tree was cut off. The new sprout will become the new tree.

An Old World laborer with a New World tractor cultivating the olive orchard.

Calves and Pigs Are Character Builders

Boys Judge Cows

By R. W. GUILFORD

Instructor in Agriculture, Elk Grove High School

AT least once a week the agricultural students in the Elk Grove (Sacramento County) High School visit a dairy, poultry plant or other place of particular interest to the class at the time. Every alternate week all the boys and girls in the county who are studying farming join together in a trip of this kind. The farm adviser and his assistant have charge of the joint trips, for which centrally located objectives are chosen.

Recently, while stock judging was being studied, a trip was taken to the ranch of Lester Johnson, Oak Grove dairyman. The Sacramento, Galt, San Juan and Elk Grove high schools each sent a judging team composed of three boys, who worked individually and collectively to make the highest score. These teams were chosen from the students who had make the best judging grades during the preceding week.

Two classes of cows were judged—one of three aged animals and one composed of a quartet of younger cows. The animals judged were ordinary grades, such as are found on average dairy farms. The boys divided into groups, half of which worked on each class of cows. The students were instructed to consider utility first in placing the cows, and to write on the score cards the reasons for the way they had judged the animals.

The final placings were made by the various instructors and E. L. Stanly, assistant farm adviser. The latter then gave the reasons for the placing of one class of cows, while Professor Fleming of the San Juan High School explained the official judging of the other group.

The splendid work which the high schools of California and other Pacific Slope States are doing in giving boys and girls practical training in agriculture is made possible by the Smith-Hughes law, which authorizes Federal appropriations to help the schools engaged in this much-needed work.

The present number of Golden State high schools offering agricultural courses is 123, an increase of 43 per cent over the previous year.

Boys and Girls' Agriculture Clubs Exert Tremendous Influence for Good

BETTER farming, like charity, begins at home. The boys and girls' club movement proves it. Probably no factor has had more influence on country life than the projects sponsored by schools and farm bureaus on behalf of rural youngsters. And the city schools, too, are featuring agricultural subjects. There is no surer or shorter road to the heart of a child than along the paths of nature. Encourage the club movement and assist your kiddies to take part!

Would a city child chance a ride? These healthy farm youngsters are enthusiastic pork producers.

Ownership of a fine Hereford calf such as this one is sufficient to fire any boy's imagination and bring out the best in his character.

And the boys are kept "on their toes" by the competition of such girls as the little lady above.

Club Work Helps Dairy Industry

SEVEN lines of work during the past year have been carried on by the boys and girls' agriculture clubs of Los Angeles County: Poultry, dairy animals, pig feeding, sow and litter, bees, potatoes, and orchard management. The first three were handled by F. H. Ernst, farm bureau club leader; the others by high school instructors.

One hundred eighty-seven boys and girls were engaged in the work, which netted $5765, a return of 18 per cent on the investment.

"The most important kind of club work carried on in Los Angeles is the raising of *(Continued on Page 14.)*

Each year the members of agriculture clubs hold an encampment at University Farm, Davis. Here they are "in the swim."

Kinks and kicks in pruning trees

Careless pruning may leave "hubs" which cause disastrous results. The tree shown below was ruined by such treatment.

Above is an illustration of rotting and deterioration of both branches and old hubs resulting from "ragged" cutting and failure to protect wounds

An oddity. The original tree shown at center was pruned by spur method. Pencils indicate branches that were expected to develop framework. Instead, buds low down on trunk developed, and it will be necessary to remove original trunk!

Two summers' growth from dormant bud; tree transplanted after one season's growth. Trees of this type, with central leader, may easily be grown from "dormant buds."

(Two upper photos by Lewis Y. Leonard. Lower views furnished by George P. Weldon.)

This Is a Good Way to Start a Riot!

JUST suggest a discussion on "Pruning" at a fruit growers' meeting. Not long ago it was the "Long Pruners" vs. the "Short Pruners"; now the "Longs" are divided among themselves. But out of all the discussion come improved methods and larger yields.

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For The Man: Clothing, shoes, underwear, automobile tires, tools—everything a man needs for himself or for the farm.

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Health, Rabbits and Wealth—Former Eastern Invalid Makes Good in California

Golden State Kind to Him

HOW many rabbits can one man care for? "Show me the man," answers Warren J. Bush, who managed 700 in New Jersey, lost his health, and last January came to Southern California, where he cultivates a two-acre garden, feeds 250 rabbits, and, as he says, feels like a fighting cock. He has refused a fabulous oil offer for his fine little farm and declares he is in the business to stay.

By O. H. BARNHILL

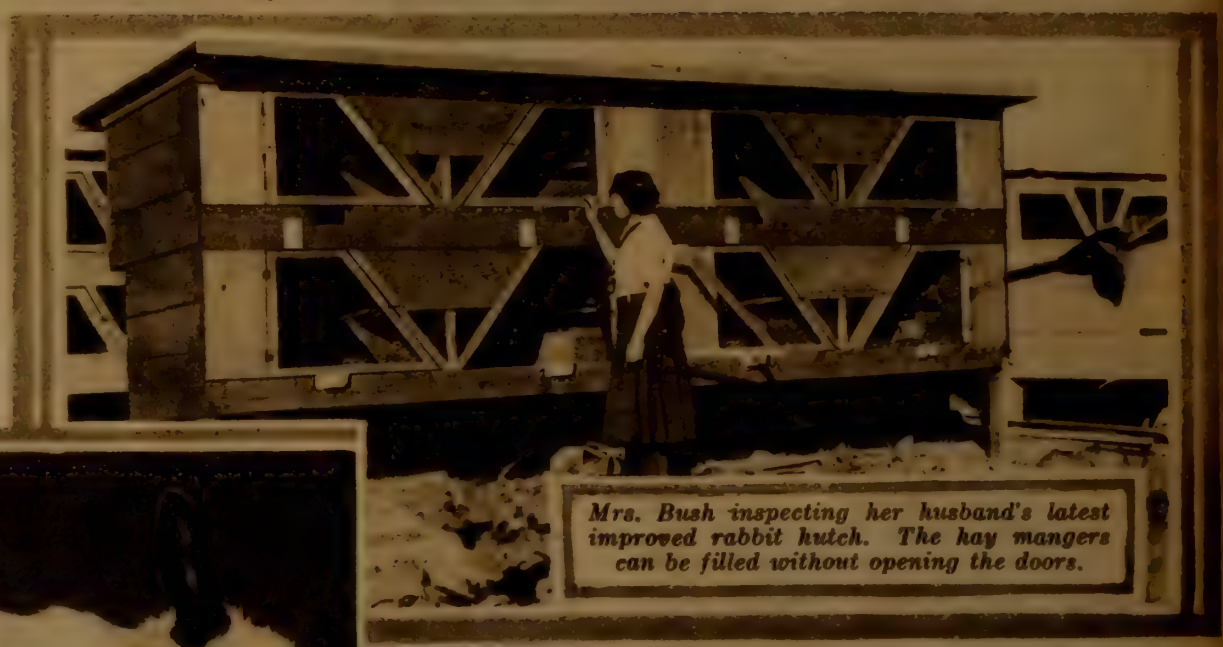
WHEN Warren J. Bush arrived in Southern California from New Jersey a year ago last January, he was broken in health and purse, but not in spirit. Going "in cahoots" with R. J. Deininger of Torrance, he settled on a two-and-one-half-acre tract a few miles southeast of Redondo, beach suburb of Los Angeles, and went to work raising vegetables and rabbits. The partners combined portions of their names to form the title "De Bu" Rabbitry.

Starting with 14 purebred hares, Bush now has 250 mature animals and 150 young ones, all first-class stock, and has made a marked success in the gardening game as well.

Oil wells are building his way, the last derrick being only a few rods from his west line. Although offered nearly ten times what his place cost, he is content to stand pat and pocket his share of production profits and oil rentals. Best of all, he has regained his health and happiness and is on the high road to prosperity.

"How does California compare with New Jersey?" Bush was asked.

"Mighty favorably," he replied. "The climate here is so much better that even the rabbits feel the good effects. At competitive exhibitions it is invariably found that the biggest, finest rabbits come from California. As for myself, in a year I managed to gain 27 pounds in weight and pull one foot out of the grave. People are much more sociable and good-natured here than on the Atlantic Coast, and industrial conditions are far better."



Mrs. Bush inspecting her husband's latest improved rabbit hutch. The hay mangers can be filled without opening the doors.

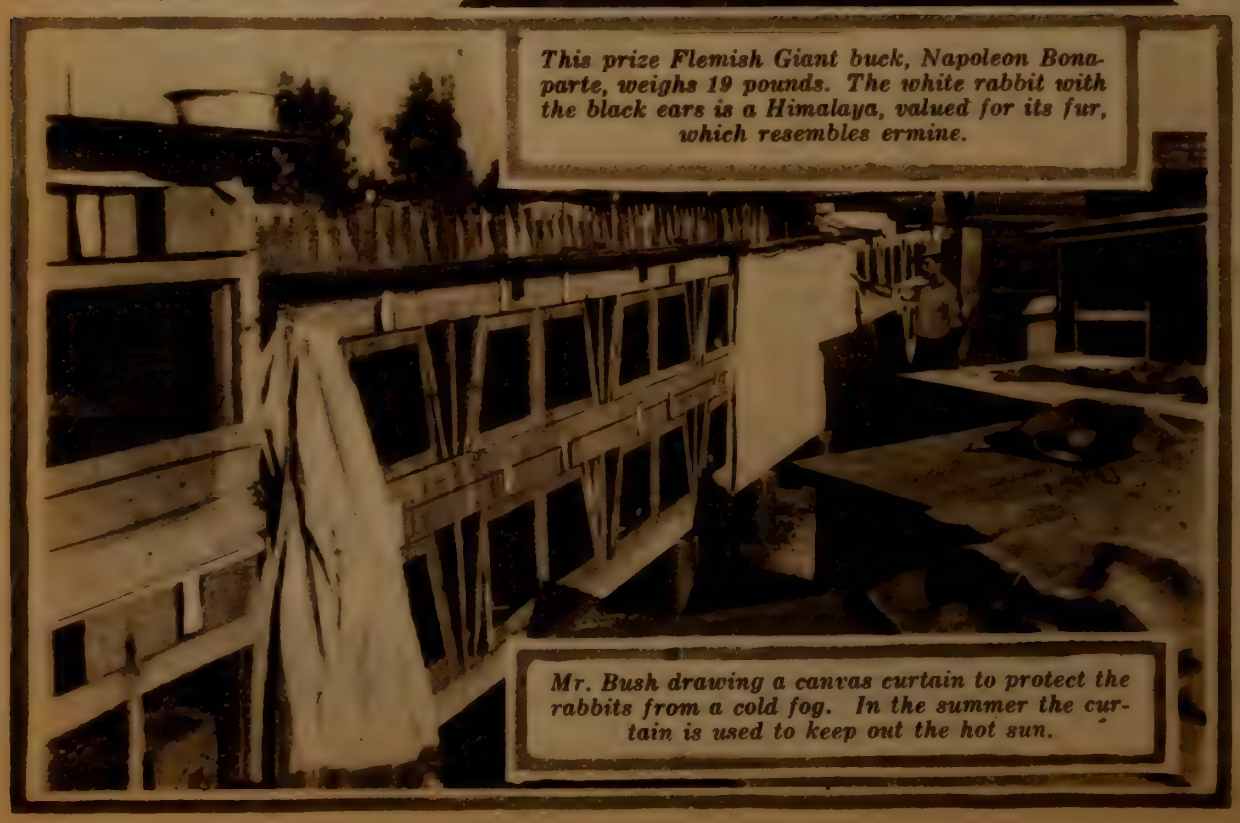
This prize Flemish Giant buck, Napoleon Bonaparte, weighs 19 pounds. The white rabbit with the black ears is a Himalaya, valued for its fur, which resembles ermine.

LIKES HARE-RAISING JOB

Although manager of a rabbitry of 700 animals near Newark, New Jersey, Bush didn't lose his health through overwork. He has built up a herd of nearly half that size here and cultivated a two-acre garden, regaining his strength meantime. Building and planting operations have claimed a good share of his time and energy, although he had little of the latter in the beginning.

"One person can take care of 500 to 700 rabbits if the hutches are properly arranged," claims Mr. Bush. "The work is light and clean, compared to the chicken business, gardening, dairying or any other branch of agriculture. As for the profits, they are all in favor of bunny, whose meat need never be offered to a glutted market.

"It is true that rabbit production has not been standardized like poultrying and some other kinds of farming, but because that is true the individual who exercises intelligence reaps correspondingly greater rewards in hare-raising operations. The breeding and feeding of rabbits, however, rapidly is being reduced to an exact science, which eliminates guesswork and taking chances."



Mr. Bush drawing a canvas curtain to protect the rabbits from a cold fog. In the summer the curtain is used to keep out the hot sun.

REDS RAISE GIANTS

Fourteen years of successful association with blue-blooded rabbits has enabled Bush to find many improved methods for their management. Here is the novel way in which he solves the problem of growing young hares to marketable size in the shortest possible time:

Basing his equation upon the fact that Flemish Giants are the largest, strongest growers, while New Zealand Reds make the best mothers, Bush discarded the solution of combining these good qualities by crossing the breeds, adopting instead the practice of making the best mothers raise the strongest young. Does of both varieties are bred in pairs, the Red litters being destroyed at birth and their mothers given the little Giants to raise.

This seems like a cruel practice and one which entails great wastage of life and reproductive energy, but Bush says it pays, and that a stockman must get results or go out of the business. Giant does have litters of 11 to 18 young, all but six or eight of which are destroyed at birth, as the latter number is all that one mother can suckle successfully. Breeders of exhibition stock often reduce the litters to three young rabbits to each doe.

DOES ARE PROLIFIC

Rabbits which weigh three and one-half to four pounds at seven weeks and sell for 23 cents a pound are the result of this method. A doe raises four litters of about seven each in a year, resting a month after each effort. This indicates a total meat production of 100 pounds for a pair of does in 12 months, giving a gross return of $23.

A doe's feed is estimated at 1¾ cents per month per pound of weight, which would amount to $1.68 for an eight-pound animal, or $3.36 for a pair. Bush claims that does can be made to net $18 a year each, which compares very favorably with chicken raising, even when the smaller number of rabbits one person can care for is taken into consideration.

The price of (Continued on Page 13)

A "Milk Bar"—Why Not?

SOFT drink parlors have displaced saloon bars and now comes the latest thirst quencher—the "milk bar." The quality of the product sold exceeds that of all other beverages, for it is a well-known fact that many artificial drinks are unwholesome.

The largest milk bar in the country is located on a big dairy farm near an Eastern city. So many of the customers who came in person to the farm to purchase bottled milk and other dairy products asked for a drink of cool, fresh milk that the "bar" was established. It is 54 feet long, done in regulation soda fountain style.

The success of the innovation has been most remarkable. Five thousand paper drinking cups have been used in 12 hours to serve customers. Nearly $800 worth of milk drinks have been sold over the counter in one day.

The price is ten cents a cup, three cups to the quart. Milk sold in this manner brings $1.20 a gallon, leaving a handsome margin over bulk sales, after subtracting all expense of retailing.

In order to stimulate the sale of milk over the bar, a mixed drink called "chocolac" was prepared. This is composed of a stock solution made of chocolate, marshmallow, sugar and vanilla and is mixed with whole milk before serving. It sells for 15 cents a cup, or when mixed with cream, 25 cents. Sold in this form, the stock solution brings $3 a gallon.

The largest sales are on Sunday afternoon in the spring, summer and autumn months, between 3 and 5 o'clock. As many as 1500 autos visit the farm in a single day, requiring the services of a traffic officer to keep the road clear.

Autos and good roads have made possible the great success of this experiment in selling a farm product direct from producer to consumer. The idea is capable of being introduced with great profit on the Pacific Coast, which is noted not only for its good roads and numerous autos, but also for its climate so mild and agreeable that city people like nothing better than to drive out to some nearby farm and make small purchases of fresh produce.

Orchardists might profitably establish "juice bars," where various kinds of fresh fruit juices, pure and unadulterated, could be sold direct to city customers and tourists. What could be more attractive on a hot summer day than a shady bar by the roadside, made beautiful and fragrant with flowers, where the nectar from oranges, lemons, apples and grapes and apples could be sipped near the trees and vines from which the fruit was gathered? The serving of such drinks not only would prove profitable from a money standpoint, but also would afford a pleasant diversion for farm women and children, tending to relieve the lonesomeness which is one of the chief objections to rural life.—O. H. B.

Stanislaus Raises $50,000,000

THE value of Stanislaus County farm crops and animals has shown a remarkable increase in the past few years, the figures being as follows: 1919, $22,000,000; 1920, $30,000,000; 1921, $40,000,000; 1922, $50,000,000, according to latest estimates.

The most commendable feature of the accomplishment indicated by the above totals is the very substantial increase in production throughout the period of depression, when the value of farm products in most sections suffered a decided shrinkage. This is largely due to the fact that Stanislaus farmers do not put all their eggs in one basket, but diversify. Furthermore, they are constantly discarding those crops and varieties which prove the least profitable. Grains, vegetables, fruits and livestock are all big money makers in Stanislaus.

A. L. Rutherford, county horticultural commissioner, attributes a large degree of the success of Stanislaus farming to weed eradication, plant pest control and rodent destruction.—W. S. TYLER.

Milk-Fed Children Win

LOS ANGELES children who use milk finish the first eight grades of school two years ahead of non-milk users, according to a survey made by the California Dairy Council. It is estimated that there are 20,000 children in this city who are retarded by improper feeding. Keeping them in school two years costs about $3,000,000, which is more than enough money to supply them with a daily diet of milk and other wholesome food needed.

Peas Yield Prodigiously

A ROW of peas 216 feet long grown by H. B. Creel in Kitsap County, Washington, last year yielded 302 pounds, which is at the rate of over 330 bushels per acre. The varieties were Teddy Roosevelt and Quite Content. The vines grew 10 feet high and were supported by wire netting. This year Mr. Creel expects to use 12-foot netting. The peas were grown on a sandy loam hillside and were watered from springs above.

PLANTING MORE PEAS

The Imperial Valley pea crop for 1923 is expected to total 175 cars, compared to forty-eight for the past season. The coming lettuce crop is estimated at 6600 cars. Last year 4826 were shipped. The spinach crop is expected to increase from five to fifty cars.

Morse's SEEDS

OUR NOVELTIES FOR 1923

New Sweet Corn "Carmel Golden"

New Table Pea "British Lion"

New Table Pea "The Lincoln"

New Bean "Rogers Stringless Refugee" Pkt., 15c; lb., 50c, postpaid)

Norton Tomato and Re-selected Stone Tomato Each (Pkt., 15c; ½ oz., 75c; oz., $1.00, postpaid)

Super-Select San Jose Canner Tomato (Pkt., 15c; ½ oz., 75c; oz., $1.25, postpaid)

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Headquarters for Everything Needed in the Care of Bees.
Send for late price list and free booklet.
The A. I. ROOT COMPANY, Dept. E, 1224 E. 12th St., Los Angeles, Cal.
PACKERS OF AIRLINE HONEY.

Enough butter-fat is being *wasted* to keep several De Laval plants like this going full force

The illustration above shows the De Laval factory at Poughkeepsie, N. Y., which covers over twelve acres of floor space and is the largest and most finely equipped cream separator plant in the world. It is now running full force, has been steadily growing and developing for the past forty years, and has made about half of all the cream separators in use in this country. A great many; but if there were twice as many De Lavals in use, millions of dollars' worth of additional butter-fat would be saved. According to conservative estimates, there is enough butter-fat being wasted by inferior and worn-out cream separators and by hand skimming to pay for the cost of running several such De Laval factories at full force for many years to come.

A cream separator is made for just one purpose—to separate cream from milk, the most efficiently, for the longest time, at the least expense. And this a De Laval will do better than any other.

When a separator fails to do this it is not a cream separator at all, but a cream waster. And there are hundreds of thousands of this kind in use, which were supposed to be "as good as a De Laval, for less money."

Don't be misled. The best is always the cheapest. And when an article such as the De Laval, over a period of forty years, has proved so satisfactory that there are as many in use as all other makes put together; when it has won thousands of contests, and over 1,000 Grand and First Prizes; when it is used and endorsed by leading dairymen everywhere—then it must be the best.

You can buy a De Laval on such liberal terms that it will pay for itself while you are using it. See your De Laval Agent or write us for full information.

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Washington Asparagus is rust-resistant, insuring heavy yields of stalks from one to two inches in diameter. Growth is clean and straight. The shoots are dark green with a heavy purple tinge. The bud does not branch until well above the cutting height.

Washington Asparagus is the most palatable and tender variety known. It was developed by the U. S. Department of Agriculture, by whom we are listed as approved growers.

A packet of seeds, or 50 roots, will plant three rows, each 50 feet long, more than sufficient for the average family requirements, and will produce for twelve years.

Send $1.00 for a packet of selected seeds, or, if you prefer, $5.00 for 50 roots, or $3.00 for 25 roots. Postpaid anywhere in the United States; complete cultural instructions with each order. *Prompt ordering is suggested, as our supply is limited.*

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FARMS FOR SALE

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ONE ACRE AND INDEPENDENCE, OR The Fine Art of Earning a Comfortable Living on One Acre in California.

For those who desire to dwell in sunny California without living up hard-earned capital.

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Write for literature.

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WANT to hear from owner having farm for sale. Give particulars and lowest price. JOHN J. BLACK, 110th Street, Chippewa Falls, Wisconsin.

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EXTRA FINE RHUBARB PLANTS—Very profitable crop. Fine intercrop in young orchard. One planting lasts many years. Bears crop few months after planting. Rhubarb Association markets crop. Circular free. W. A. LEE, Box 88, Covina, Calif.

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Brooders and baby chick supplies. Hatching "Quality" chicks has been our business for 14 years. All our stock is from carefully selected egg type hens that year after year have proven themselves real money-makers. Incubators electrically operated insure strong, sturdy chicks. All leading varieties, including very choice heavy-laying S. C. White Leghorns. We guarantee full count of LIVE chicks at destination. Write for prices.
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BEES PAY BIG—Italian bees and queens shipped to any point west of Rockies; pound packages, $1 each; queens, 50c. Satisfaction or money back. SPENCER APIARIES COMPANY, Sawtelle, Calif.

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BRONZE KING FARM,
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MAMMOTH BRONZE toms and hens; also eggs in season. Our stock are California State Fair winners and graded from the best Eastern stock procurable. Twenty years of practical experience with turkeys. We offer good opportunity for turkey raising on this 30,000-acre range. JOHN G. MEE, breeder of turkeys and herding Collie dogs, San Miguel, Calif.

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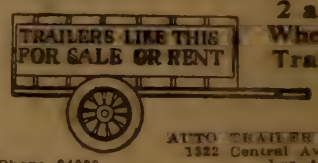

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IF YOU WANT TO BUY OR SELL registered or grade cattle of the dairy breeds, or registered cattle of the beef breeds, write to the largest and strongest livestock sale service in the West—CALIFORNIA BREEDERS' SALE AND PEDIGREE COMPANY, 311 Oechsner Bldg., Sacramento, Calif.

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REGISTERED SHORTHORN BULLS, Berkshire pigs, Shetland ponies. W. S. GULFORD, Butte City, Calif.

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NATURAL LEAF TOBACCO—Chewing, 5 pounds, $1.75; 10 pounds, $3; 20 pounds, $5. Smoking, 5 pounds, $1.25; 10 pounds, $2. Pay when received. TOBACCO GROWERS' UNION, Paducah, Ky.

HOMESPUN TOBACCO — Chewing, 5 lbs., $1.75; 10 lbs., $3; 20 lbs., $5. Smoking, 5 lbs., $1.25; 10 lbs., $2, 20 lbs., $3.50. Send no money; pay when received. CO-OPERATIVE TOBACCO GROWERS, Paducah, Ky.

CIGARS AT FACTORY PRICES—Smoke El Largo cigars, $5 for 100, $1.25 for 25, 65c for 10. Five-inch Panetellas, $3.75, box of 50. Genuine cigar clippings, only 60c lb. Frank F. Miller, 1208 W. 8th St., Los Angeles, Calif.

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CHOICE GLADIOLAS at reduced prices—12 bulbs, all standard named varieties, regular retail price $1.50 to $1.75, sent postpaid for $1. 30 bulbs for $2. ROSEDALE FLOWER GARDENS, Pacific Grove, Calif.

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AUTOMOBILE owners, garagemen, mechanics, send today for free copy America's most popular motor magazine. Contains helpful articles on overhauling, repairing, ignition, carburetors, batteries, etc. Automobile Digest, 606 Butler Bldg., Cincinnati.

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BECOME RAILWAY MAIL CLERKS—$133-$186 month. Men, 18 to 35. Common education sufficient. Sample examination questions free. Write immediately. Franklin Institute, Dept. N 125, Rochester, N. Y.

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WOMEN, GIRLS — Learn gown designing, making at home; $40 week. Big spring demand coming. Learn while earning. Sample lessons free. FRANKLIN INSTITUTE, Dept. N 589 Rochester, N. Y.

The Nut Tree

(Continued from Page 2)

pears, apricots and nuts. One form is a sugar-coated fruit paste, another contains nuts, while still another consists of paste with walnut kernels on top. This product has become already so popular that a large mail-order business has sprung up. For miles on either side of the Power market handsome red-and-white signs have been set along the road. The first day after these signs appeared business increased 75 per cent. The success of these roadside announcements illustrates the advantage of catching the speeding autoist's eye and fixing *(Continued on Page 14)*

Rabbits and Health

(Continued from Page 10)

breeding stock at the De Bu rabbitry is figured at $1 per month of the animal's age. Unusually fine specimens are valued up to $120 each. Alice, a gray Flemish Giant, is said to hold the world's record for size of litter, 23. In one year she produced 74 young. Napoleon, a prize buck, weighs 19 pounds.

FEED CARROT A WEEK

While some breeders feed rabbits all the hay they will eat and grain only once a day, Bush reverses this plan. He also differs with some hare growers on the green-feed question, holding that carrots are good for the bowels. Each doe is given a carrot a week, and one a day shortly before the birth of a litter. The tops are chopped off the carrots before the latter are fed. No grass or other green feed is given, as this class of provender is apt to cause slobbers, Mr. Bush maintains.

A ton of rolled barley and the same quantity of alfalfa hay is fed each month to 250 does and 150 young rabbits. Salt and clean, fresh water are kept before them at all times.

For bowel trouble, as much permanganate of potash as will rest on a dime is dissolved in three gallons of water and given to the rabbits once a week. The drinking jars are scalded out each day. Lime is scattered daily, not only on the bottoms of the hutches, but also on the ground underneath, to keep away flies and mites.

TEACH CLEAN HABITS

The De Bu hutches are the cleanest the writer has ever seen. Two methods are employed to keep them in this condition. In the first place, the bottoms of the hutches slope slightly towards the back, where there is a wooden grate eight inches wide which permits the offal to drop through. Secondly, when a doe is first put into a hutch she is kept for a while in one back corner, encircled with a cylinder of poultry netting. After being given the run of the hutch the doe continues to use the place where she was first detained.

"Rabbit manure makes the finest kind of fertilizer," declares Mr. Bush. "We expect to dry this product and grind it in a mill, selling the surplus at $1.75 per hundred pounds. We know this plan is practicable, because it has been put in successful operation by a Los Angeles firm. The refuse which accumulates when young rabbits are butchered also is used for fertilizer.

"Another item promises increasing profits. People are just waking up to the value of rabbit skins for manufacturing fur garments.

PROTECT FROM FOG AND SUN

A curtain of light duck is hung in front of the hutches when the weather is rainy or foggy or when the sunshine gets too hot for comfort. The cloth is fastened to rings, which are strung on a wire stretched along the south side of the building under the eaves.

A new rabbitry recently built by Mr. Bush contains eight hutches, four of which are in the second tier of the structure. Twelve square feet of floor space is allowed for each New Zealand red doe and her young, while 16 feet is required for Flemish Giants. The water jars project through an opening cut in the front wall underneath the netting-covered doors, so that the latter need not be opened in watering the rabbits. The nests are in boxes 14 by 16 by 24 inches. The V-shaped feeding mangers have one end open, to permit of being filled from the outside.

STENCIL DOES' EARS

A runway shed 10 by 14 feet is provided for 30 young does, which are kept in this building from the time they are seven weeks old until they are five months of age. From five to twelve months is considered the most profitable age. This exercise shed is floored with three-inch boards, with half-inch cracks between. The does are identified with stencil marks in their ears, which are treated in this manner as soon as the animals are taken from the home hutches.

For strong, healthy, hardy chicks you must have perfect incubation!

Any incubator will hatch a percentage of fertile eggs—but that does not mean it has done a good job. The real test is in the *quality* as well as the quantity of chicks. Whether your chicks will be weak and sickly, or hardy and vigorous, is determined *during the period of incubation.*

You can be absolutely sure of perfect incubation, of strong, healthy chicks and maximum hatches, if you demand and insist on getting the genuine

JUBILEE INCUBATOR

For more than forty years the JUBILEE has maintained its supremacy. It has thoroughly tested every known device and appliance, and has originated all its own improvements. The *perfectly* controlled system of ventilation and moisture supply, and the hot water heating system, are *original* with the JUBILEE. They have been imitated many times—but never equalled. The JUBILEE lasts a lifetime. We have records of JUBILEES still in use after twenty-eight years of perfect service.

Write for Catalog

JUBILEE incubators are made in four sizes, from 117-egg to 540-egg capacity, priced from $35 to $75. Our free catalog illustrates and describes all models. Shows many interesting letters from large hatcheries and individual users. If you want the most efficient incubator ever made, send the coupon *now* for the free JUBILEE catalog.

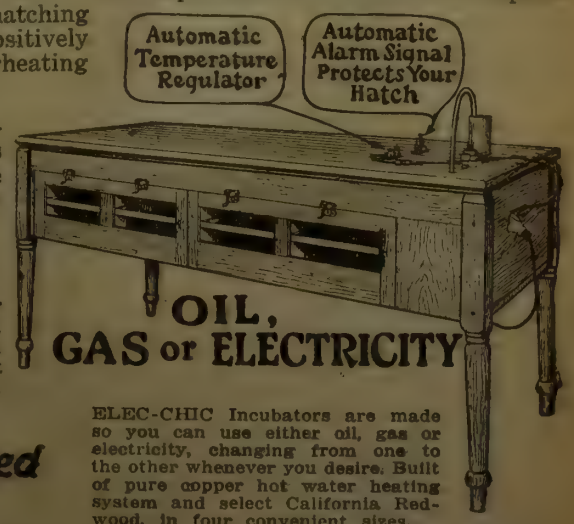
JUBILEE INCUBATOR CO.
SUNNYVALE, CALIFORNIA
Santa Clara County

One ELEC-CHIC INCUBATOR & BROODER

Will Make You $75.00 to $150.00 Monthly Profits!

They will do it because they are practical machines, designed and built by practical, experienced poultry men. Hundreds of tests have proven them to be the most successful of any ever used in this climate. Special features of the ELEC-CHIC are its exclusive and dependable AUTOMATIC temperature regulator and ALARM SIGNAL. They make hatching and brooding with ELEC-CHIC equipment easy and positively ACCIDENT PROOF! Never any worry about overheating or chilling your hatch or brood.

Our improved ventilating and moisture system is assurance of fine, big hatches of strong, sturdy chicks that are easy to raise. Triple insulation makes the ELEC-CHIC the most economical in fuel consumption of any machine made.



Our Poultry Experts Will Help You

Write and tell us what your present plans may be—what your facilities are, etc. Our service department is at your command, and can help you with suggestions in many ways. We are glad to have you write at any time. Keep our catalog 2-M on hand at all times as a convenient reference on poultry equipment. WRITE FOR YOUR COPY TODAY!

ELEC-CHIC Incubators are made so you can use either oil, gas or electricity, changing from one to the other whenever you desire. Built of pure copper hot water heating system and select California Redwood, in four convenient sizes.

Easy Payment Terms can be Arranged

POULTRY EQUIPMENT CO., Burbank, Calif., Dept. M.
Please send me your catalog 2-M and information about your free poultry service.

Name .....

Address ..... Town .....

I now have ..... Hens of ..... Breed

.....

EASY TO OPERATE

No staying up nights, no time lost "sticking around" the incubator or brooder house. Just set the automatic heat controller and alarm signal and go on about your other work. The ELEC-CHIC will take care of itself and beat the hen at her own game.

Germain's 53rd. Annual Catalog

YOU want to put idle land to work—and make productive land MORE productive—

—YOU want to produce bigger, better, more marketable crops—

—the BEST for your home garden—whether you plant vegetables, flowers, small fruits or ornamentals—

—YOU want reliable, usable information on all phases of fertilization, irrigation, pest control.

YOU will find ALL this information in Germain's big FREE Planting, Poultry and Pet Stock Annual.

Use the coupon NOW!—for NOW'S the time to plant!

Send me FREE copy Germain's 1923 Planting, Poultry, Pet Stock Annual

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O&F 2-4

Germain Established 1871 Seed & Plant Co. N.E. Corner Sixth & Main Sts. Opp. P.E. Depot Los Angeles, Cal.

The Charles Weeks System

of Intensive Poultry and Berry Farms

One Acre and Independence, or
The Fine Art of Earning a Comfortable Living on
ONE ACRE IN CALIFORNIA

For those who desire to dwell in sunny California without living up hard-earned capital.

For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 25 miles from Los Angeles.

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Owensmouth California

Write for 80-Page Free Book Today

Send No Money Use It 30 Days

One Man Alone Pulls Big Stumps 1923 KIRSTIN Drum Type Stump Puller multiplies your strength 992 times. Pull big, green or tap-rooted stumps. No extra help needed. Made entirely of steel—fastest, most powerful, durable One-Man Stump Puller made.

$39.50 and up 30 DAYS' TRIAL

New Kirstin ONE-MAN Stump Puller

Mounted on Wheels—Easy to Move

LAND-CLEARER'S GUIDE

Demonstrators Wanted

No selling—no canvassing. Demonstrators merely allow others to see how the KIRSTIN clears land quick, easy and cheap. Liberal commissions. Write today. Only one man in each locality.

Reduced Prices—Easy Terms

KIRSTIN prices now lower than ever before. Complete line of One-Man and Horse Power models for all kinds of stump work. Single, double and triple power. Prices as low as $39.50. Small monthly payments. If desired, starting after 30 Days' Trial. Write for 80-Page Land Clearing Book—FREE.

Quick Shipment from Escanaba, Mich.; Portland, Ore.; Atlanta, Ga.; San Francisco

A. J. KIRSTIN CO., 4502 Lud Street, Escanaba, Michigan

$3.00 per Month

"A Whole Year to Pay"

Why wait longer when a few cents a day places this fiery brilliant, genuine blue white, perfect cut diamond on your finger. No risk, no delay. Satisfaction guaranteed. Regular $60.00 value, our price, $47.75.—Reduced prices.

Klein smashes prices on great million-dollar stock of diamonds, watches and jewelry—saves you one-third and trusts you for what you want.

WRITE FOR CATALOG

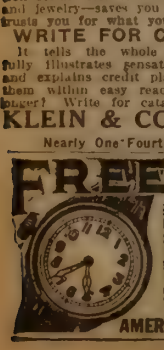
It tells the whole story—beautifully illustrates sensational bargains and explains credit plan that places them within easy reach. Why wait longer? Write for catalog today—sure!

"Lady Lorraine" Large solitaire, perfect cut blue white diamond, 14 kt. solid gold ring. Special, $47.75.

KLEIN & CO 122 West Madison Street, Dept. B-2314, Chicago, Ill.

Nearly One-Fourth Century Same Location.

FREE WRISTWATCH



Handsome, guaranteed time keeper, given for selling only 40 packs of vegetable or flower seeds (mention which) at 10c per large pack. Easily sold—EARN BIG MONEY OR PREMIUMS. Get sample lot today. Send no money. We trust you till seeds are sold.

AMERICAN SEED CO. Box A-128, Lancaster, Pa.

USE A LOG SAW!

This outfit easily cuts 15 cords a day, falls trees, buzzes up branches. Does work of many men.

2 H-P $91.50

OTTAWA 1923 MODEL F.O.B. Ottawa $97.25, Pittsburgh

Do Boys' Work

Easy to move. Mechanically Operated Valves, Throttling Governor, Burns Kerosene. Write today for Free Book.

OTTAWA MFG. CO.

2351P Wood st., Ottawa, Kans. Room 2351-P, Magee Bldg., Pittsburgh, Pa.

Send for my FREE Catalog

Red Top Steel Fence Posts and Farm Fencing

HARRY BAYLIES, "The Fence Man"

432 Pacific Finance Bldg., Los Angeles, Cal.

For More and Better Chicks

use Petaluma Electric Incubators and brooders. It is easier to raise strong, healthy chicks that are full of "pep" and that's the only kind our system produces. It will pay you to investigate our methods. Send for Bulletin D-5.

Petaluma Electric Incubator Co., Petaluma, Calif.

Increase Egg Consumption

(Continued from Page 3)

In an announcement published in one campaign we read in large type the following: "Eggs—the Heart of a Hearty Breakfast." Then in smaller type it is said: "The morning meal always centers on eggs. And it isn't merely habit or custom. It is because eggs are the heart of a hearty breakfast. Eggs are 'meaty.' Eggs are substantial. Eggs are the difference between the breakfast that carries you through the morning and the breakfast that doesn't. Eat more eggs—and serve them in a different way each morning." Then a few recipes are giving for cooking them. On a tag attached to a picture of a basket of eggs it is stated that two eggs equal two lamb chops, one substantial portion roast beef or halibut, one portion of meat pie, two good-sized baked potatoes and two portions of cooked rice.

The feat of serving eggs in a different way each morning may be accomplished for 100 days in succession, according to a pamphlet compiled by John H. Barber, manager of the Poultry Producers of Central California.

The wholesale dealers and the Poultry Producers' Association of Southern California organized an "egg council," and this council in turn has employed an advertising agency to prepare the advertisements which appeared practically every day in morning and afternoon papers. F. R. Williams, secretary and treasurer of the Producers' Association, wrote me as follows: "The dealers in Los Angeles realized some time ago that their chief hope was to stimulate local consumption and that the most effective means was through an organized campaign."

All this is a good start. The results have been eminently satisfactory. Whether the plan is comprehensive enough remains to be seen. Certainly the amount of money that is being expended is insignificant compared with what manufacturers of special products believe to be necessary for results.

The Nut Tree

(Continued from Page 12)

his attention while there is yet time to decide to stop. Another thing which favorably impresses passersby and apprises them of the presence of a roadside market and refreshment parlor is the sprinkling of the adjacent ground and roadway during the dusty season.

On either side are stands bearing fruits and nuts in tempting array, also tables and chairs for the free use of patrons. Ice cream and soft drinks are sold to piece out picnic dinners.

The price-fixing problem is solved by splitting the difference between what dealers pay and what they charge. This gives the grower a handsome profit and offers buyers a substantial inducement to purchase direct from the producer.

Boys and Girls' Clubs

(Continued from Page 8)

pure bred dairy heifers," declares Mr. Ernst. "This not only interests young people in dairying, but demonstrates to their parents and neighbors the superiority of purebred stock. The way this operates is well illustrated by the experience of some club workers at Pasadena, whose purebred heifers so impressed their parents that the latter are replacing grade cows with purebreds."—O. H. B.

CHIMERA ARTICLE POSTPONED

Owing to lack of space, Part II of Professor Collins' article on Chimeras will be published in the issue of February 11.—*Editor.*

54-INCH HOVER, $18

All complete. Comes set up ready to use. Send for circular. Ask about our quick turning egg tray.

Pioneer Incubator Co.

Los Angeles, Cal. 446 N. Andrews Blvd.

Can you afford to Waste what other home builders are SAVING?

Get this Free Portfolio showing pictures of Fenner Homes and Plans

The Fenner method of building is saving money for home builders everywhere. Factory Cutting eliminates waste, lessens cost of materials and labor, and gives you the benefit of carload freight rates. You benefit by the wholesale methods of handling.

A Better Home

In addition to saving you money, the Fenner factory-cut method insures you a better constructed home of better materials. You get the pick of the finest lumber, all cut to perfect fit. It makes construction easier and much faster. Factory cutting is the same principle used in building steel skyscrapers. It is the modern, efficient method of building.

Write your name and address in the space below and mail to us. We will send free portfolio of pictures and plans. We will show you how to build better at less cost.

FENNER MANUFACTURING CO.
Box R 4318 Portland, Oregon

Fenner FACTORY CUT HOMES

231

Name _____

Address _____

7 Piece JAPANESE Blue Bird Dinner Set $2.49

This genuine imported Japanese 7-piece Blue Bird Dinner Set at our special introductory price of $2.49. Compare with sets costing as high as $6.00.

The tablecloth is 60x60 inches, closely woven. Many beautiful designs. It is reversible—both sides of rich Copenhagen blue. Six napkins to match. A real bargain at our special price of $2.49. Rush your order today.

SEND NO MONEY

SEND NO MONEY. Just name and address. Pay postman only $2.49 and few cents postage. Satisfaction guaranteed or money back. Send for FREE bulletin of other bargains.

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BLACK LEG

100% PROTECTION FOR LIFE from one vaccination with Cutter's Liquid or Solid Blackleg Aggressin. Absolutely safe. Cutter's Solid Aggressin Injectors work just like Blackleg Pill Injectors. If Cutter's Aggressin is unobtainable locally, write

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"The Laboratory that Knows How"
Berkeley (U.S. License) California

N.B.—Old Style Powder and Pill Vaccines still made for those who prefer them.

USED PIPE

All Sizes in Stock
Standard and Screw Casing

PACIFIC PIPE CO.

203 Howard St., San Francisco, Cal.

TAMARIX or ATHEL TREE CUTTINGS

100—$2.00 1000—$15

F. O. B. Indio
20 Postpaid, $1.00

ROBERT BARKER Indio, Cal.

Production & Protection

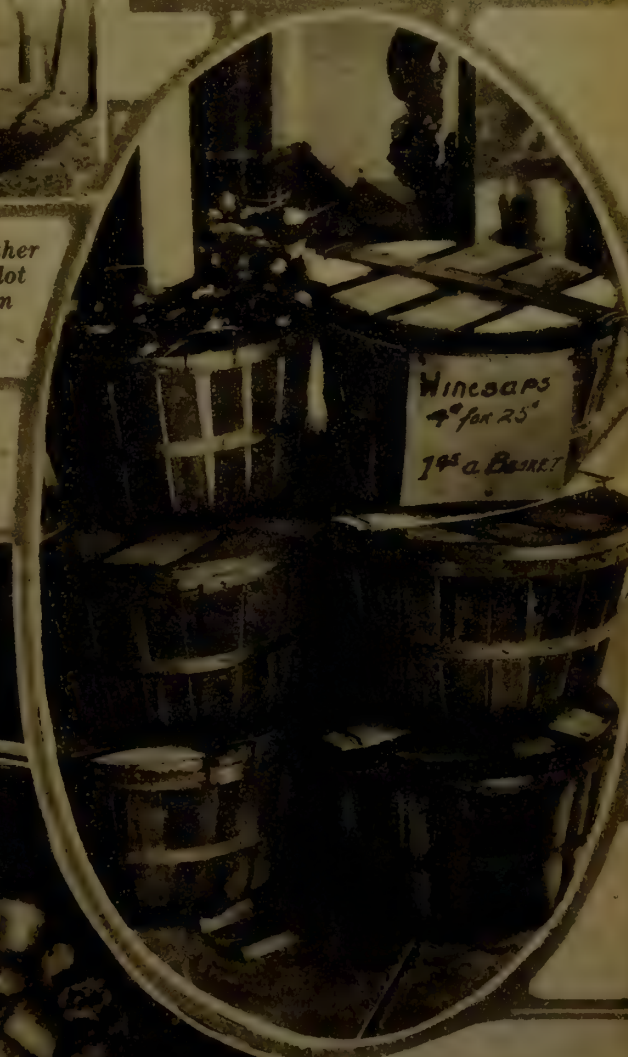
Two Factors Linked Closely

QUANTITY and quality production of soil products would avail little if plant pests and diseases were allowed to go unchecked. Closely allied with efficient production is watchful protection. California leads the world in the efficiency and scope of this work. Intensive fruit growing would receive a serious setback were this vigilance to be relaxed for even a few months.

Profitable sweet potato production depends largely on protection. A new "angle" is afforded by the recently announced partial drying process, which seals the contents.

No, this isn't cabbage, but something better—California head lettuce. And it's much different from the straggly leaves that grew in Grandmother's garden!

Alien insect enemies and all other kinds of plant pests have a lot of trouble getting into Kern County, as this border sign indicates.



The bushel basket is superseding the box in Washington, as indicated by this display in a California market. Incidentally, protection is called for; Ganos are being sold for Winesaps!

The "topped off" package means a one-time customer. These hampers were faced with good potatoes, but the remainder of the contents proved worthless. A fine for the packer if he were apprehended

Dry Goods Bargains
Delivered FREE!

Bluebird Scrim

In 10-Yard Lengths

24 Inches Wide

332R9739—Ten yards of lovely new Bluebird pattern scrim, on a white ground, in a good quality, at a price no other house in America can approach. It is 24 inches wide. Order quick. Real $1.29 value! Order by No. 332R9739. Price, 10 yards, 97 cents. Delivered Free.

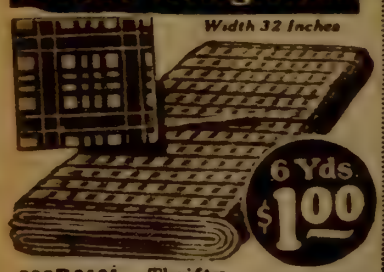
Big Bargain in Apron Gingham

Width 26 Inches

332R9125—We challenge the world to match this value in Apron Gingham. Dark Blue check only, in a good durable quality that will give long service. Width about 26 inches. Just the thing for aprons, coveralls and durable dresses for children. Sold in 10 yard lengths only. Order No. 332R9125. Price, 10 yards only, $1.09. Delivered Free.

Smashed Price on Dress Gingham

Width 32 Inches



332R9181.—Thrifty women will be glad of this chance to buy good 25-cent standard quality Fancy Dress Gingham at our amazingly low bargain price. It is a firmly woven fabric and comes in various pretty patterns of Blue, Brown, Green, Pink or Black Plaids, and Blue, Green, Pink or Black Checks. Width, about 32 inches. State the color wanted and whether a plaid or check pattern. Sold in 6 yard lengths only. Order by No. 332R9181. Price, 6 yards, only $1.00. Delivered Free. Worth $1.50

Bluebird Tablecloth About Half Price

48x48 Inches

332R9450—This genuine imported Japanese bluebird feather-stitch tablecloth is one of the most charming patterns ever shown in this country—and at our price, it's simply an irresistible bargain. Has all hand blocked printing in fast color indigo dyes. Beautiful bluebird and floral design. Very artistic and dainty. Size 48x48 in. Order by No. 332R9450. Price, each 69 cents. Delivered Free.

Order Anything on This Page and Get True Co-Operation

Cut out the in-between profit you now pay the middleman system. The bargains on this page show how you save by this direct merchandise distributing plan. Don't pay more for your Dry Goods—don't pay high prices to clothe your family. Let the Chicago Mail Order Company direct merchandising plan help you smash the wasteful middleman system.

Smash the In-Between Profit System that Has Raised Your Cost of Living!

Twenty-one cents' worth of wheat at the farm costs $1.00 in bread at the kitchen door. $1.00 worth of goods at the factory costs $3.00 at the farm—unless you cut out the middleman. The middleman market system makes a lot of money on food grown by the farmer. The middleman merchandising system steps in and profits on the goods you buy. The producer is squeezed and consumer is profiteered, that the middleman system may live and profit.

A bushel of wheat; a ton of hay; a dozen eggs; a pound of butter; or a day's work, will buy more real merchandise value from the Chicago Mail Order Co. than from any other source in the world!

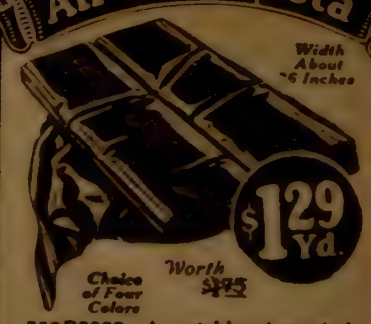
The Great Chicago Mail Order Company is the connecting link between the factory and you. We take immense outputs of merchandise and distribute them direct and prepaid to customers everywhere. No jobbers, no wholesalers, no traveling men, no retail stores, no profiteers to boost prices. Big quantity buying and no in-between waste means putting prices down to where they belong. This is the common sense co-operative system, through which America's big mail order house, the Chicago Mail Order Co., saves millions of dollars for the American public every year. It is co-operation worked out in a practical way—co-operation that helps you make a real saving.

The Best Mail Order Service in America

Serving the millions as we do today, every department of this vast institution is keyed for Quick Action. This great catalog is planned to serve the entire family with every kind of outer or under apparel. Let all gather 'round it and choose their own outfits. The women and girls will find models gathered from the World's Fashion Centers—styles suitable for the most important social functions, and also the quieter things for out of doors and house wear. The men and boys can choose their "Sunday Best," their practical business or school clothes, their shop or play clothes. And in addition, we provide complete assortments of staple dry goods at matchless bargain prices which enable you to save on material for things you prefer to make at home. Don't miss these excellent bargains which bring such big money savings.

All Silk Taffeta

Width About 36 Inches



332R8029—A matchless bargain in a standard grade of all-silk taffeta that proves its texture in its rustle and shows its beauty in the glisten and lustre of its exceptionally fine finish. This is absolutely the biggest bargain in taffeta silk in the whole United States! Comes in Black, Copenhagen Blue, Navy Blue or Brown. Width about 36 inches. State yardage and color wanted. Order by No. 332R8029. Price per yard, $1.29. Delivered Free.

Everything Delivered Free

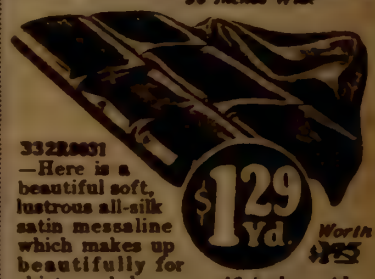
Yes—everything you buy is shipped prepaid. No extras of any kind. We pay all transportation charges right to your door. This is an important saving, because while other mail order houses ask higher prices and charge you for postage, we deliver free the World's Best Styles at our smashed bargain prices.

Our Money-Back Guarantee

Every article is sold to you on a positive understanding that if the goods don't please you, you are to return them and we'll refund your money! Also, we guarantee that, Style for Style and Quality for Quality, our Prices are the Lowest in America.

Don't Miss This Offer! All-Silk Satin Messaline

36 Inches Wide



332R8031—Here is a beautiful soft, lustrous all-silk satin messaline which makes up beautifully for skirts and dresses. 36 inches wide. It is extra high grade, firmly woven, very serviceable. The colors are Black, Tan, Copenhagen Blue, Navy Blue or Brown. State color and yardage wanted. Order No. 332R8031. Price per yard, only $1.29. Delivered Free.

Send Coupon for FREE Catalog

Wide French Fashioned Seam Silk HOSE

Prices Cut in Two

332M7632—Genuine pure thread silk hose with mercerized cotton tops. The heels and toes are reinforced to give good wear. Wide flat French fashion back seam, as shown in illustration. Colors, Black, Cordovan, Brown, Sand Tan or Gray. Very stylish and a wonderful value at our special bargain price. Sizes 8 to 10½. State size and color wanted.

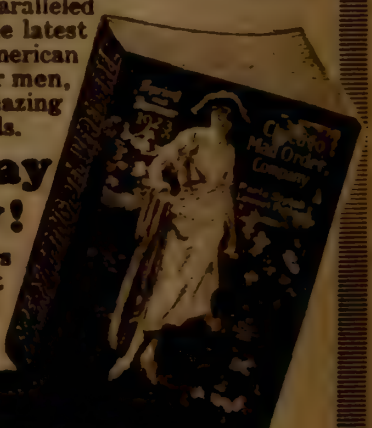
97¢ per pair
2 Pair for $1.93

Order by No. 332M7632. Price, 2 pairs for only $1.93; per pair, 97c. Delivered Free. Worth $1.50 pr.

Range of Prices

Dresses	95c to $19.95
Suits	$6.95 to 24.95
Coats	4.95 to 19.95
Waists	59c to 5.95
Skirts	79c to 6.95
Hats	39c to 5.95
Shoes	59c to 4.95
Children's Apparel	10c to 7.95
Men's Apparel	10c to 16.95
Boys' Apparel	10c to 12.95

Send for the Great Chicago Mail Order Bargain Style Catalog. **The World's Best Styles at the World's Lowest Prices.** More than 5,000 Positively Unparalleled Bargains—the very pick of the latest French models and the best American styles in wearing apparel for men, women and children. Also amazing bargains in shoes and dry goods.



Send for It Today —Save Money!

Gives every one of your dollars a bigger buying power than it ever had before. Don't spend one penny for clothes until you have received your Free Copy of this great Style Catalog.

Send the Coupon, Letter or Post Card TODAY

This Coupon Brings Free Catalog

Chicago Mail Order Co. Dept. 332
26th Street and Indiana Avenue, CHICAGO, ILLINOIS

Please mail me, at once, ABSOLUTELY FREE, your Diamond Jubilee Paris Fashion Catalog, showing me how I can buy everything to wear for every member of the family at only 8c profit on the dollar. Delivered free. No postage to pay.

Name .....

Address .....

P. O. ..... State .....

Chicago Mail Order Co.

Dept. 332 Chicago, Illinois

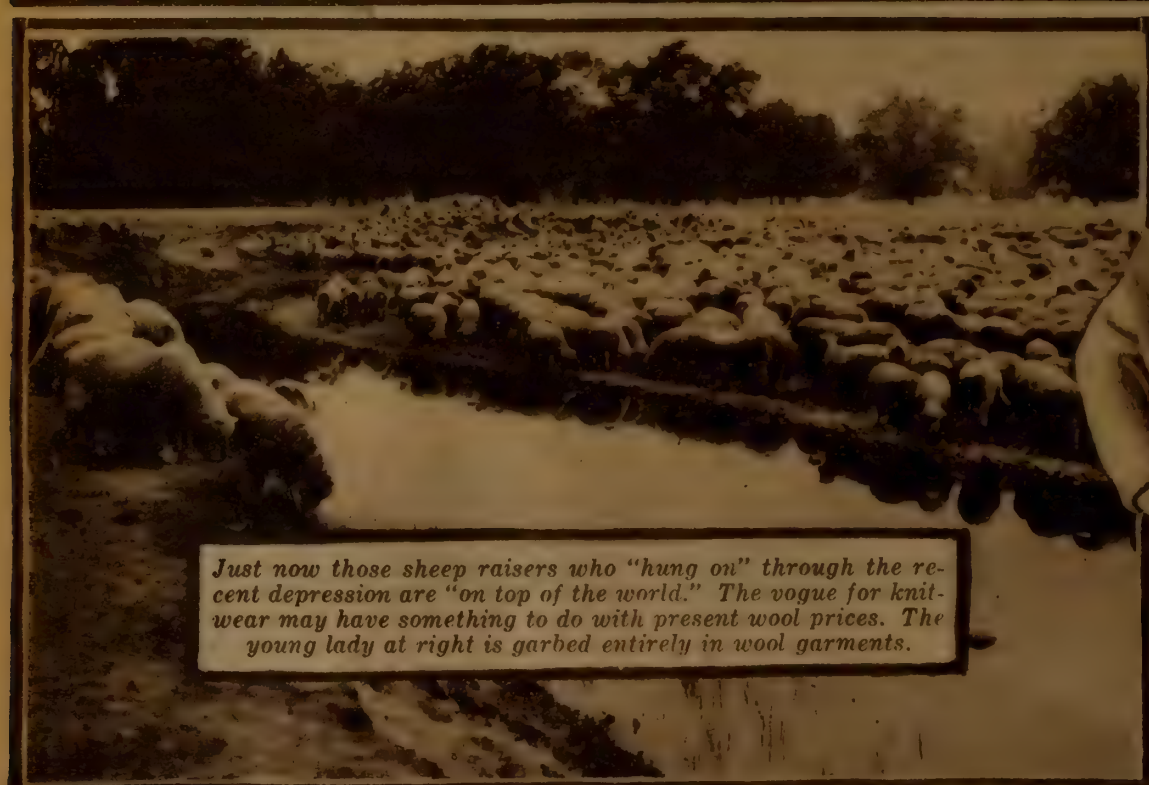
ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

FEBRUARY 11, 1923

Seen through the Camera's eye

Transportation at Low Cost
On the mighty Sacramento and its tributaries more than $50,000,000 worth of soil products annually are moved from farm to market.



Just now those sheep raisers who "hung on" through the recent depression are "on top of the world." The vogue for knitwear may have something to do with present wool prices. The young lady at right is garbed entirely in wool garments.

A Percheron breeder uses this simple and inexpensive feed box in the barn lot. It has several advantages. The animals cannot "throw" their grain, nor interfere with each other, yet the feed is readily accessible from all sides.

Below is shown a motor cultivator with furrowing attachment making short work of an ordinarily tedious job. (Courtesy Motors Equipment and Tractor Company.)

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
FEBRUARY 11, 1923

Luther Burbank on Raising Apple Seedlings

Great Plant Breeder Describes His Remarkable Experiments—More Than Five Hundred Varieties Grown Upon One Tree

By LUTHER BURBANK

Written Especially for ORCHARD and FARM

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IN raising apple seedlings, when the object is to get improved varieties, generally it is best to select the seed from some one standard apple that already possesses most of the good qualities sought in the improvement.

However, we must remember that all the more modern apples, having become more or less thoroughly crossed in the orchard through being planted side by side, rarely manifest the tendency to produce anything like the original. Winter apples are slightly more apt to produce winter apples from seed than are summer apples, and summer apples are about as likely to produce winter apples as they are to produce summer apples.

VARIETIES CROSSED THOROUGHLY

So thoroughly have apples been crossed by bees and by the wind that it is almost labor thrown away to intercross them. If two varieties possessing certain desirable qualities were crossed, the probability of obtaining a combination of the good properties of both would be only slightly stronger than that a similar combination would result from the planting of the seeds of any other one variety of apple. In fact, the crossing might work to the neutralization of the tendency to produce good qualities, and thus the very opposite would result, in some cases even producing seedlings inferior to those raised directly from one individual variety.

Apple seeds, like all other seeds, germinate more readily if not dried too thoroughly; however, unlike pear and plum seeds, they will germinate if dried quite thoroughly, even though kept for a year or two. But the best method is to take them out of the apples, placing them when fresh, after thorough cleansing, in a box of sawdust or sand with just moisture enough to keep the seeds from becoming too dry, but not moist enough to cause germination.

In this way they can be kept until desired for planting, and when planted will germinate readily and with special vigor.

Apple seeds may be planted in a prepared bed in the open field in rows—three or four feet apart—wide enough to permit the cultivation to be done by horse or tractor; or ten to fourteen inches apart—sufficient space for cultivation by hand.

The seeds should be sown rather thickly—about half an inch to an inch apart. In my own experiments, after opening the drills I often sprinkle in a little clean, sharp sand, and drop the seeds on this, usually covering them about an inch in depth. Sand may be used for covering, but the young plants break through sawdust much more readily than through sand.

In testing to obtain improved varieties, the young seedlings must be carefully watched, and all weak or slow-growing ones should be destroyed as soon as recognized. Any found to be infected by mildew—a common disease among apple seedlings—also should be promptly destroyed.

It is never wise to treat seedlings with fungicides, in as much as the persistent aim should be to produce a plant that will resist such diseases. Only such plants should be preserved as are manifestly vigorous growers and thoroughly healthy.

GRAFTING SAVES SPACE

In testing the seedlings that have been selected, much valuable time can be saved, and less space occupied, if they are grafted upon large bearing trees. In my own experiments one or two good grafts are taken from each of the selected seedlings, usually at the end of the first year's growth. These are placed well out on the smaller branches of a bearing tree, utilizing such branches as are about half an inch or less in diameter. Thus they will begin bearing in two or three years, or at the longest in four years; while if they are placed upon the large branches it will require fully twice as long to fruit them.

By this method I have tested as many as five hundred and twenty-six varieties at the same time upon a single tree, most of them being in fruit at the same time.

The economy of space can be appreciated when we stop to consider that if these 526 varieties had been planted out as apple trees are ordinarily planted in orchards they would have occupied only five acres.

Considerable time also is saved, for fully twice the time would be required for the young trees to produce fruit as for the grafts. By this method it is possible to test one hundred thousand or more varieties on a single acre.

Luther Burbank's beautiful home at Santa Rosa, Cal. Right—New dwarf sunflower, developed by the plant wizard. Dwarf stems, drooping heads and heavy foliage afford protection from birds.

Timely and Helpful Information on Grape Pruning

Different Systems Described—Professor Bioletti's Views—Varietal Considerations

IN the pruning of grape vines, while there are certain essential principals developed through years of experiment and experience, probably there is greater variation in systems than with any other class of plants. But these systems in the main are adapted to the special requirements of different varieties, as well as the purposes for which the grapes are to be used.

Prof. F. T. Bioletti, for many years viticulturist of the California Agricultural Experiment Station and foremost authority in the world on the question of vine pruning, several years ago published two large and important bulletins which present detailed discussion of the whole vine pruning problem.

In two recent circulars, however, he discusses very clearly and simply the different vine pruning systems that are in common use and the reasons why they are used and also the principal common mistakes made in vine pruning and their remedies. These circulars are numbers 245 and 248, available for distribution from the Farm Advisers in the various counties, or the College of Agriculture, Berkeley.

There are three principal pruning systems in use in California today: Head pruning, cane pruning and cordon pruning.

Head pruning is the oldest system in use in the State and one developed from decades of practical experience. With many of the common varieties it is eminently satisfactory, although with others it is not at all successful.

The common varieties which give good results with head pruning are the Muscat, Palomino, Zinfandel, Alicante, Tokay, Rose of Peru, Mission and Malaga.

The chief characteristic of this system of pruning is the development of a main trunk with three to five arms, which makes a self-supporting tree or bush. The fully-formed vine then consists of an upright trunk, ranging in height from 18 inches to 4 feet, dividing at the top into a ring of four to eight arms, ranging in length from 6 to 18 inches. At the ends of the arms each year are left from one to three spurs consisting of the current season's growth, each of which has from one to three buds, depending upon variety.

The cane pruning system has come into prominence during recent years and is adapted to a number of varieties which do not give success with the head system. The principal varieties pruned by the cane system are the Sultanina or Thompson Improved, Black Corinth, Pierce, Concord and Eastern varieties in general.

In this system, the vine has a trunk similar to that in the head pruning system, ranging from 2 to 3 feet in height. With mature vines, the trunk divides at the top into four arms, 6 to 12 inches in length. At the end of each arm a fruit cane of the current season's growth is left, ranging in length from 2 to 5 feet, dependent on variety.

Each cane will have from ten to twenty buds. Where the vines are weak, only one cane per arm is left. Each arm carries also one or two renewal spurs, consisting of short canes with one or two buds. The function of these renewal spurs is to furnish fruit canes for the next season's crop.

Cordon pruning is adapted especially to certain varieties, including the Emperor, Cornichon, Black Monukka and others, some of which do reasonably well either with head pruning where long spurs are left, or with cordon pruning. It is necessary in handling varieties which have been found by experience to not bear sufficient crops on spurs, or to produce fruit of inferior quality on canes. It is particularly well adapted to vigorous growing, large fruited varieties of the table grape group.

In this system, the vine is given a long, slender trunk which curves at a height of about 30 inches from the ground, following a horizontal direction to a length of 6 to 10 feet. Along this trunk are developed upright arms 4 to 12 inches in length which carry the fruit.

Where head pruning is used, no supports or trellises are necessary except for the first few years, when stakes should be used in order to carry the vines to the point where they became self-supporting.

Care must be taken constantly to keep the heads *(Continued on Page 14)*

ORCHARD and FARM

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Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Prize Winners Announced

AT last the judges have completed the task of examining scores of letters submitted in ORCHARD and FARM'S "Suggestion Contest."

The three judges were Dr. George Clements, agricultural director, Los Angeles Chamber of Commerce; Frederick W. Taylor, widely known horticultural authority and fruit judge, and Robert W. Hodgson, Agricultural Extension Service, University of California. Here are the awards:

FIRST PRIZE, $25—J. LANGLOIS WALKER, STOCKTON, CAL.

Second Prize, $15—C. H. Goodshall, Victorville, Cal.

Third Prize, $10—Dennis H. Stovall, Sierra Madre, Cal.

Fourth Prize, $5—Guy D. Thomas, Fresno, Cal.

Five Prizes of $1 Each—R. W. Peeks, Keene, Cal.; William A. Somerville, West Los Angeles, Cal.; Myrtle F. Vincent, Palo Alto, Cal.; R. W. Nelson, Medford, Ore.

The following were accorded honorable mention:

Judith Anderson, Pasadena, Cal.; Clarence Anvick, Sacramento, Cal.; Mrs. Claude Adams, Blythe, Cal.; Charles Anderson, Van Nuys, Cal.; Mrs. James S. Argo, Lomita, Cal.; Mrs. W. A. Adams, Clio, Cal.; Charles D. Adams, Clio, Cal.; Mrs. J. A. Biren, Van Nuys, Cal.; Glenn Baker, Pomona, Cal.; Edward B. Brockman, Long Beach, Cal.; Mrs. Emily Birkett, Napa, Cal.; J. H. Bond, Petaluma, Cal.; Mary E. Belt, Los Angeles, Cal.; P. M. Bottiler, Prado, Cal.; Mrs. Clara Baldwin, Campbell, Cal.; Mrs. Roy Beach, Mariposa, Cal.; Mrs. Nettie G. Bateman, Santa Barbara, Cal.; Mrs. R. F. Bucholtz, Livingston, Cal.; Mrs. E. Clauson, Orland, Cal.; Hugh S. Canon, Los Molinos, Cal.; L. J. Chase, Stockton, Cal.; Mrs. Anna S. Cunningham, Van Nuys, Cal.; Mrs. Juanita Cooper, Santa Barbara, Cal.; R. W. Cranston, Merced, Cal.; Anne Lee Camp, Elko, Nev.; Mrs. M. R. Casidy, Modesto, Cal.; Miss Petuna Dunham, Long Beach, Cal.; Sonia M. Dole, Petaluma, Cal.; Mrs. E. J. Daniels, Hollister, Cal.; J. 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"What's New?"—Keeping Abreast of Agricultural Progress

Buy California Hogs

SEATTLE, Portland, Tacoma and Spokane buyers purchased $6,800,000 worth of California and corn belt hogs last year.

Growers Get Half Billion

IT is estimated by the United States Department of Agriculture that cotton growers will receive a half billion dollars more for the 1922 cotton crop than was paid them for the crop grown the previous season.

Gardening in Tulare

THE planting of 454 acres in the Porterville district to vegetables by one firm, J. V. Selman and Thomas E. Moon, indicates that wholesale market gardening may become a leading industry of Tulare County. Most of the acreage mentioned has been set to lettuce, although 34 acres are in spinach and 10 in carrots.—W. S. TYLER.

Artesian Wells Cause Damage

SOME of the abandoned artesian wells in Southern California do more harm than good, as the unused water tends to bring alkali from the subsoil to the surface of the ground, according to ranchers in the flowing water belt. It is unlawful to uncap artesian wells, but stockmen sometimes release the water for the use of their animals and neglect to recap the pipe, it is said.

Profits in "Turk" Picking

TURKEY PICKERS earned $7.50 to $15 a day during the Thanksgiving and Christmas seasons at Corning, in the vicinity of which it is estimated there were 100,000 turkeys produced the past year. These birds brought producers nearly a half million dollars, selling at 44 cents f. o. b. for the Thanksgiving trade and 35 cents at Christmas time. In order to add vim, vigor and vitality to the native stock, wild toms are imported at a cost of $100 each.—WARREN N. WOODSON.

Citrus Frost Insurance

ONE insurance company actually is insuring citrus orchards against frost injury. The maximum coverage the present season is $120,000, but if the experiment proves a success, this amount doubtless will be increased in the near future. The rate is $5 to $12 per $100 insured risk, depending upon susceptibility of the grove to frost and other circumstances. The company agrees to pay only 75 per cent of any frost damage which may occur and promises no payments for injuries of 10 per cent or less.

Antelope Valley Windbreaks

JAPANESE bamboo planted along irrigation ditches and around reservoirs in the Antelope Valley, Los Angeles County, makes good windbreaks, growing densely to a height of eight feet or more. The climate of the valley is dry, cold and windy and the altitude over 3000 feet. Black locust trees are grown successfully for shade and windbreaks in the valley in some places along the State highway and around farm buildings and orchards. The tree is very hardy and needs watering only the first few years. Some specimens near the Weld ranch, 10 miles west of Lancaster, have not been irrigated for 30 years, according to an old settler in this district.

Cattlemen Build Storage Plants

BUTCHERS and cattlemen throughout California will watch with more than usual interest developments in Tulare County, where the first two guns of a battle already have been fired as the result of the decision of the Tulare County Cattlemen's Association to build six cold storage plants from which they purpose to retail meat at "lower prices to the consumer."

The butchers of the county, at least those in the larger cities, have united to combat the move, through a petition to the Supervisors, asking for a county meat inspection ordinance which, if it fails as a county proposition, will be carried to the individual cities.

Stockmen declared the price "on the hoof" was 3 cents lower per hundred pounds today than in 1914, and that the market had fallen off by reason of high retail prices and reduced consumption, which they charge to the retail trade. They propose to re-create the demand for meat through lower prices. The first of these plants now is operating in Tulare City, and one at Visalia is to be started soon.

Butchers want meat inspection, which stockmen say is a move to frighten the small cattlemen, through inspection fees, into refusing to sell through the co-operative plant.—FLOYD BYRNES.

Growers Get $19,000,000

FINAL payments for the 1921 raisin crop, made in January, brought the total amount received by growers up to $19,156,039. The price received for loose raisins averaged $142 and for layers $176. Currants brought $177. The highest price was received for fancy sulphur bleached, which brought $233.

An unfortunate feature of the 1921 raisin deal was the red ink which appeared in growers' statements. The association advanced $120 a ton for Malagas, while the net receipts amounted to only $80; Valencias, $120 advanced, $65 netted; dried black grapes, $160 advanced, $105 netted; choice Northern bleached, advanced $210, netted $208.

On the 1920 crop it was found necessary to bill back $53 a ton on Malagas, for which $200 had been advanced; Valencias, $61; dried black grapes, $12. Ten cents a pound had been advanced for each of these varieties. The above figures are taken from a recent report of the Associated Raisin Growers.

Commends Oregon Pack

"THE best packed pears on the Chicago market are those put up by Oregon growers," declares C. I. Lewis, who has lately been visiting a number of large Eastern fruit markets. "They are vastly superior to the Washington product, fully equal to the very best that come from California and far superior to most of the packs arriving from that State. California pears, however, reach Chicago in better condition and hold up better on the market than those from her northern neighbor, due to more care in precooling," he adds.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

VIII—W. H. GARDNER

WERE the "by-line" with Walter Gardner's name omitted from his articles, regular readers of ORCHARD and FARM would recognize them immediately; his is a sparkling style distinctly his own.

W. H. GARDNER

Mr. Gardner's training and experience have given him an unusual combination of agricultural and mechanical knowledge. He graduated in 1911 from Stanford University, majoring in chemical engineering. Several years of mining and dredging work took him to South America, Mexico and Alaska.

For seven years he has been identified with the tractor industry of the Pacific Coast, having served as president of the California Tractor Association and as the spokesman of Western tractor and implement men on matters of national consequence.

During this time Mr. Gardner has traveled almost constantly through the agricultural districts, maintaining contact with tractor dealers and owners, and becoming acquainted with scores of progressive farmers.

In addition to acting as sales and advertising manager for one of the largest tractor concerns in the West, Mr. Gardner has devoted considerable time to general literary work, and more recently has been retained as advertising counselor by several influential corporations.

Gardner speaks with authority upon all matters pertaining to farm power and mechanics, as well as broader aspects of agriculture, to the study of which he has devoted his amazingly active mind. He writes for no other farm publication. Watch for future contributions from this important member of our staff! Gardner has mastered the art of compressing much valuable, practical information into a few words and creating a desire for more!

NEXT WEEK—HELEN TEMPLE.

Protecting the Trunks of Young Trees

By GEORGE P. WELDON

Contributing Editor of ORCHARD and FARM—Pomologist Chaffey Junior College of Agriculture

IN this day of high-priced trees it is necessary for the planter to exercise every precaution to prevent losses.

Some factors are more or less under the control of the planter; others are not.

Chief among the things which are injurious to the young trees, particularly the first season in the orchard, are sunscald, borers, rabbits and drifting sand.

SUNSCALD DANGEROUS

Sunscald is always dangerous. It usually occurs on the south or southwest side of a tree. It may consist, if not severe, in mere discoloration of the bark; but often the burning results in drying and death of a section of bark on the side of tree which is toward the afternoon sun.

GEORGE P. WELDON

Sunscald itself may not be as severe as the borers which are always waiting for a chance to attack a tree that has been injured in this manner. According to experiments conducted by the late J. H. Whitten, sunscald takes place principally during the winter season. This is a fact that many growers fail to appreciate and as a consequence trees are unprotected.

In the summer usually there is sufficient shade from foliage to prevent injury, but in the winter the bare trunks need protection—which they seldom receive.

Whitten discovered that the temperature of the sap in the tree might become from 15 to 30 degrees warmer than the temperature of the surrounding atmosphere.

When this condition exists during the day and frost occurs at night, the extremes are liable to result in the so-called sunscald. This being the case, winter protection of the trunks becomes more necessary than summer protection.

BORERS FOLLOW SUNSCALD

The borers which follow sunscald are of two kinds—viz., "flat-headed" and "shot hole." The former are the more destructive of the two species. They first tunnel just underneath the bark, until a tree may be girdled, and then eat into the solid wood. The name, "flat-headed borer," comes from the fact that the region of the larva just back of the head is flat, and the burrow is somewhat flattened or oval in shape.

Often this insect attacks the tree which has been sunscalded just above the ground, causing complete girdling and death. At other times a tree may become weakened to such an extent that it will break at the point of injury.

While these borers seldom if ever attack perfectly healthy wood, they may be considered quite a serious pest, since they gradually extend their injury from dead or dying wood to healthy portions.

RABBITS ARE MENACE

Jackrabbits are particularly fond of succulent sprouts on young deciduous fruit trees and grape vines. Often heavy losses occur where nothing is done to prevent ravages. They eat not only the sprouts, but also the bark, and complete girdling of a tree trunk is not an infrequent occurrence.

BEWARE DRIFTING SAND

In some sections of light, sandy soil and severe windstorms, drifting sand may cause serious trouble by beating against the trunks of the trees. There are methods of preventing this injury, along with other injuries that have been mentioned previously.

PROTECTION OF THE TRUNKS

There is nothing superior to whitewash for preventing sunscald. Since the high temperature of the sap is due to absorption of heat rays by the green color of the inner bark, the white surface reflecting the heat rays will prevent the absorption, with its consequent damage.

There are many good formulas for whitewash. Some of these are as follows:

FORMULA NO. 1

Quicklime	30	pounds
Tallow	4	pounds
Salt	5	pounds

Water to make desired thickness.

FORMULA NO. 2
(Government Formula)

Quicklime	40	pounds
Salt	15	pounds
Rice flour	3	pounds
Spanish whiting	½	pound
Glue	1	pound
Water	5	gallons

FORMULA NO. 3*

Quicklime	10	pounds
Sulphur	1 to 3	pounds
Salt	½	pound

*In preparing whitewash according to No. 3 formula, slake lime and add sulphur while it is slaking. This makes a self-boiled lime-sulphur whitewash which is very satisfactory.

RABBITS LIKE SALT

Rabbits are fond of salt and a whitewash containing it may attract them to the trees. Bitter aloes is a repellant to rabbits and may be used at the ratio of 4 pounds aloes to 30 gallons whitewash.

The application of whitewash may be made with a convenient-sized paint brush, or it may be sprayed upon the trees with any of the ordinary small barrel or knapsack spray pumps.

In this way, the work may be more quickly done, and while a thin whitewash must be used in the spray pump, results are satisfactory.

TREE-PROTECTORS ADVISED

The term "tree-protector" is used to describe various devices which are made to wrap about the tree trunks for protection against rabbits and sunscald. These protectors may be manufactured from yucca, which is soft and pliable. Probably there is no better protector on the market than that made from this material. They may be purchased in various lengths, so that the orchardist can get the size to fit his particular trees.

Since jackrabbits can reach a considerable height, little value results from protectors that do not cover the trunk for a height of about 15 inches.

There are, in addition to the yucca protectors, various kinds of stiff paper devices, most of which will serve the purpose quite well, but cannot be expected to give the service of good yucca.

Even newspapers, in the absence of something better, may be used to good advantage.

USE ONLY WHITE

One precaution should be observed in the use of protectors: Only those that are white or at least light colored are safe. Black, green or otherwise dark colored material used in their manufacture may be the cause of severe scalding.

The writer has seen young olive trees badly scalded on the southwest side beneath wrappers made of black paper, which absorbed the heat rays.

If shielding against rabbits is the principal consideration, the protector may be made of woven wire. A cylinder of the ordinary chicken wire is often used, and results are just as satisfactory as when the trunks are covered entirely by some more dense material. To a slight extent, also, wire will deflect the sun's rays and prevent sunscald.

BLOOD IS EFFECTIVE

Another old remedy which seems to possess considerable merit in the protection of trees against rabbits is blood. This acts as a repellant, and a small amount smeared against the trunks of trees upon which rabbits are feeding will prevent injury.

The value of tree protectors scarcely can be overestimated and every planter should expect to use either whitewash or some one of the other things mentioned.

"Scurfy-Eye" Attacks Naval Oranges

JUDGING from the number of specimens submitted by growers, scurfy-eye of navel oranges has been quite prevalent this year in Tulare and Kern counties.

The trouble, as well shown in the illustration, consists of dry scales or scurf at and around the navel. It is not an actively progressing decay and does not detract seriously from the eating quality of the oranges, but it does injure the appearance and stability of the fruit.

The cause of the trouble is not definitely known, as it has not received the scientific investigation it merits.

Some years ago the writer, after a laboratory examination found the alternaria citri fungus uniformly present in such oranges. The spores of this fungus are present in large numbers in the atmosphere in interior valleys.

After the blossoms are infected, the fungus gains access to the navel and is responsible for a part of the June drop.

Some oranges which are infected but which manage to "stick on" anyway, develop later into the typical navel end rot common in the interior. It is our present theory that scurfy-eye is due to a combination of alternaria fungus and thrips. The injury is done in the blossom.

The fungus spore finds lodgment in the injured tissue of thrip scars, and while not sufficiently deep-seated to produce June drop or navel end rot, is able, in the case of certain specimens, to kill the surface of the skin, and as the fruit grows in size the injury assumes a scaly or scurfy appearance around the navel.

The extent of the trouble varies from year to year as the amount of fungus infection and thrips injury varies. So far as known up to the present there is no practicable remedy.—J. ELIOT COIT.

Irrigate Feather River Farms

PLANS recently have been completed for doubling the acreage of irrigated land east and south of Oroville, which now comprises 24,000 acres. This is to be accomplished by the construction at New York flat of a reservoir having a capacity of 44,000 acre feet and others at Palmero and Lost Creek, the latter to have a capacity of 5000 acre feet. Plans also are being made for building a 109,000-acre foot capacity dam at Grass Valley.

This development work will be made possible by the sale of $2,000,000 worth of 6 per cent, forty-year bonds, which recently were authorized by the unanimous vote of the Oroville-Wandotte irrigation district. All the holdings of the South Feather and Palmero systems are to be consolidated. The Lost Creek and Palmero reservoirs are to be constructed in time to use next summer. The land to be irrigated lies in the citrus belt.—W. S. TYLER.

DEMAND FOR HOPS

From 9 to 11 cents a pound was paid for 2300 bales of hops recently by C. C. Donavan, Santa Rosa hop grower and dealer, whose purchases for the present season total more than 13,000 bales—A. RODD.

Home Farm Happenings

By One of Us

CLEAN CHICKEN YARDS

The chicken houses and yards were treated to a good, thorough cleaning the other day, thanks to the rainy weather. This is a job that gets put off and off and off—whenever there is anything else to do. We gave them a good whitewashing, with a liberal dash of sheep dip in the wash. Hope the hens will appreciate it, although they aren't laying much yet.

OIL SAND BOX FOR TOOLS

Once in a while we "swipe" a good idea. This one works: Put a lot of dry sand in a box or half barrel in the corner of the shop or tool shed. Pour over it old oil from the crankcase or any other waste oil. Then stick shovels, hoes, axes and all sorts of such tools into the sand. Make this the place to keep these hand tools; then they will always be bright and clean and you will always know where they are.

We have gathered a lot of tools together and put in the sand box—because it's a new idea, maybe—and John swears by all that is high and mighty that they are going to be put back there every time they are used, all of which we hope will be the case.

SACRIFICING SHADE TREES

We had two big eucalyptus and two walnut trees in front of our house. Two years ago we had the latter grafted with Eureka cions, and now the trees have fine, new tops. They bore quite a few nuts last fall. The Eureka is a heavy producer of fine nuts in the central part of the Sacramento Valley, where experts have said that walnuts would not do well.

The eucalyptus trees were crowding the walnuts, and therefore—although shade is an object with us—we cut down one of the former. This allowed the nut trees to grow nicely, except on the south side, where the other eucalyptus tree stands.

Now we have decided that the remaining shade tree must go, for it is robbing the walnut tree—and everything else within sight. It is a plain case of a big pig getting all the best feed.

It seems a shame, however, to sacrifice a beautiful 30-year-old tree. It will make 10 tiers of wood, though—which will help some.

TAX TIME AND OUR SCHOOLS

All over America, and particularly in the rural districts, we have been going through a peculiar development as regards schools.

A long time ago our schools didn't amount to much; cheap, crude buildings; underpaid teachers, indifferently trained. Now we seem to have gone to quite the other extreme. Vast sums are spent in training teachers, and there seems to be no limit to the amount buildings can be made to cost.

Tax time and the large proportion of the tax for schools is the occasion for this outburst. We know the danger of being called "old fogy" and "standing in the way of progress" whenever one questions improvements of any kind, but isn't it worth while giving a little thought to the following questions:

Couldn't a perfectly comfortable, light, roomy and adequate building be built for one-quarter the sum that our new school cost? Didn't the county superintendent and the architect have practically the "whole say" about the plans, cost, etc.? Was the matter ever considered as a business proposition and discussed by the principal taxpayers before the needs of the community or the amount of the bond issue were discussed Do you or any of your neighbors take any interest in or know anything about what is going on in school affairs anyway? And isn't it about time you did?

We are free to admit that when we pay taxes is the only time we give the matter a thought. But we do believe there will be a sort of reaction soon and extra extravagances in educational affairs will be checked up more closely than has been the case during the past decade.

Part II of article commenced in issue of January 28.

Chimeras—Interesting Variegated Plants

By J. L. COLLINS

Instructor in Genetics University of California College of Agriculture

THE occurrence of chimeras is not limited to the green portions of the plant; that may occur also in both the flowers and fruit without causing any noticeable change in other parts of the plant. The peculiar behavior of the Bridesmaid variety of Bouvardia has been explained on the basis that it is a periclinal chimera for flower color.

When this plant, which produced pinkish-white, double flowers, is propagated from cuttings it gives rise to plants having the same color of flowers. When plants are propagated from root cuttings of these same plants, they give rise to plants having dark red double flowers and then continue to give only red-flowered plants from both top and root cuttings.

EXPLAINS FLOWER CHIMERAS

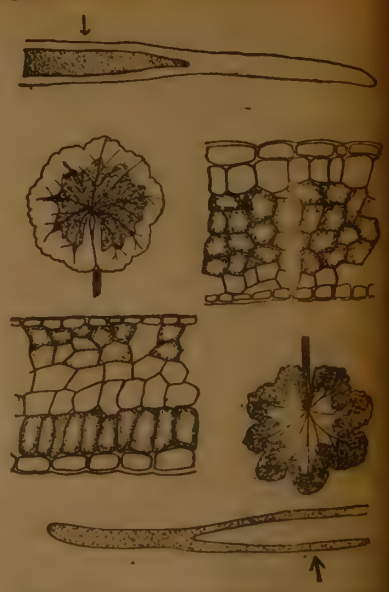
The reason for the peculiar behavior of this variety was a deep and dark mystery, which was only cleaned up when Dr. Bateson turned plant detective and ferreted out the secret that the plants of this particular variety were periclinal chimeras.

The outer cell layers of the plant, which give color to the flowers, had lost the power to produce dark-red color, while the cells lying beneath the surface layers were not affected by the change.

Now it happens that when new buds and branches originate on the aerial parts of any plant they are composed of exactly the same cell layers as the main stem. In fact, they are at first just little, wart-like protuberances on the stem, gradually elongating into branches.

An entirely different process is involved when buds are produced from roots, as is the case when plants originate from root cuttings. The little bud does not start at the surface, but near the middle of the root. It then pushes its way out through the outer layers of cells and finally breaks through the surface, much as a nail which is driven through a board.

Thus plants produced from root cuttings serve to bring to light the kind of cells that are far beneath the surface of the plant, and when these cells are different from those of the exterior layers, they develop into plants different in some respect from their parents.



Above is diagram showing a section through the edge of white-bordered geranium leaf as it would appear under a small microscope, the shaded parts representing green.
Lower diagram shows appearance of green-bordered leaf. Cell arrangements indicate appearance of edges of leaves when sections indicated by arrows are examined under a high-power microscope.

All gardeners are acquainted with "bud sports," a term often applied to any plant peculiarity. As in the case of the chimeras, mystery regarding the origin of bud sports has only partly been solved.

Many plants, when severely injured by excessive pruning or by severe frosts, produce a crop of adventitious buds as a means of recovery. These buds are a sort of life insurance policy for the plant to furnish a means of existence in case of a calamity. They are not produced as ordinary twig buds, but in the same manner as has been described for the buds arising from root cuttings; that is, they originate far beneath the surface of the plant and push their way out to the surface.

NECTARINES ON PEACH TREES

If such an unsuspected periclinal chimera as the Bridesmaid Bouvardia or the pink-flowering tobacco were to produce adventitious buds, the branches developing from such buds would bear flowers different from those of the rest of the plant, and lo! we see a bud sport.

It is not at all uncommon to find on a variegated plant branches which show no variegation and are often called bud sports. They are in reality only branches composed of one of the two kinds of cells of which the parent plant is made up.

Cases have been reported a number of times where fruit spurs or branches bearing nectarine fruits have appeared as bud sports on peach trees. It is now the opinion of some authorities that some of these peach trees producing nectarines are in reality periclinal chimeras, the sub-surface or "hand" part composed of cells which were potentially nectarine, the surface cells or the "glove" part being peach in nature. The so-called sports would then result upon the appearance of adventitious buds having their origin in the deeper tissues of the tree.

Sectorial chimeras have appeared in peaches, apples, pears, figs, prunes, cherries, tomatoes, citrus and other fruits. Periclinal chimeras in fruits are not unknown. Fruit chimeras may appear on plants which are themselves chimeras or on normal plants.

True bud sports ordinarily can be distinguished from the apparent or psuedo bud sports, which really are adventitious buds from a chimera, by the behavior of the root cuttings. Those from the plant on which the true bud sport appeared should produce normal plants, while root cuttings from the plant on which the psuedo sport appeared should produce plants like the sport.

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Red Spider Injury and How to Prevent It

By E. R. DE ONG

University of California College of Agriculture

RED SPIDERS or plant feeding mites (for they are not true spiders) take a heavier toll of our orchards, vineyards and gardens than does any other one pest!

They are dangerous enemies of almost every orchard tree, deciduous or citrus, in practically every county in the State.

The strawberries of Santa Clara County, the vineyards of the interior, the bean fields of the Sacramento Valley, the carnations of the greenhouse and the violets around our door, all suffer alike. Yet we have a remedy which, with some variations, has been in use in California for 40 years or more.

Sulphur in some form, either as a spray or dust, is indicated for this pest, and if used properly at the right time, and thoroughly, will be found satisfactory. There is slight risk of damage to foliage, and the expense is small.

INJURY CAUSED BY RED SPIDER

The red spider, while feeding, extracts the sap and reduces the amount of green coloring matter (chlorophyll), as is evidenced by the resulting pale color of the leaves. This causes, first, a mottled appearance, and finally a paling of the entire leaf surface, which frequently is followed by defoliation. The seriousness of the injury is due to the fact that substances are found in the leaf, associated with the green coloring matter, by the aid of which the plant manufactures sugar and starch from which the plant itself is developed.

These materials constitute more than four-fifths of the dry weight of all fruit and even of the tree itself. If this green coloring matter is destroyed the plant is unable properly to feed a growing fruit crop or to mature a normal number of strong buds for the coming year; moreover, the fruit must of necessity be of small size, with an unduly large amount of pit in proportion to pulp—a grade which is always a drug on the market.

Trees that have been prematurely defoliated by red spider or other causes and then irrigated in the late summer usually will throw out new leaves, and possibly bloom, from buds developed for next year's growth. Other buds which have not been forced into foliage may have so much of their stored starch withdrawn that they will shatter off. A late second crop of leaves will manufacture and store more sugar and starch, but it is doubtful if it can restore a tree to normality or develop fruiting buds.

Defoliation of prunes results in undersized fruit, as shown in accompanying illustration. Prunes from normal trees in this orchard graded 40 to the pound, while those from the defoliated portion went 72 to the pound. This was a reduction of 44 per cent by weight and a depreciation in value from 11¾ to 7½ cents per pound at the year's prices. The injury to next year's buds, also due to the work of the red spider, causes an additional loss.

THREE KINDS OF RED SPIDERS

Three species of red spider are common in deciduous orchards—the common red spider or two-spotted mite, which attacks during midsummer; the brown mite or almond mite, which passes the winter in egg stage on the tree and feeds from the first of March to August; the citrus red spider, which also is found on the trees during the winter in egg state.

The common red spider winters in a dormant condition in the soil or feeds upon hardy weeds and cultivated plants. There is a slow increase in numbers during the spring on wild morning glory, malve (cheese weed) and other weeds. Migration to the orchard tree usually occurs in June or the first of July. Control work depends on the species of mite attacking; hence we must distinguish between them if we utilize the most efficient sprays.

DECIDUOUS WINTER SPRAYING

Two species of red spider—the brown or almond mite and citrus mite—are on deciduous trees in the winter as an egg. Spraying at this time with lime sulphur or crude oil emulsion offers the best chance for thorough control and also will prevent any injury to the opening buds next spring. Use lime sulphur solution (or substitutes) at winter strength (one to ten) at any time during the winter, but preferably just before the buds open. If the peach twig borer and all fungus diseases are absent, the use of crude oil emulsion (10 gallons of oil in 100 gallons of spray) is recommended; apply before the buds swell.

SPRING SPRAYING OR DUSTING

If the winter application has not been made and red spiders attack the opening buds or are causing the leaves to turn pale, then spray thoroughly with the following formula, using 7-11 gallons for large trees:

Lime sulphur concentrate (31°-34° Baume), on almond	2 gals.
Same, on prune	1 gal.
Same, on peach	1 gal.
Calcium caseinate	½ lb.
Sulphur powdered or sublimed	5 lbs.
Water to make	100 lbs.

Sulphur applied as a dust by means of a hand or powder duster is more effective for spring attacks than for midsummer work. Three or more applications usually are necessary at 10 to 15-day intervals. A 10 per cent filler of hydrated lime should be used in all dusting sulphurs unless to be used in a powder duster with a forced feed.

SUMMER SPRAYING OR DUSTING

Thus far we have been dealing only with the brown and citrus mites which winter in the egg stage and hence attack the trees in early spring. Now we must consider the common red spider or two-spotted mite. These are in the ground through the winter and cannot be controlled at this time by sulphur applications. Their first feeding is on hardy weeds and cultivated plants, and after these dry up they migrate to orchard trees.

Little can be done towards controlling them in the spring except killing the spring host plants, and our main dependence must be in early application of a sulphur spray before they are established in the orchard. After they are defoliating the trees or causing the leaves to turn pale, it seems impossible to check them for more than a few weeks at a time.

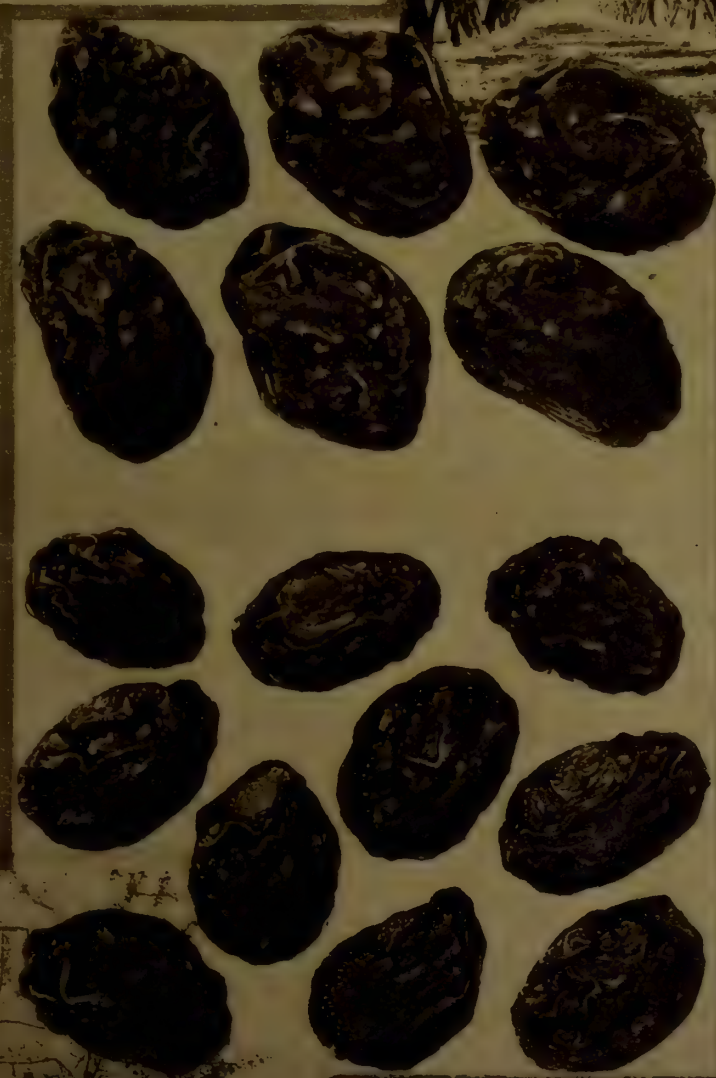
The time for the first spraying for most regions is from the middle of June to the first of July; on dry, sandy soils or where vegetation dries early it may be necessary to make the first application in May.

Be sure the first spray is applied as early as the spider has ever attacked in other years. Use the same formula as given for spring spraying, with any good spreader, such as calcium caseinate or flour paste. This spray is somewhat dangerous to foliage at temperatures of 100° F. or above, and if the attack is very light the gallon of sulphur solution may be omitted. This omission should not be made unless necessary, as it increases greatly the efficiency.

Orchards that are very susceptible to sulphur injury sometimes are sprayed with water only. The addition of four pounds of flour paste would be an improvement to the water sprays, but even then will be much less efficient than the sulphur sprays.

Dusting with dry sulphur for the common red (Continued on Page 13)

Almond trees at University Farm, sprayed with two gallons lime-sulphur solution, five pounds sulphur, two pounds dry prepared flour paste in one hundred gallons spray. Sprayed June 8; photographed August 4.



Dried prunes from normal trees (top), and from defoliated trees (bottom). This fruit grown in same orchard and under similar conditions, except one part of orchard was defoliated by red spider.

These trees were grown under same conditions as those above, but were unsprayed. Defoliated by ravages of red spider, T. Telarius.

Wire Bracing of Fruit Trees Rapid

By I. C. BARNARD

Division of Pomology, University of California, Davis

THE new system of bracing fruit trees by means of wire, a central ring and screw eyes or staples has been adopted by growers throughout the orchards of the State of California with amazing rapidity. Moreover, it is rapidly gaining favor throughout the country. In fact, the writer was asked for an article on tree wiring by a South African syndicate of Johannesburg, Africa, for the benefit of the growers in that section.

Growers have written from the States of New York, Ohio, Georgia, Washington, Oregon and Indiana, expressing their interest and asking for additional information.

This method of bracing trees goes hand in hand with the so-called system of long pruning. "Long pruning" has increased the yields of fruit trees throughout the State of California, and as the grower used wooden props or some form of bracing before long pruning was introduced it is necessary that the orchardist brace his trees with even greater care to handle the increased yield.

A BOON TO GROWERS

During the past season especially, growers throughout the State have found out the central wire brace is a boon to the fruit industry, in that larger crops can be matured safely on the tree without breakage than has been the case in the past year where wooden props were used. Following are interesting reports on the success of this system:

"Over most of the Northern cling section wood props are standard, and the yield is so heavy that many are necessary; but R. C. Ingram of Gridley tried wiring on 20 acres of his place last winter and finds there is no comparison between the two methods. As to cost, there is not much difference once over, but the wiring is permanent and the other has to be repeated each season. It took two men about a month last winter to wire the 20 acres, but no wood props are required at all this year and the trees are holding their loads. Where wood props were used over the rest of the place quite a lot of damage came by a heavy windstorm in July blowing over props and breaking branches. The Ingram orchards are considered among the finest in the district and were entered in the peach contest. Yields are heavy and seconds few. On a final picking of Tuscans, there were five boxes of seconds in a load of 110 boxes, which was typical of the last picking, but heavier than earlier pickings. A rule in the orchard is to thin to about six inches so that the fruit is always large and heavy. Consistently heavy yields are secured and the trees are in fine shape."

REASONS FOR POPULARITY

The increasing popularity of wire bracing of fruit trees is easily understood when considered in the following manner:

In the first place, an orchardist is a very busy individual about the time his fruit has attained sufficient size to cause the limbs to require props; hence if he has already installed the central wire brace after he finished his pruning in the winter, the labor of hauling out props and placing them is eliminated forever; the wire brace is practically permanent, requiring is prictically permanent, requiring only occasional attention from time to time. Hence, this elimination of the labor cost for propping has been a big saving to the grower.

Not only a saving in time and labor is accomplished, but the actual cost of the material to wire brace a tree is considerably cheaper than would be the cost of a sufficient number of wooden props to support the crop on the same tree. The writer, while giving tree wiring demonstrations in Sutter County on January 5 and 6, 1923, talked with a grower in that district whose cost for wiring full-bearing peach trees, including labor and cost of equipment, amounted to only 16½ cents per tree. When one stops to consider that props cost from 10 to 20 cents apiece, and that an average of eight props per tree generally is necessary and that after the wiring has been installed, it is good for fifteen to twenty years or longer, the above figure represents a big saving to the grower over a period of years.

MORE SECURITY AFFORDED

Then, too, wire-braced trees are secure, whereas wooden props often are dislodged by winds, or sink into the mud during irrigation, causing considerable breakage. Wooden props are also a nuisance during cultivation, especially when the grower wishes to establish furrows for the final irrigation preceding harvest. Also, depreciation of props is very high as compared to wire bracing.

During the summer of 1922, the writer in co-operation with the Agricultural Engineering Division of the College of Agriculture, made a few tests on the strength of some of the materials used in wire bracing, the results of which may be of additional value to the orchardist.

It was found that it took 130 pounds of force to pull a small chicken wire staple out of a two-inch walnut limb after the staple had been driven down as far as is the custom when bracing fruit trees.

The one and one-half-inch barbed wire staple required 450 pounds of force to extract it. The two-inch staple required 605 pounds of force to pull it out.

The No. 207 screw eye gave way at 400 pounds of pull. In this case the screw eye was not pulled out of the wood, but the eye was opened out straight.

The eye of the No. 209 screw eye gave out at 230 pounds of pull.

It was the intention to conduct the same tests on each variety of tree—i. e., apple, pear, peach, prune, etc.—but owing to lack of time the tests were carried out only on walnut. However, the above figures serve as an indication of the enormous load of fruit the wire bracing system can carry safely. The breaking point or tensile strength for several sizes of galvanized wire is as follows:

Size.	Breaking point.	Size.	Breaking point.
No. 0	4966 pounds	No. 9	992 pounds
No. 1	3867 pounds	No. 10	774 pounds
No. 2	3465 pounds	No. 11	618 pounds
No. 3	2840 pounds	No. 12	510 pounds
No. 4	2433 pounds	No. 13	372 pounds
No. 5	2079 pounds	No. 14	297 pounds
No. 6	1770 pounds	No. 15	222 pounds
No. 7	1389 pounds	No. 16	183 pounds
No. 8	1170 pounds		

MATERIAL VARIES

It is said that when the wire is bent around something, the above figures are reduced about 50 per cent. However, this did not prove to be the case in the above tests. In fact, in several

Here is shown the method of setting up ladder in center when placing wire braces in a tree of large size.

Staples used in experiments. Note "figure 8" tie, which never pulls out. Left to right—Chicken-wire staple, No. 1 1-2 wire staple, No. 2 staple, No. 209 screw eye.

Props not only make the orchard unsightly but also interfere with cultivation. Wire bracing rapidly is supplanting this method.

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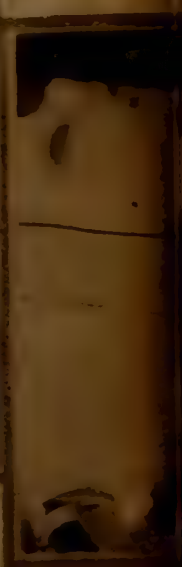

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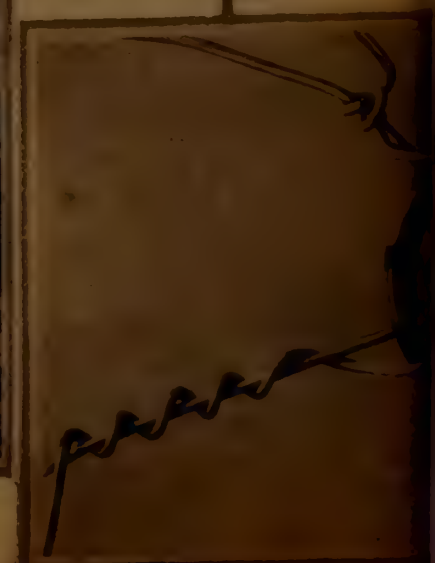

Increasing in Favor—Latest Methods Described and Discussed

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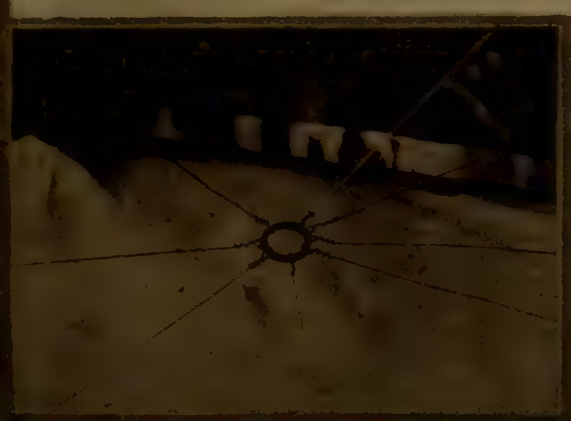

Ring suspended in tree by wires leading to main branches.

Note the amount of ground space occupied by the props under this heavily laden prune tree. An economic waste.

cases it took approximately 400 pounds of pull to break No. 14 wire, after it had been attached to the screw eye. However, this may be explained by the fact that the tabulated figures above are averages and the piece of wire used in the tests probably was extra good material.

Considering that the average yield in the State for apricots is about six tons per acre and about the same for peaches, etc., and that in an orchard which is planted 20x20, there would be 108 trees to the acre, then six tons or 12,000 pounds divided by 108 gives about 111 pounds, or an average of about two to three fifty-pound lug boxes per tree. Assuming a tree is wire-braced with No. 14 wire and No. 209 screw eyes, and knowing from the tests as outlined above that it took 230 pounds to open the eye of the No. 209 screw eye, and using 50 per cent of the tensile strength for No. 14 wire, would make the breaking point of the system 148 pounds. However, the 148 pounds represents the amount of weight it would take to break the weakest part of the system. Assuming that in the wire-braced tree of the above example, eight main limbs are braced, then it would take approximately eight times 148 pounds, or 1184 pounds of weight to break the system, which is far in excess of the amount of fruit borne by an average full-bearing tree even in California.

ENORMOUS STRENGTH SHOWN

In the above tests it was impossible to break the washer. The harness ring broke after 610 pounds of pull had been applied. However, the ring was elongated, having only two wires attached, whereas had eight wires been attached pulling equally in all directions, this elongation of the ring would not have occurred; hence the number of pounds to break it would have been considerably higher.

The central wire bracing is not "fool proof," and the writer wishes to caution any grower who contemplates installing this system not to get the screw eyes or staples too low on the main limbs as breakage above the points of insertion is sure to occur if this mistake is made. Also to avoid splitting, good judgment should be used as to the sizes of screw eyes and staples inserted in various sized limbs.

Readers wishing more detailed information concerning the system may secure free of charge circular No. 249, by addressing the Director, Agricultural Experiment Station, Berkeley.

How Hunter Pickled Olives

C. R. HUNTER, one of Fresno's hustling hucksters, makes good money each year picking and pickling olives. Five boxes of fruit and five cans of lye are dumped into a barrel, which is filled with water and allowed to stand until the bitter taste has left the olives. The finishing of this process can be determined by the disappearance of the white color of the flesh next to the pit. If even a tiny bit of this remains the olives will be bitter.

The lye then is soaked out by changing the water night and morning for five or six days, after which four to six quarts of salt is added, and the olives allowed to stand for two more days, when the picking process is complete. If the fruit is too salty, or not salty enough, more water or salt is added until the proper flavor is obtained.

The pickled olives retail on the public market at 25 cents a quart, which weighs a pound and a half. The fresh fruit is sold for seven cents a pound, or ten cents a quart. This leaves fifteen cents a quart for pickling, or $24 for a 40-gallon barrel, estimated by the difference in retail prices.

Three cents a pound—$1.50 a bushel—is paid for olives on the tree. Picking five bushels—50-pound boxes—is considered a good day's work. Three boxes were gathered by Mr. Hunter one forenoon, while six other men who were working by the day on a big ranch gathered only the same quantity in that time. This resulted in their losing their jobs.

Hybrid vs. Chimera

Dr. Coit Gives Scientist's Views on Grape Grafting Claims

(Editor's Note—The accompanying communication was suggested by the assertions of R. B. Holcomb, Tulare, vineyardist, recently reported in ORCHARD and FARM, to the effect that he had succeeded in establishing a true hybrid by cross-grafting.)

To the Editor of ORCHARD and FARM: I note in your issue of December 17 an article which states that Mr. R. B. Holcomb of Tulare claims successfully to have crossed different varieties of grapes by grafting, thus producing improved new varieties.

To quote: "Cross-grafting, when properly done, produces a hybrid which partakes in greater or lesser measure of the characteristics of both parents, which largely eliminates the element of chance and enables the breeder to operate with scientific certainty."

Permit me to point out that, from the scientist's viewpoint, the results he is stated to have obtained are impossible, for the reason that such a combination of buds as he describes could only result in a mechanical mixture of the cells of the two varieties.

Such a mixture is known as a chimera, not a hybrid. The actual fusion or mixing of hereditary units of two or more varieties can take place only in sexual reproduction. All the so-called graft hybrids of earlier record have been found in recent investigations to be of chimeric origin.

If, as seems likely, Mr. Holcomb's new types are chimeras, they cannot be expected to remain stable, but will certainly produce shoots of varying characteristics—some like the stock, some like the cion, others being mixtures in various degree. The methods of producing chimeras have been very well worked out by using various dissimilar herbaceous plants, which will graft together—such as tomatoes, nightshade, eggplant and potato. So far this method has not been productive of improved varieties, and the unstable character of the forms produced are suggestive of anything else but "scientific certainty."

Very truly yours,
J. ELIOT COIT.

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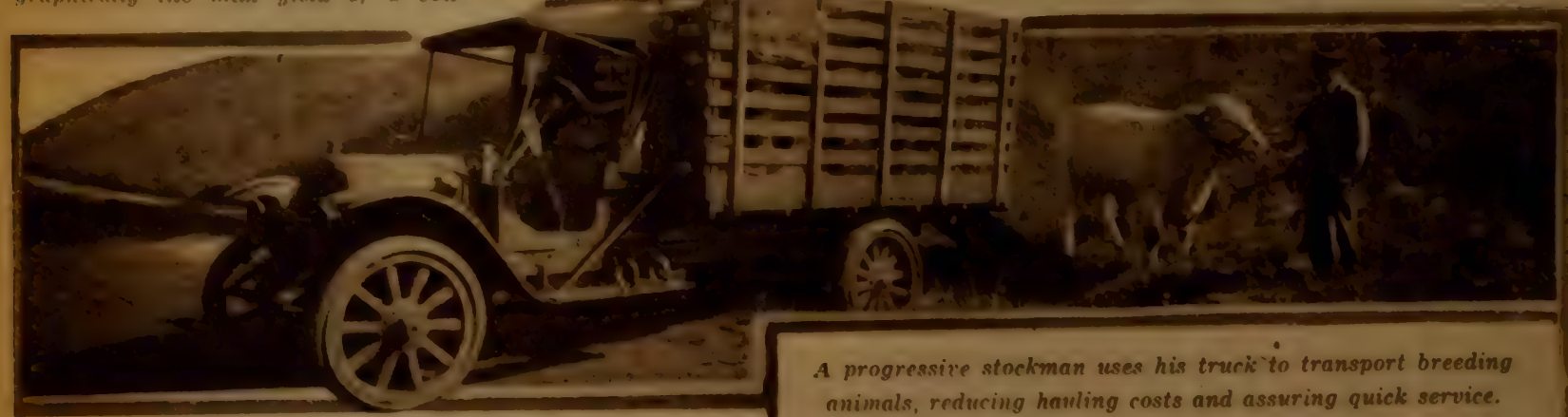

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YOUR GARDEN of FLOWERS

by Helen Temple

"I WANT something different in my garden of flowers. What shall I plant?" queried a flower enthusiast recently. Dear me! We could plant acres of flower beds, no two of which would be alike. Or we can have a garden of wild flowers and feel that we have something a little different than our neighbor. When I speak of a garden of wild flowers I do not mean to suggest that we convert our flower beds into a wild garden, but I do mean that each of us who has an extra corner in our yard may plan a wild flower garden. Perhaps we have a space of ground in our garden of flowers that cannot be easily cultivated, or maybe we have an extra corner that didn't fill up. I have planted a number of our California wild flowers, shrubs and plants, using a location similar to the spot in which they grew, and they succeeded wonderfully. I feel, therefore, quite safe in suggesting the wild flower garden.

HELEN TEMPLE

The most successful wild flower garden is one that is the most effective. To attain this result it may be apart from the remainder of the yard. The wild flower garden which impressed me most is one which I visited at the home of a friend last year. It was separated from the garden proper by an untrimmed hedge of privet, the entrance being nothing more than an irregular opening in the hedge where three plants had been omitted.

This wild flower garden was planted as nearly as possible as Mother Nature plants. There were the ferns against a bank, holly shrubs, a small pond with wild water plants, wild California shrubs, such as the wild lilac, and a generous variety of wild flowers, such as our poppies, violets and roses. The garden seemed almost perfect, but my friend sighed for an oak tree, declaring that one could plant an ideal wild flower garden about a large oak tree.

To obtain the best results in planting the wild flower garden we must avoid straight lines. Mother Nature does not carry a tape measure with her when she plants her garden, but sows here and there in splotches and splashes over the landscape, neither making square beds nor round ones.

IMPROVING THE LOCATION

If you are fortunate enough to own an oak tree growing on a bit of ground that has a slight slope and a bank with a fair amount of real California rocks, your wild flower garden will need little changing before planting.

If you do not have these desirable properties a trip into one of our nearby canyons will supply you with a thrifty young oak, possibly a holly and enough rocks to build a small "rockery." When transplanting a tree of this kind care should be taken to prevent the breaking of large roots. I have had best success with shrubs of this kind when the earth about the roots was disturbed very little. This may be accomplished by lifting the tree carefully and placing it into an old barley sack, tying the sack in order to hold all the earth about the roots. Plant the tree without removing the sack—it will add humus to the soil.

The construction of a rockery is a simple matter. Irregularly shaped rocks, preferably those which are porous, and leaf mold are all the materials needed. If you have a ledge or bank, build the rockery against that. Pack the rocks in layers, filling in the crevices with leaf mold and the porous soil found in natural rockeries.

What to plant in the rockery is easily learned on a trip to the mountains. Maidenhair, brackens, fivefingers, coffee and tea ferns—in fact, any of our wild ferns, are suitable for this purpose. Choose those which are natives of your locality, if possible. Quite often one may purchase a variety of Western fern from large city florist and nursery shops. Any of the delicate shade-loving plants and shrubs growing under trees and in crevices on our rocky hillsides will mingle well with the ferns in the rockery.

I have seen small ponds constructed without the use of cement, but I do not feel justified in recommending them. A small pond requires very little cement and may be easily built by a novice, if a few simple directions are followed. A small pond in the wild flower garden need be but two or three feet wide and five or six feet long. All of the ponds I know of are shallow, being less than two feet deep. It is maintained by pond experts that deep water is the cause of failure in fish culture. Do not follow straight lines when constructing a pond. Avoid sharp corners and follow lines similar to those of a natural basin.

PLANTING AROUND PONDS

Plant chain ferns and hardy brake ferns among a few wiry water grasses around the edge of the pond. Water cress and lilies will also thrive here. As with the rockery, I advise the planting of local water-loving plants and shrubs about the pond.

If the wild flower garden is to have a lawn, plant carpet grass, which grows naturally throughout many sections of California. I used cuttings and also separated the plants for propagating. Carpet grass may be also propagated by layering. Keep the ground very wet until the plants are well established, then water thoroughly once a week. I found the grass filled in quickly between the cuttings when the latter were about six inches apart.

Ice plant is good to cover corners and ledges. It is a native of California, growing abundantly along the coast and in the Mojave Desert. It soon forms a thick covering and will stand much neglect. Propagate with cuttings.

A shrub which should by all means be included in the wild flower garden is the California or Christmas holly. Here are a few plant suggestions: Poppies, tulips, hairbells, mountain balm, yerbabena, alumroot, Spanish bayonet, wild cyclamen, yerbamansa, lupine, matilija poppy, mountain birch, wild lily, azalea, wild roses, violets and peas, gooseberry and wild lilac.

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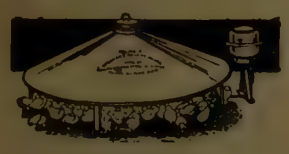

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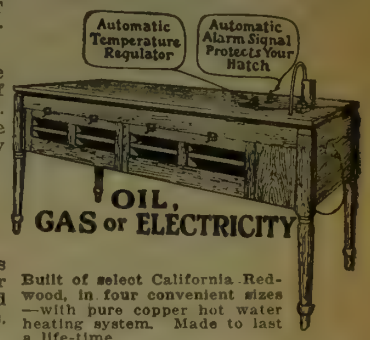

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HAZARD & MILLER—Herman Miller, formerly eight years member examining corps, U. S. Patent Office. Hazard's Book on Patents free. Central Bldg., 6th and Main, Los Angeles.

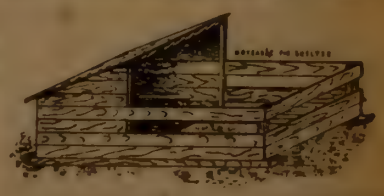
Movable Pig Shelter

WHEN the pigs are several days old and the sow may be trusted to take care of the litter, it is a good plan to move them to a pasture lot, not too far away.

The little hog shelter suggested by the drawing may be used in this way. It is built on runners to be dragged to a clean place as often as necessary.

It is built of thin boards nailed to a light framework of 2x4-inch scantling, toe-nailed into 2x6-inch runners, laid "flatwise."

The shelter is six feet wide and ten feet long. Only half of it is covered with a roof of boards and roll roofing.



There is a nest floor in the covered half. The front part is to let the little pigs on the ground to get a taste of grass early in life. At the same time they have a warm nest inside.

Stringers are laid across and nailed into the runners to tie the structure together from side to side and to make a support for the nest floor.

There is an opening in front between the runners for a pig creep, but the back of the pen is built down to the ground between the runners and banked with earth to prevent drafts of cold wind.—H. A. SHEARER.

SHEEPMEN DESIRE PROTECTION

The Yolo, Colusa and Solano Wool Growers' Association, which includes 90 per cent of the sheep men of that section, is planning to secure better State laws for the protection of sheep from predatory animals.—MRS. T. G. HOLLABAUGH.

Orange Show Under Way Next Week

ALL is in readiness for the opening of what promises to be the most successful orange exhibition ever held at San Bernardino. Every inch of exhibit space has been taken. The show opens February 16, but will continue through until the following Sunday, February 26.

A feature of this year's show is the close co-operation of growers, distributors, packers and organizations, many of whom are combining to make more effective displays.

The California Citrus Institute will hold its annual meeting in conjunction with the National Orange Show in San Bernardino on Tuesday, February 20. The institute sessions will be held in the auditorium of the Elks' Clubhouse. There is growing concern among citrus orchardists that the old groves of the State are deteriorating both as to the quantity and quality of the fruit which they produce. The main discussion of the Citrus Institute will center around this general problem. Practical orchardists from all over Southern California will discuss various phases of the problem in the light of their personal experience. It is thought that such a program will be of great value to the industry. At the morning session the management of old orchards will be discussed from four different standpoints; first, as to irrigation; second, fertilization; third, cultivation; fourth, cover cropping. At the afternoon session there will be a symposium of discussions on the general topic, "My Experience in Handling Mature Citus Orchards." Time will be given for the discussion of the many points raised by the principal speakers.

Arizona Coming to Front in Fruit

THAT Arizona before many years will be a big factor in the fruit industry of the Southwest is the prediction of many observers.

The largest planting of grapefruit made this year took place in the Yuma mesa district, according to Robert W. Hodgson, Los Angeles County farm adviser, who recently returned from a trip to the agricultural districts of California's "next-door neighbor." One man on the mesa has set out 16,000 young grapefruit trees, Mr. Hodgson stated, pointing out that this may account in part for the acute shortage of grapefruit stock.

"The only thing that is holding back grapefruit planting in the Imperial Valley," asserted the county agent, "is lack of young trees, a condition which may not be relieved for two years because there is so little seedbed stock which will be available for budding next spring. Agents for Arizona planters combed California during the past season and bought up all available stock."

Not only citrus fruits, but also apricots, and particularly grapes, are coming in for serious attention in Arizona. Mr. Hodgson states. Large tracts have been planted to Malagas and other early table grapes, and further development is anticipated this season. Apricot growing has not yet attained great commercial importance, he said.

"Fruit production in Arizona is in the experimental stage," Mr. Hodgson concluded. "So far there has been little concerted action along the lines of co-operative marketing, grading, packing and other practices which have contributed to California's success. These things undoubtedly will come, however, as Arizona finds herself horticulturally. We may look for big developments in fruit growing during the next few years."

Building 8600 "Reefers"

THE ordering of 5000 more refrigerator cars by the Pacific Fruit Express Company in time to move 1923 perishable crops is welcome news to California farmers who lost millions of dollars' worth of fruit the past season because of car shortage. These cars will be 40 feet long and 9 feet wide, with cork floors; sides, ends and ceilings lined with hair felt and an ice bunker capacity of five tons.

Three hundred 50-foot cars with a loading capacity of thirty-five tons and carrying six tons of ice have been ordered for passenger train service.

The foregoing orders are in addition to the contract for 3300 refrigerator cars, now being filled, making a total of 8600 cars ordered by the company this season. The company already owns 20,000 "reefers" and with the added equipment should be able to take care of next season's business, it is asserted.

Red Spider Control

(Continued From Page 7)

spider is less efficient than for the spring attacks of the other two species. This is due partly to a lower humidity preventing the adherence of the sulphur and partly to the heavy web which this species spins.

To wet thoroughly a full-grown tree in foliage will require from 7 to 11 gallons of spray—the latter amount for large trees like almonds. Allowing 70 trees to the acre and an average of 9 gallons per tree, 630 gallons per acre will be required. At average market prices the cost of materials for liquid spray would be $3.58 to $4.84 per acre.* Cost of application varies with the type of apparatus and other factors.

The total cost of dusting with the "knapsack" duster is from $1 to $2.25 per acre; with power duster, from $1.30 to $3.70 per acre.

*Acreage covered based on trees of five years' age or more. It should always be noted in comparing cost of dusting versus spraying that for most situations, in red spider control, it is necessary to make two or three applications of dust to one of a liquid spray, and even then the repeated dustings may be less efficient than one thorough spraying.

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Spider–Aphis–Scale

without damage to fruit, flowers or vegetation, with the stainless agreeable insecticide

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A liquid concentrate, ready for use. Mixes readily with water in any proportion. A trial order of one gallon (making 25 gallons of spray) sent prepaid anywhere in the United States for $2.00.

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No method of maintaining soil fertility has proved so efficient as the proper application of barnyard manure. It is a foresighted policy to build up crop yields with a McCormick-Deering Manure Spreader. Put manure on your fields finely, evenly, uniformly, and economically; the extra fertility will in a short time pay for the McCormick-Deering spreader.

Note again these features in McCormick-Deering construction: 1. Power delivered from both wheels. 2. Double ratchet drive with six feed speeds. 3. Short-turn front axle—no pole whipping. 4. Rear wheels track with front wheels. 5. Tight bottom. 6. Two beaters and wide-spread spiral. 7. All-steel main frame.

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BABY CHICKS: 100 or less, $25.00 per 100; 500, $120.00; 1000, $230.00.

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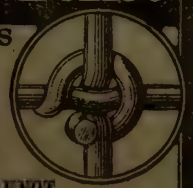

MY STIFF-STAY FENCE—NOTE THE SPECIAL KNOT

Here is a fence that is specially designed to give long service on Pacific Coast ranches. The illustration shows the special "Pacific" knot that is so constructed as to be entirely flexible for uneven ground and open so that moisture cannot accumulate and cause rapid deterioration. Used in combination with "Red Top" Steel Fence Posts, it makes a strong, sturdy, attractive fence that will give perfect satisfaction and last for years.

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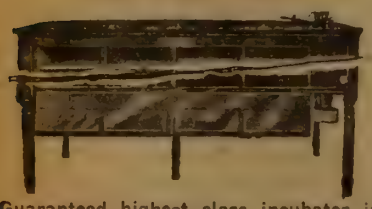
"PIONEER"



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FACTORY-CUT HOMES

Agricultural Leaders of the Pacific West

V—F. T. BIOLETTI

AMONG the faculty members of the University of California who have achieved international fame none is more outstanding in this regard in the College of Agriculture than F. T. Bioletti, professor of viticulture and fruit products, who for 30 years has been a well known and loved character among California fruit growers.

In point of period of service few, if any, members of the College of Agriculture faculty have been before Golden State horticulturists for so long a time as Professor Bioletti. He is one of the few left of the group of immortals gathered together by Hilgard and Loughridge in that fruitful period when the foundations for the present College of Agriculture were being laid. There is probably no man better known by California fruit growers and farmers at large than Professor Bioletti.

A fact which has contributed materially to his popularity, aside from his long period of service, is the unusually large amount of field and demonstration work which Professor Bioletti has conducted. In many respects he may be called the first extension worker from the California College of Agriculture.

For years this tireless worker has been traveling up and down the State giving demonstrations on pruning, trellising and many other horticultural operations. As a field man and demonstrator he stands easily at the top of the list, in this respect being equaled only by the late Dr. J. C. Whitten.

An additional factor contributing to his widespread popularity, and particularly to his international fame, has been his prolificacy as an author. All who know Professor Bioletti marvel that he finds time to do so much. He usually publishes three to four circulars per year as a series of bulletins covering the varied phases of horticultural industry. It is doubtful whether any living horticulturist has written as extensive and comprehensive a list of publications.

GRAPE AND OLIVE AUTHORITY

Professor Bioletti's major field is viticulture. For more than 20 years he has been engaged in promoting the grape industry of California. The present-day practices used by vineyardists are very largely due to the work of Professor Bioletti. The fame of California wines in former years was largely attributable directly to his efforts.

Professor Bioletti is distinguished, however, in other fields.

As a micro-biologist he has few equals and is recognized as an authority in this field of knowledge. He stands as the leading authority on olive culture, having followed the development of the California industry for the past quarter of a century. It is doubtful whether any living horticulturist knows grape and olive varieties as does Professor Bioletti.

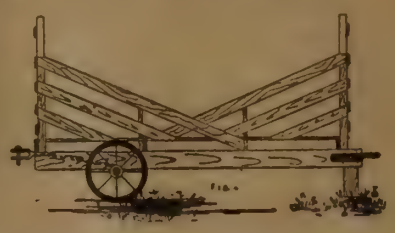
Among his outstanding contributions to horticultural science are his works on vine and olive pruning. In the field of viticulture, without a doubt, Professor Bioletti is today the world's greatest authority.

In closing, mention should be made of the fact that the development of the Division of Food Products of the College of Agriculture, with its important investigational work on the dehydration and preservation of food products, originated with Professor Bioletti and has developed under his wise and able leadership Prof. W. V. Cruess, who is at present in charge of food products work, was formerly a student of Professor Bioletti and was later associated with him in the Division of Viticulture.

Home Made Farm Trailer

THIS trailer is easily made in the farm shop. It is braced for strength and designed for easy loading at the sides.

There are additional side boards made in the form of gates for carrying sheep and hogs. They fit over the regular side braces at the center. They are not needed for larger animals nor for hauling hay. A horse or cow is tied to the front of the rack.



Loading is done at the sides by means of a low bridge or chute, or through a stable door.

The ends of the rack are braced by the hay boom pole ladders.

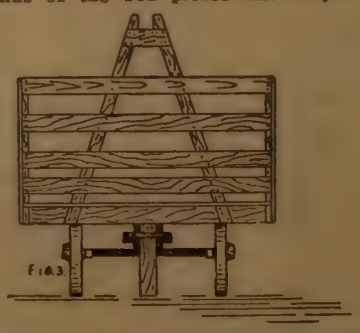
The drawings show a trailer five feet six inches wide by ten feet six inches long, but the size should fit the farm needs.

The axle and wheels may be taken from an old automobile or truck. The lumber yard, hardware store and home shop will supply the other materials. Bolts and blacksmith-made irons should be made strong and well-fitted to save trouble and future repairs.

Use plenty of bolts, not less than three-eighths inch for the sides, with half-inch bolts for the corners.

The size of the timbers and slats should fit the size of the trailer. For the smaller sized trailers 2 by 6 inch (selected) will do for the bed pieces, 4 by 4 inch for the floor joists and corner posts, 2 by 4 inch for the hay ladders and 1 by 4 inch for the slots. The lumber should be dressed and smooth planed for painting. Use matched flooring.

The front leg is rounded at the top, as shown by the dotted lines, and bored for a three-quarter inch bolt. The leg swings up between the front ends of the bed pieces and may be fastened with a rod or chain. A hook is not secure enough.



A rear hitch is shown. It is handy at times to haul an empty wagon back to the field or to move implements with wheels.—HERBERT A. SHEARER.

Testing Persimmons

EIGHT varieties of Japanese persimmons—Zengi, Tsuru, Triumph, Tabers 129, Tabers 23, Ormond, Okame and Bennett—are being tested by Fred W. Kelsey, El Monte nurseryman. He is selling a carload of six other varieties—Hachiya, Tanenashi, Fuyugaki, Tamopan, Hyakume and Gailey—half the trees being used to fill advance orders. Five hundred pounds of D. Lotus seed has been imported from China for raising persimmon root stocks. The new varieties will be tested in the San Fernando and San Gabriel valleys.

NAPA DRIES CHERRIES

Napa County orchardists last year dried 18 tons of cherries and sold them at 18 cents a pound.

Grape Pruning

(Continued from Page 3)

of the vines from coming too close to the ground and to shape the heads so as to give a proper distribution of the arms.

Cane pruning requires a permanent, horizontal trellis, usually consisting of one or two, sometimes three galvanized iron wires, the lowest of which is 30 to 40 inches from the ground, the second about 12 inches above the first; where the third is used it is from 12 to 15 inches higher. This system is easy to establish but as the vines become older it becomes increasingly difficult to keep them in good form.

The cordon pruning system requires a permanent trellis, similar to that used in cane pruning. It is the most difficult of the three systems to establish, but once the vines are in good cordon form they are comparatively simple to maintain.

MISTAKES POINTED OUT

The principal mistake made in vine pruning, according to Professor Bioletti, is failure to modify the pruning according to the strength or vigor of the vines, which inevitably results in irregular crops and sometimes in early decline and death of the vines. The number of canes or spurs left, as well as their length, is determined very largely by the vigor of the vine.

Where the vine is healthy, the number of spurs or canes and buds left should be larger than in the case of vines showing less vigor. But, where this is carried to an extreme and entirely too much wood is left, the vine may be injured seriously on account of overbearing to the point where actual death may occur.

The most common mistake made is in leaving too many spurs in the head-pruning system and too many canes where the cane pruning system is used.

The other mistake most commonly made, according to Professor Bioletti, is the adoption of methods which do not make for permanence of vines such as the vertical cane system, very commonly used in pruning the Thompson Seedless variety. This results in shading the shoots from below and ultimately in making an inferior fruiting cane.

Likewise, the vertical cordons frequently used on the Emperor may result in a similar general condition.

PRINCIPLES SUMMARIZED

The principles of vine pruning developed by Professor Bioletti, an understanding of which will enable the grower to prune intelligently and to avoid the difficulties above mentioned, are as follows:

(1) Each year the vine bears a crop and also develops the buds which produce the crop and growth of the following year.

(2) The condition of the vine at the end of the year determines how much crop it can bear and how much growth it can make the next year.

(3) The more crop the vine bears in one year the less growth it can make in the same year and vice versa.

(4) The amount and quality of all growth depends upon the amount of sunshine it receives.

Thirteenth National Orange Show

San Bernardino, Feb. 16-26

The Most Colorful, The Most Gorgeous, The Most Beautiful Exposition in America

17—FEATURE EXHIBITS—17

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The Finest Band on the Pacific Coast

BIG, HUSKY CHICKS

Better, stronger, with plenty of "pep"; chicks easier to raise. That's the kind you have been looking for; that's the kind our system produces. It will pay you to learn how it is done. Write today for free Bulletin D-5.

Petaluma Electric Incubator Co., Petaluma, Calif.

Our Crying Need for Trees—Golden State Faces Serious Problem

By MILTON M. INMAN

CALIFORNIA can live without trees, but not so well.

Have you ever come down from the mountains, fragrant with the scent of the pines and cedars, to look upon our valleys, fertile yet comparatively barren?

It is at such times that Californians appreciate how an Easterner feels when he exclaims: "California is beautiful, but it looks like a desert reclaimed! Where are your trees?" The orchards, of course, relieve the situation, but they do not take the place of forest trees.

Californians, who have almost a morbid loyalty to their State and an intense pride, are put on the defensive and are unable even to reply that it is "unusual," realizing that nearly all trees thrive in our climate, the only reason we do not have them being that few have been planted—and yet one pound of eucalyptus seed will produce 2000 seedlings!

MANY PROBLEMS INVOLVED

The soil-erosion problem is only one of the serious questions involved. Each year the heavy rains take their toll, robbing the farmers of valuable soil. Each year fires destroy hundreds of acres of timber, which must be replaced if we would conserve our water supply. Every season brings suffering from heat and winds which might be avoided by more extensive use of windbreaks.

But of most vital importance, perhaps, is the aesthetic factor. Many a landowner postpones from year to year the tree planting that he "intends" to do, realizing finally that if he had acted upon his original impulse the home place would have become both beautiful and valuable.

TREES VITAL NECESSITY

Trees are a vital necessity—a crying need in many parts of the State! We need them on the farms, in the foothills, along the highways, in the mountain watersheds.

Public officials long have been aware of the situation and have striven to arouse the public consciousness. In various counties local bureaus are carrying on the work. The Federal Forest Department is striving to reduce fire losses. The California Agricultural College is graduating students in forestry who will carry the message of conservation to the people.

SOUTHLAND FACES CRISIS

But still there is woeful lack of public consciousness on this important matter.

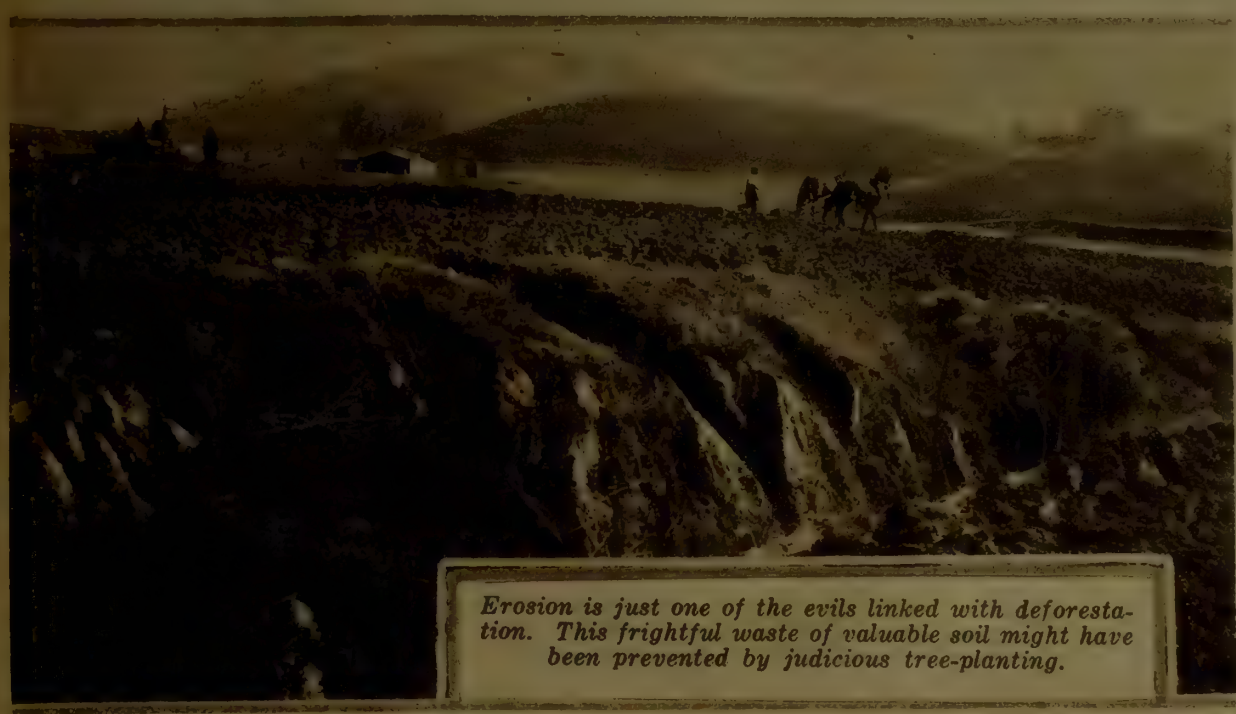
According to Dr. Samuel P. Clements, agricultural secretary of the Los Angeles Chamber of Commerce, with every present water source taxed to capacity, the Los Angeles basin can support but 2,600,000 people!

Unless watersheds are protected and the average rainfall of about 14 inches conserved at the source, Los Angeles will have to close its doors and play Indian giver to thousands who shiver in an unfavorable climate and dream of a home in California.

Los Angeles County now is replanting the hills that have been burned by city campers or made barren by nature.

Within a few years the wind will rustle the branches of tall pines and children will play in their shade; floods that carry away the rich soil of full-grown orchards to the sea will be controlled; precipitation will be increased, and the climate will be made more even.

Roads that reflect the heat of the glaring sun will be planted with a variety of trees, for California is versatile in what she can grow. A few men who realize that forestation is a necessity to our well-being cannot do it alone; they must have the help of every man in the State, and particularly the farmers, who need the trees most.



Erosion is just one of the evils linked with deforestation. This frightful waste of valuable soil might have been prevented by judicious tree-planting.

Grow Peas for Canning

FOUR HUNDRED acres of garden peas were grown on the Marin Meadows the past spring and put up by the Santa Rosa cannery, which handled this crop for the first time. The pea crop was followed by cherries, peaches, pears and tomatoes in the order named, the overhead expense being reduced by a long operating season.—MRS. G. B. RODD.

SUCCESS WITH SWEET SPUDS

Roy May Corcoran, sweet-spud grower, has 14 acres of Nancy Hall yams and Jersey Sweets, which yielded up to 15 tons an acre the past season and sold for 2 cents a pound, which figures out very satisfactory gross returns. Single plants of the first-named variety produced 13 pounds of tubers, while over 7 pounds of Jerseys were found underneath one plant.

Are you getting all the engine power you pay for?

This largely depends on the condition of the piston equipment. With McQuay-Norris Piston Rings, Pistons and Pins, you can be sure of more power, lower gasoline and oil bills, and less carbon trouble. In most cases all a worn engine needs to restore its original power and economy is McQuay-Norris Piston Rings. Your best investment is a combination of Leak-Proof and Superoyl.

One Superoyl Ring on each piston prevents carbon troubles by keeping excess lubricating oil out of the combustion chamber. The Leak-Proof Ring in all the other grooves prevents waste of fuel and insures complete compression and power. Its exclusive two-piece design means equal cylinder-wall pressure at all points. Its greater flexibility means better performance in worn cylinders.

If the cylinder walls of your engine are badly "out of round," they should be reground or rebored. There are shops which specialize in this work. Then you'll need McQuay-Norris Pistons and Pins as well as McQuay-Norris Piston Rings. If your engines are wasting fuel or power, install McQuay-Norris equipment.

Your dealer has McQuay-Norris Piston Rings, Pistons and Pins in stock or can get them promptly from his supply house.

Get the facts free

Write our Department AK today for free booklet, "To Have and to Hold Power." It explains why gas engines lose power and waste fuel and how to correct their condition. Send for free copy now.

McQuay-Norris Manufacturing Company
General Offices, St. Louis, U. S. A.
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McQUAY-NORRIS
PISTON RINGS
PISTONS
PINS

FOR AUTOMOBILES, MOTOR TRUCKS, TRACTORS, STATIONARY GAS, OIL AND STEAM ENGINES, MOTOR BOATS, MOTOR CYCLES, AIRPLANES, COMPRESSORS, PUMPS, LOCOMOTIVES, STEAMSHIPS, REFRIGERATING MACHINES

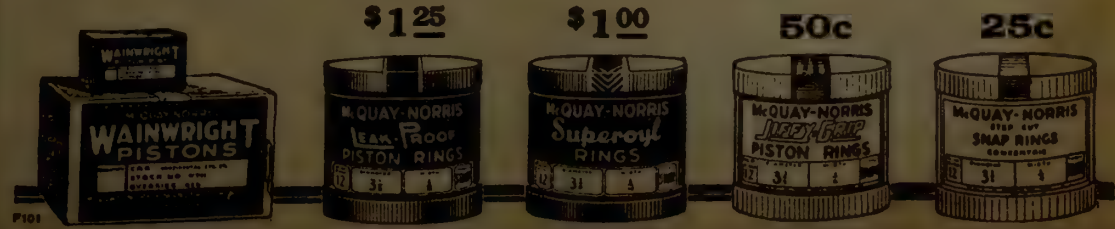
McQuay-Norris *Wainwright* Pistons and Pins —gray iron pistons as light in weight as safety permits—specially designed for replacements — available in standard sizes and oversizes—also in semi-finished form 75-thousandths oversize. Pins of exceptional accuracy. Made of special heat treated steel.

Leak-Proof — its exclusive two-piece design means equal cylinder-wall pressure at all points. Its greater flexibility means better performance in worn cylinders. Best for all grooves except top, which should have Superoyl. Made of Electric Iron. Price per ring— **$1.25**

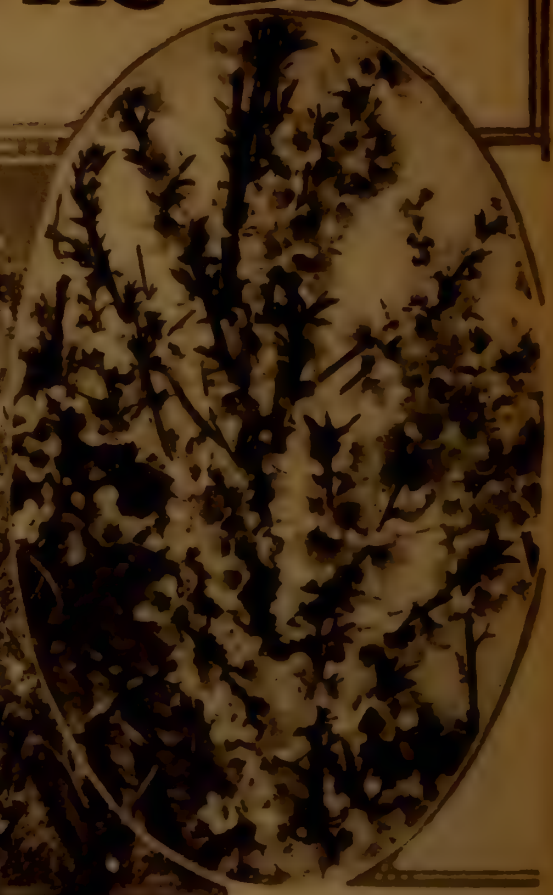
Superoyl — stops oil trouble. Keeps lubricating oil out of combustion chamber. Collects excess oil on each down stroke of piston and empties on each up stroke, which ordinary grooved rings cannot do. Made of Electric Iron. Price per ring— **$1.00**

JIFFY-GRIP — the quick-seating ring with the non-butting joint. "Seats in a jiffy." Can be fitted closer than the ordinary step-cut rings. Ends cannot butt when fitted tightly as quick-seating rings should be. Made of Electric Iron. Price per ring— **50c**

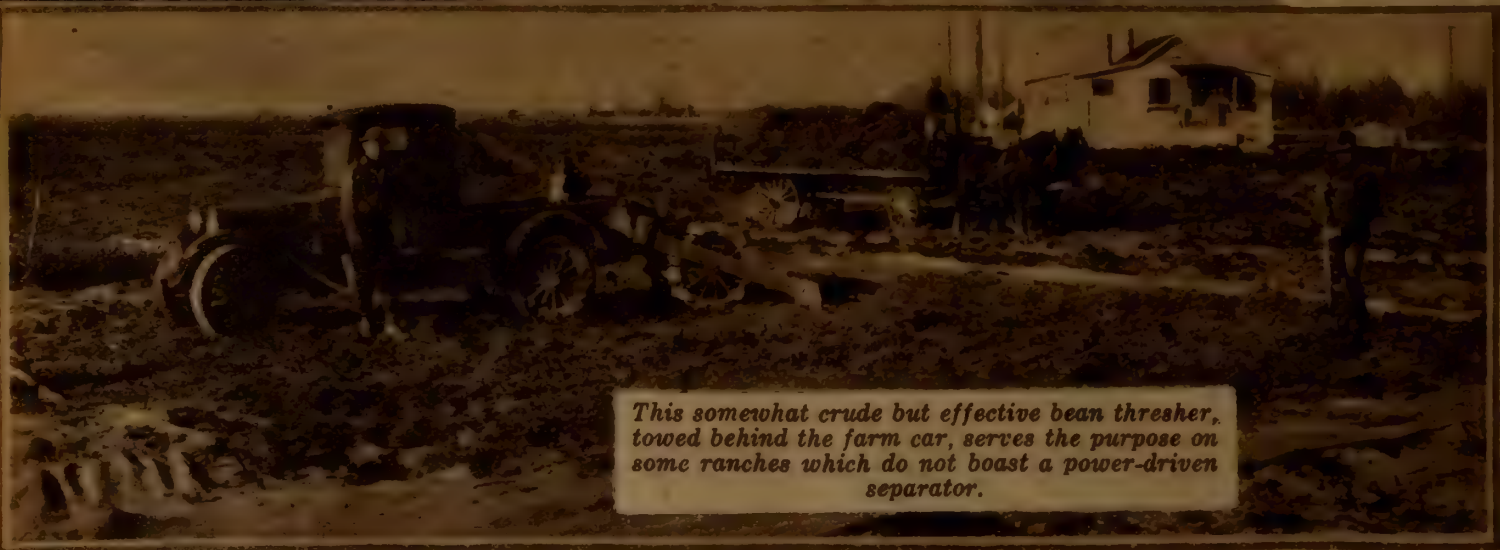
Snap Rings — of the highest grade. Raised above the average by McQuay-Norris manufacturing methods. Made of Electric Iron. Their use insures all the satisfaction possible for you to get from a plain snap ring. Price per ring— **25c**



Blossoms While The East Shivers!

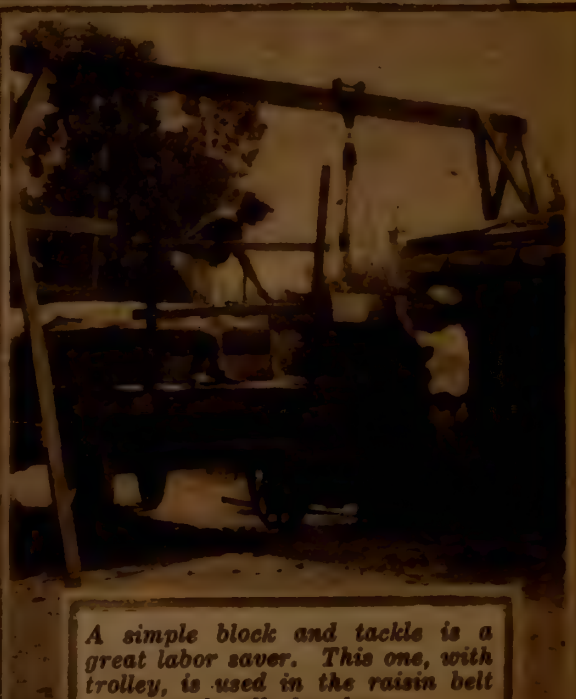


Already bursts of bloom betoken the springtime. Soon whole valleys will be seas of white and pink.



This somewhat crude but effective bean thresher, towed behind the farm car, serves the purpose on some ranches which do not boast a power-driven separator.

A mistake! Don't make your front lawn lower than the surrounding ground. This farmer's neat cement curb proved to be a winter menace, forming a pond.



A simple block and tackle is a great labor saver. This one, with trolley, is used in the raisin belt to handle lug boxes.

cal

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

FEBRUARY 18, 1923

SHAKE HANDS WITH HEALTH —EVERY DAY

—your best "hired hand"

HEALTH is the best help you have 'round the farm because you can't do much *without* it. From sowing time to harvest time your best "hired hand" is your own health. Therefore—

Watch the things you eat! Give your body machinery at least the same care you would give a costly tractor or harvester. See that you have a dish of prunes [in one delicious form or other] every day.

Why prunes? Because prunes—and especially Sunsweet Prunes—supply something the body needs every day: *a laxative from Nature's own pharmacy.* Besides, prunes are rich in natural fruit sugar, tonic iron and other mineral and "vitamine" elements that help to make farm fare really healthful.

If you want to keep your best "hired hand" happy and on the job, Sunsweet is the word at sun-up—and any time during the day!

Ask for these fine, full-flavored and rich-meated prunes at the store where you trade; and send for the Sunsweet Recipe Packet. Use the coupon below—it's free!

California

PRUNE & APRICOT GROWERS ASSN.

PACKERS OF SUNSWEET & GROWERS BRANDS

Prunes

California Prune & Apricot Growers Association, 35 Market St., San Jose, Cal.: Please send me, without cost, the Sunsweet Recipe Packet—"60 ways to shake hands with Health every day."

Name _____ Address _____

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER

FEBRUARY 18, 1923

Now Is the Time for Deciduous Spraying

February and March May Call for Quick Action With Pest Fighting Equipment—Pointers for Deciduous Fruit Growers

By GEORGE P. WELDON

Contributing Editor of Orchard and Farm Pomologist, Chaffey Junior College of Agriculture

THE early spring days in the orchard are of great importance in connection with the control of certain insects and diseases by means of a domant spray.

GEORGE P. WELDON

Not all orchards require spraying, and the orchardist needs to become familiar with the common insects or diseases in order that he may recognize the necessity for timely control measures. The peach producer finds it necessary to spray annually in order to control two common pests—one an insect, the other a fungus.

The insect pest, which bores into the growing tips of young trees, and later the fruit, is known as the peach twig borer. The fungus disease, which causes blisters to form in the leaves, is known as leaf curl. These pests are of such general distribution that everyone who grows peaches soon becomes familiar with both of them.

WHEN TO SPRAY

The time to control twig borer and leaf curl is in the spring as the buds are swelling. Perhaps no time is better than when the pink of the unopened blossom buds is seen just prior to their opening, but good results may be attained before this time.

Last season the writer conducted some experiments to determine the comparative value of early and late spring applications. The earliest spraying was done on February 7 and the latest on March 17. In each case plenty of trees were left without spraying for purpose of comparison, and it was found that perfect control for each pest was secured on both dates.

On January 7, 1920, some Elberta peach trees were sprayed for curl leaf control with equally as good success. Therefore, it seems probable that leaf curl can be prevented by spraying any time between the first of January and the time that peach trees begin to bloom.

In the case of twig borer, indications are that spraying should be delayed until after the first of February.

If one is growing varieties that are not subject to the attack of the curl leaf fungus, but must be sprayed for twig borer, no better time can be found to spray than during that period when the pink is showing in the blossom buds. On the other hand if curl and not twig borer is the main consideration, the application may be made earlier.

For peach spraying, nothing has been found that will give better results than lime sulphur, either liquid or dry. The liquid material of the ordinary Baume test of 30 degrees or over, does not need to be used stronger than one gallon of lime sulphur to ten gallons of water. The dry material will give equally as good results, according to two years' tests by the Chaffey Junior College, when used at the strength of two pounds to ten gallons of water.

Whether liquid or dry material is used, will depend upon comparative costs and the personal liking of the grower. The accompanying table gives the results of one of the experiments to which reference already has been made. In the orchard, where these records were made, results were so positive that one could walk along the row where the spraying was done, and pick out every unsprayed tree, either because of the twig borer infestation or the curl leaf infection.

A number of fruit growers in the community who viewed the experiments went away with greater confidence in the value of lime sulphur spray than they ever had before. The peach grower cannot form a better habit than that of spraying his trees with this material each season.

RESULTS OF EXPERIMENTS CONDUCTED BY MR. WELDON

Table 1 shows the estimated percentage of Curl Leaf infection due to the attack of the fungus *Exoascus deformans*, and Table 2 the number of wilted tips due to the Twig Borer attack. Variety of peach, J. H. Hale.

TABLE 1

TREE NUMBER.	DATE OF SPRAYING.	SPRAY STRENGTH. Lime-sulfur, Dry.	PER CENT INFECTION. SPRAYED TREES.	PER CENT INFECTION. UNSPRAYED TREES.
1	2-7-22	2 lbs. to 10 gals. water.	0	60
2	2-7-22	2 lbs. to 10 gals. water.	1	80
3	2-7-22	2 lbs. to 10 gals. water.	0	75
4	2-7-22	2 lbs. to 10 gals. water.	0	15
5	2-7-22	2 lbs. to 10 gals. water.	0	50
6	2-7-22	2 lbs. to 10 gals. water.	0	40
7	2-7-22	2 lbs. to 10 gals. water.	1	10
8	2-7-22	2 lbs. to 10 gals. water.	1	..
9	2-7-22	2 lbs. to 10 gals. water.	0	..
10	2-7-22	2 lbs. to 10 gals. water.	0	..

TABLE 2

TREE NUMBER.	DATE OF SPRAYING.	SPRAY STRENGTH. Lime-sulfur, Dry.	NUMBER WILTED TIPS. SPRAYED TREES.	NUMBER WILTED TIPS. UNSPRAYED TREES.
1	2-7-22	2 lbs. to 10 gals. water.	0	9
2	2-7-22	2 lbs. to 10 gals. water.	2	21
3	2-7-22	2 lbs. to 10 gals. water.	0	24
4	2-7-22	2 lbs. to 10 gals. water.	0	5
5	2-7-22	2 lbs. to 10 gals. water.	0	28
6	2-7-22	2 lbs. to 10 gals. water.	0	23
7	2-7-22	2 lbs. to 10 gals. water.	0	15
8	2-7-22	2 lbs. to 10 gals. water.	0	..
9	2-7-22	2 lbs. to 10 gals. water.	0	..
10	2-7-22	2 lbs. to 10 gals. water.	0	..

APRICOT IS INJURED

While its value in the peach orchard is unquestioned, investigations made in Florida some years ago and recent studies by the University of California in the Santa Clara Valley, have shown that the apricot will not stand the lime sulphur treatment. A condition which is called sulphur poisoning, and which results in stunted fruit, has been observed, and there seems no question but that the lime sulphur is responsible.

Therefore, while peaches are greatly benefitted by the treatment outlined, the apricot grower must use some substitute for lime sulphur in cases of twig borer infestation as this pest (but not curl leaf), also is found on apricots. Since twig borer is a chewing insect, an arsenical poison; for example, arsenate of lead, will kill when taken into the body of the insect. Peach trees which have not been sprayed with lime sulphur and which, after coming into leaf, develop an infestation, may be protected quite well by an arsenate-of-lead spray. It is not, however, a very safe spray to use on peach foliage, and some burning may result from its application.

No doubt the same treatment of apricots will prevent wormy fruit, but in the absence of experimental data it should be tried only in case of serious infection. For all fungus diseases of the apricot (for example, shot hole and brown rot) Bordeaux mixture is an effective spray. It does not, however, have any effect on twig borers. Apricots usually benefit by an early spring application of Bordeaux.

SCALE INSECTS AND BROWN MITE

Sometimes deciduous fruit trees are infested with San Jose scale, black scale or certain other species of more or less common occurrence. Also they may have the eggs of the brown mite, one of the red spiders, on the bark. All of these pests can be controlled successfully *(Continued on Page 14)*

Dipping Potato Seed Insures Clean Crop of "Spuds"

By F. H. ERNST

University of California, Agricultural Extension Service

POTATO diseases are responsible for inestimable losses annually. Disinfection of the seed is the very best potato crop insurance. Scab and rhizoctonia—black scurf—are probably more widespread than any others and the resultant losses are never fully appreciated. Both can be controlled fairly effectively by dipping with corrosive sublimate.

Potato scab, probably the most common of all potato diseases, is well known by the conspicuous scab pits or spots on the surface of the tubers. This disease attacks only the tubers. It first appears as minute reddish or brownish spots on the surface. The scabby appearance of the tubers, which follows, is due to the growth of cork cells, as the tuber tries to protect itself against the irritating action of the invading fungus.

Experiments have demonstrated that the fungus will remain in the soil several years. Turnips, garden beets, sugar beets and mangels also are affected by this disease. These susceptible crops should be avoided in a rotation with potatoes.

Rhizoctonia is a fungus disease which manifests itself in a number of ways. On the tuber it forms small black spots, which will not wash off, but can be scraped off easily. These dark bodies are the resting stage for the disease and by means of them the fungus spores are carried over from year to year and spread from place to place. This disease also may exist in the soil, but its severity undoubtedly is influenced by soil temperature, moisture and other factors during the early growth of the potato plant.

The most common symptoms produced by rhizoctonia are:

(1)—POOR GERMINATION. Some of the seed pieces fail to germinate, others produce only short, thick sprouts, which fail to break through the ground. In some cases, the tips rot off before they reach the surface. (2)—BROWN STEM AND CANKER. When the disease does not kill the young shoot, a browning of the stem may result, this appearing as well defined cankers. (3)—ROLL LEAF. Late in the season tips from newly formed leaves tend to roll and have a characteristic brownish tint. (4)—AERIAL POTATO. When the disease completely girdles the plant small tubers are formed about the girdled portions. (5)—Many very small potatoes are frequently produced on seriously diseased plants. Some of the various hosts upon which various forms of rhizoctonia have been found in America are as follows: Sugar beet, bean, carrot, cabbage, cauliflower, cotton, lettuce, potato, radish, sweet potato, pumpkin, watermelon, garden peas; also many species of weeds and ornamental plants.

DIP IN CORROSIVE SUBLIMATE

Use clean seed if possible. Treat seed potatoes only with corrosive sublimate. Formaldehyde is not effective in the control of rhizoctonia. Avoid planting diseased areas. Render the soil slightly acid by plowing under green manure crops.

The use of sulphur has been recommended for scab treatment, but careful experiments indicate that this chemical has little or no effect on scab. Proper dipping, however, is very important and is recognized as a necessary operation by all progressive potato men.

Mercuric chloride—corrosive sublimate—has been found to be the most effective material for treating seed potatoes. Rhizoctonia is controlled by the two-hour soaking in this chemical, which controls scab equally as well as does formaldehyde and should therefore be used as the standard material for all seed potato treatments.

The dipping solution is prepared by dissolving four ounces corrosive sublimate in thirty gallons of water. Soak the uncut tubers in this solution for one and a half to two hours and dry before planting. Add one-half ounce of the chemical for every four bushels of potatoes treated for two hours, as the solution decreases in strength with use. About eight ounces of corrosive sublimate are needed to dip twenty-six bushels of tubers.

If potatoes are not planted soon after dipping, dry thoroughly before replacing them in storage. Avoid the use of dirty or old bags, because of danger of reinfestation.

ORCHARD and FARM

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
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Luther Burbank — W. S. Killingsworth
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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

FARMERS AS EXPERIMENTERS

While it is an undeniable fact that much of the progress of American agriculture is due to independent investigations and experiments carried on by farmers, it is likewise true that this sort of work often leads to loss. Many planters cannot resist the lure of novelties and new varieties, which usually are advertised very attractively. The result is the expenditure of much money for high-priced goods which frequently prove to be worthless. It is desirable to experiment with new and novel creations in the plant world, but few farmers can afford to engage in this work extensively.

FAILURE OF CHEAP MANAGEMENT

More agricultural co-operative associations fail because of inefficient management than from any other cause, judging by a survey recently completed by the United States Department of Agriculture. Unaccustomed to the high salaries paid expert executives by private companies, farmers often employ cheap managers. In such cases, failure is almost inevitable, because a co-operative project is one of the most difficult of all business organizations successfully to superintend. No reasonable expense should be spared to secure the best brains obtainable for such work.

FARMING WITH MECHANICAL POWER

Electric motors, gas engines and tractors are doing the work of more than a million horses on California farms. A greater amount of mechanical power, in proportion to acreage, is used in this State than in any other, according to Prof. L. J. Fletcher of the California College of Agriculture. The average amount of oil and electric energy used on the average Golden State farm is eight horsepower, which is more than the animal power used. The greatest number of tractors and motors are found in the grain and fruit counties, the former being used mostly for field work and the latter for pumping irrigation water. The engineering department of the University Extension Division not only teaches tractor and motor operation and repairing, but also the installation of septic tanks and farm lighting systems, two improvements found in increasing numbers on Pacific Coast farms. The premier position of mechanical power in California is a good indication of the superior living conditions which prevail here and the progressive spirit of the farm population.

ACCEPTING SCIENTIFIC INFORMATION

The independence of the American farmer is one of his most commendable traits and one which is responsible for much of the splendid progress of agriculture in the United States. It is possible, however, to carry this spirit too far, as in the refusal to accept scientific information the reliability of which has been established beyond the shadow of a doubt. A good example of this attitude is found in the failure of some orchardists to accept the scientific fact that pear blight, which also attacks apple trees, is a germ disease and can be eradicated only by cutting out infected tissue with properly sterilized tools. Instead of sterilizing tools with chemicals which have been proved safe, some farmers will experiment with salt and other unreliable substances, with the result that the disease is spread by pruning. Blight is known to have been carried to clean orchards by farmers who deliberately ignored the warnings of scientists in order to prove to their own satisfaction that it was infectious.

"What's New?"—Keeping Abreast of Agricultural Progress

Catalina Produces Pickles

SANTA CATALINA ISLAND is not usually thought of as a farming country, but the inhabitants grow a good many cucumbers and other "pickle timber," and a pickle factory there is very much desired, according to Dr. George Clements of the Los Angeles Chamber of Commerce.

Blight Damaging Orchards

BLIGHT has been unusually destructive in Sacramento pear orchards recently, according to A. E. Morrison, county horticultural commissioner, who says that in one orchard practically every tree has been ruined by this dangerous germ disease. During the first part of the winter the weather has not been cold enough to stop the spread of the pest, which is rendered much more difficult to control as a result of this condition. Three inspectors are aiding growers to clean up their orchards.

Beetles Kill Much Timber

THE United States Forest Service estimates that 100,000,000 feet of yellow pine timber has been killed in the Happy Camp-Lava Beds district of the Modoc National Forest by pine beetles during the past three years. An examination of 430,000 acres of yellow pine timberland in the area named indicates that 150,000 feet per section has been destroyed. Private timber owners are co-operating with the Government in an effort to stamp out the pine beetle.

Chance for High Farming

ONE of the problems of mountain farming is being solved in the Southeastern States by the growing of seed potatoes to supply lowland growers. The latter have been in the habit of shipping in Northern-grown seed spuds, but find that an equally good product can be grown in their own Southern mountains, where the climate is similar to that in the North.

A dependable cash crop has been one of the greatest needs of California mountain farmers. Growing seed potatoes for their "low down" neighbors may prove a practical solution of this problem.

System Earns $7,000,000

THE general substitution of the long pruning system for the severe cutting-back method formerly practiced in California increased the 1922 fruit crop about $7,000,000, according to B. H. Crocheron, agricultural extension director, who believes the value of the orchards of the State has thereby been increased $100,000,000. Half of California's orchards are now long pruned, as nearly as can be ascertained. This results in a one-third larger yield of fruit, in the opinion of Mr. Crocheron and others who have kept careful check on improved practice.

Sheep Consume Farm Waste

THE way in which a small flock of sheep can be made to produce "side money" is well illustrated by a Southern California rancher's experience last year. Forty ewes raised $700 worth of lambs and wool! During the winter these sheep feed on the alfalfa fields, while in the summer they run on vacant land, of which there is a great deal in the Antelope Valley, where the ranch is located.

The sheep also pick up grain stubble gleanings and are fed alfalfa rakings, which are collected after each of the six hay crops is baled. In this way the sheep find their living by using feed which otherwise would go to waste. They are provided with shade in summer and a good shed during the winter months.

Reduce Hop Acreage

"WITH 55,000 bales of unsold hops now in California warehouses, and the price down to 7 cents a pound for first-class stock and no market at all for the poorer grades, the only remedy for the situation is a drastic reduction in hop acreage," declares Irving S. Marks, prominent Sacramento hop grower and dealer.

There are enough hops now on hand to supply the needs of this country for the next two years, estimates Mr. Marks. Foreign shipments have been shut off by Great Britain's embargo, which was instituted for the purpose of enabling British growers to dispose of their crop to advantage. This and prohibition have ruined the hop market.

The consumption of beer in Great Britain has decreased one-half in the past four years, declares Mr. Marks, dropping from 36,000,000 barrels in 1918 to 18,000,000 barrels in 1922.

The passage of a law permitting the reopening of American breweries would, of course, put the hop industry on its feet again, but Mr. Marks is not hopeful of such action being taken by Congress.

The hop acreage in Northern California is estimated at 6000 acres, having been decreased only 10 per cent in recent years.

Register More Herefords

SEVENTEEN THOUSAND more cattle were registered during the past year by the American Hereford Association than by any other beef-breed association, according to officers of the organization named. The total number of Herefords admitted to registry during 1922 was 108,430, an increase of 8411 over the previous 12 months, which shows a healthy growth of the beef business along white-face lines.

Plan Local Produce Sales

LASSEN COUNTY farmers are planning to take advantage of the good market for their produce which is afforded by local lumbering operations. In order to feed the men engaged in Lassen logging camps and sawmills, $1,856,000 worth of farm and garden produce was shipped into the country last year.

The local grower finds it difficult to supply this excellent home market, because he does not produce any one commodity in sufficiently large quantities to interest the big lumber companies. This situation is to met by a central receiving station, where farm produce will be received from growers and graded and packed in shape to sell at wholesale. The farm Bureau is leading in this commendable movement.

Hog Partnership Plan

A NEW partnership plan for raising purebred hogs is being worked out by Clayton Slocum, manager of the Key herd of Duroc Jerseys at Willows. Mr. Slocum is going East to purchase a number of high-class purebred sows, in partnership with local farmers. The latter will agree to care for the hogs, while Slocum attends to the selling and pedigree work. The cost of feed is divided equally between the joint owners.

When a litter of pigs is sold the profits are divided on a 50-50 basis. Additional litters may be produced on the same plan, or the partnership terminated by selling the sow. Mr. Slocum's purpose in putting this plan into operation is to increase the number of hogs—especially purebreds—in California and to enlarge the market demand.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

IX—HELEN TEMPLE

ORCHARD and FARM'S floriculture editor is a true flower lover and has the knack of helping others to grow them successfully. Because she writes in such an interesting way and gives so much timely and practical information, she has a greater following than any other popular writer on this subject in the State.

MRS. TEMPLE AND SON, "BILLY."

In private life, as Mrs. Will E. Temple, the conductor of "Your Garden of Flowers" department typifies the busy, modern young mother, who, because of her superior intelligence and efficiency, is able not only to reign as gracious queen of her own household, but also to give time to outside interests.

Mrs. Temple is gifted with the rare imagination that enables her to look at a bare lot or home-place and visualize the transformation that can be brought about by intelligent planting and care.

For several years she has made a special study of the flowers that can be grown by the novice under average California conditions. She recommends to those who wish to beautify their grounds the same formula that she has followed—namely, to grow flowers and study them at the same time.

Helen Temple's "Garden of Flowers" is an exclusive feature of ORCHARD and FARM. She tells each month what to do in season and discusses such topics as arrangement, varieties and cultural requirements, as well as answering questions of subscribers.

NEXT WEEK—J. D. BIXBY SR.

Spring Fertilization Makes Fruitful Groves

By J. ELIOT COIT

Contributing Editor Orchard and Farm

NE of the most important requirements for regular and heavy crops of oranges is proper and adequate fertilization of the trees. The methods of fertilization are diverse and often confusing, because the conditions and requirements of land in California differ radically from those prevailing in Eastern States.

DR. COIT

Extensive experiments and common experience both show conclusively that nitrogen and mus are the chief needs of Califor- a soils. Potash, phosphorus and lime e present in adequate and abundant ounts in nearly all California orch- d soils.

Under most conditions, young orange oves may be brought into bearing th the use of leguminous cover- ops alone, which is by far the cheap- t means of fertilization. Moreover, ere is plenty of room to grow large ver-crops while the trees are small. ter the trees appropriate most of e space and come into bearing, there less room to grow cover-crops and the same time the removal of crops presents a heavy drain on the soil. then becomes necessary to bring in ant foods from outside sources in creasing amounts.

BUY ON THE UNIT BASIS

The best citrus fertilizer practice to apply humus-forming materials— an straw, manure or alfalfa hay—in e fall and quick-acting nitrogenous rtilizer—blood, cottonseed meal and h meal—in the spring or late winter, d do the deeper plowing in fall, ther than spring.

Either bulky manure or commercial rtilizer used alone is less desirable an a suitable combination of these aterials. The trees will make much tter use of high-priced commercial rtilizers where the soil is well sup- ied with humus, which mantains the cterial flora of nitrifying organisms.

Within recent years the fertilizer ade has largely adopted the unit sis for quotations, as this greatly mplifies the calculation of formulae. he unit, as arbitrarily taken, is twenty ounds, or one per cent of the ton. here are always as many units of an ement in a ton as the material nalyzes in percentages.

FIGURING FERTILIZER PRICES

For example, if stable manure is ought at $5.00 a unit of nitrogen plus ve cents a unit for organic matter, d the manure analyzes one per cent itrogen and sixty per cent organic atter, then we know that the price the manure would be $5.00 plus 3.00; a total of $8.00 per ton. The yer would not care about the mois- re content, unless he had to pay for ansportation. Manure, of course, ntains in addition some potash and osphorus, but as these are not eeded, it is not good policy to allow ything for them.

Dry alfalfa hay, which analyzes two and one-half per cent nitrogen and eighty-five units organic matter, would be worth $16.75 per ton for fertilizer. But the nitrification efficiency of alfalfa hay is greater than that of ordinary manure and, in my judgment, the orange grower could afford to pay, if necessary, as much as $1.00 per unit more for the nitrogen in alfalfa than that in manure, which would raise the former's value per ton to $19.25.

Nitrogen in organic commercial fertilizers is now quoted about $7.00 per unit, delivered, while in straight chemicals, such as sulphate of ammonia or calcium nitrate, the price varies between $4.00 and $5.00. Whether it is best to use an expensive organic fertilizer, such as blood, or a cheaper chemical, will depend on the condition of the soil and amount of bulky manures previously applied. If the manuring has been heavy, then it is a permissible economy to use the cheaper chemicals named for all or a part of the spring application.

HOW MUCH FERTILIZER

It is impossible to give specific directions as to amounts of fertilizers needed without knowing something of the soil, its previous treatment and local conditions. In a very general way, however, it may be said that orange trees fifteen years old will need about three pounds of nitrogen per ton per year. Two pounds of this chemical should be given in bulky manures in the fall and one pound in organic concentrates in the spring.

One pound of additional nitrogen per tree per year should be added for each five years of additional age; for example, a twenty-five-year-old grove would need five pounds of nitrogen per tree per year, as follows: 332 pounds of manure per tree, or about 15 tons per acre in the fall, and about 14 pounds per tree of dried blood, analyzing 12 per cent nitrogen, in the spring.

This would cost about $105 for the manure and $26 for the blood, or $131 per acre per year. This is considered adequate for a full bearing grove of very large trees where no cover-crop can be grown. It should be possible to fertilize an ordinary grove for $100 per acre per year. Such use of fertilizer is often very profitable where climatic conditions are favorable and where soil moisture and pest control are carefully attended to.

WHEN TO APPLY MANURES

Spring fertilizer should be applied at a time to provide a maximum of available nitrate while the trees are blooming and setting the crop. This period varies with the season, but ordinarily is from the middle of March till the middle of July, the greatest need coming about May 1.

Organic concentrates are changed over into soluble nitrates by soil bacteria, dried blood requiring about four weeks, fish meal six weeks, cottonseed meal about eight to ten weeks.

Dried blood is the best of these materials, because it contains no phosphorus or potash which must be paid for. It nitrifies quickly and produces excellent results with citrus trees.

Because it becomes available all at once dried blood should not be used in too large quantities and only in conjunction with bulky manures. It is well, in order to avoid the danger of some loss from denitrification, to divide the dose of dried blood into two applications, six weeks apart, except where less than six pounds per tree is used.

The spring fertilizer in the case of bearing trees should be spread over the entire soil area and worked into the soil to a depth of four or five inches.

The foregoing suggestions should be taken to apply generally, rather than specifically, for any particular grove. Conditions vary greatly and the final decision must be governed by judgment and experience.

SYSTEMATIC FERTILIZATION PAYS

Fertilization has not yet been reduced to an operation of scientific precision. It is still a mixture of art and science. It is of very little use to have a chemical analysis made of soil for the purpose of deciding on fertilizer, for no one properly can interpret the analysis after it is made.

As a rule, nitrogen and humus are the items liable to be lacking in fertilizers. The lack of humus can be determined by walking over soil and kicking into it with the foot. The lack of nitrogen can be seen by the color, crop and growth of the trees and the general appearance of other vegetation growing on the land.

Don't Let Trees Go Hungry

IT pays to fertilize systematically. A hundred dollars an acre a year can be made to increase the crop several hundred dollars annually, and also improve the appearance, reputation and sale value of the citrus grove.

Fertilize regularly and often with moderate amounts rather than spasmodically; the latter method may throw the trees into "off-bloom." Manure and bean straw are the "bread and potatoes"; dried blood and fish meal, the "ice cream and cake" of a well balanced meal for citrus trees. And chemical fertilize may be "courses" of varying importance, according to conditions.

—J. E. C.

Home Farm Happenings

By One of Us

LUGS AND TRAYS IN ORDER

Another job that the rain is forcing on us is fixing up fruit-drying trays and lug boxes. Pretty good rainy day job it is, too, and it is a comfort to have a lot of such things out of the way before active spring and summer work opens up. Seems to go faster when you are not in a hurry. When you are waiting for trays at drying time they don't seem to pile up very fast.

A WORD ABOUT ROOTING HOGS

It's just a lot of fun to see a bunch of happy, contented hogs root-around in a woodland pasture—good as going to a real fine show. Regardless of what "experts" and hog-ring manufacturers may say, hogs were intended to root in the ground; that's what the snout is made for. Nature surely intended them to eat roots, acorns, herbs, charcoal, bugs, worms and the forty or more other things they get from the ground.

Our river bottom pasture is just rooted all over; doesn't hurt it a bit, either. On the other hand, this does it good, clears it up a little more each year, and keeps it well cultivated, so that we get a big growth of grass for the cattle and sheep.

PULLING PEAR STUMPS

We are pulling out some pear tree stumps this week, the remains of a few trees the blight killed. We are digging around them, then hitching a chain to the top of the stump and pulling them with a team. The trees are eight years old and are cut off about 30 inches above the ground. In the holes we will plant prune trees.

Surprising what big roots these trees have! Takes a good deal of digging to get them loose. We are putting prunes back in the holes because we don't want to let the ground be idle. We have to cultivate and irrigate anyway, and we don't think it would be wise to put a pear back without waiting a year or so for the blight infection to "sort of" die out. And if prunes get pear blight, as is now being suggested, just what will happen, we wonder!

SHEEP FOR THE SOUTHLAND

We are very much pleased with the things we learn from Editor Knollin, Farm Adviser Bob Hodgson of Los Angeles County, H. A. Miller of the Los Angeles Chamber of Commerce agricultural department and W. W. Van Pelt of Riverside regarding the movement for more sheep, particularly more farm flocks, in Southern California. Which reminds us that our 1922 accounts show that, next to the prunes, the purebred sheep were our best money makers.

A small flock of sheep "fits in" mighty well on a lot of farms and we can see how welcome a supply of prime lambs from small farm flocks will be to the butchers of Los Angeles and surrounding territory.

We understand the manure for fertilizer for citrus and other orchards will be a factor to be considered. Of course, on Sacramento River bottom land that doesn't interest us so much, but we can see how sheep can be made successful competitors with hens and cows as fertilizer producers, and with far less care.

Seems to us there is a place for hundreds of flocks of good, medium wool grades that will raise a prime mutton lamb to mature quickly.

One nice thing about a campaign like this, backed by such interests and men as those mentioned in the opening paragraph, is that it "goes over." Nowhere else in the world today is there a greater organization of its kind than the Los Angeles Chamber of Commerce, nor is there any other place where worthy things are done with greater dispatch than in Los Angeles County!

He's a Real "Dirt Farmer"

. W. BARNES of Riverside County . calls himself a "real dirt rmer" and looks the part—a big, rly westerner who spends his time the field and garden doing the ings that others talk and write out. Mr. Barnes at a recent fair, owed forty different kinds of farm ops, mainly fruits and vegetables, l grown on eight acres of land near e Santa Ana river, three miles north- est of Riverside.

Sweet spuds are the main crop, 25 ns being produced on five acres. e trade prefers a rather small ooth tuber to the big, overgrown d with varicose veins. White and ncy Hall yams weighing up to seven unds each were grown. White rose the best Irish potato grown by Mr. arnes.

The second largest crop is Spanish ions, of which three tons were pro- ced on three-fourths acre. This va- ety has a very large white bulb, so mild that it can be eaten almost like an apple.

Virginia and Spanish peanuts—"goober peas," the Southerners call them—are grown between the rows of melons, which are eight feet apart. The Klondyke is considered the best watermelon. The White Wonder will keep until Christmas if it is protected with straw. A yellow honey dew melon looks much more inviting than the common white variety, the veteran gardener points out.

Some splendid specimens of the sweet spud squash, or banana, were shown, also a small, heavy and very warty Japanese kind. The Mammoth has little to recommend it besides its size.

Rhode Island greening apples attracted the eyes of Easterners, who had been told that good winter apples could not be grown in this region. Eight bushes were picked from a single tree.

Purple vetch, the best cover crop for Southern California, is grown in a small way, as is buckwheat and many other odd crops.

From two rows of Zinnias $20 worth of blossoms were sold to a city hotel, as many more given away and great quantities went to waste.

Roselle buds are considered fine for jelly and juice, containing much more peptic acid than most other fruits. The Roselle needs only half as much sugar as standard fruits and often is mixed with milder fruits to make them jell.

THIS WEEK'S COVER

"Buddy del Naranjo, 4872," posed for Mr. Goodmanson's striking cover design. But Buddy did not go through the ordeal willingly. It was only after patient persuasion and insistence on the part of his owners, the Misses Kirby and Saunders, of Redlands, that he consented to face the terrifying camera. And at that, our photographer kept one eye on the goat and one on his "finder"; he has had past experience with heavy hitters.

Deep Tillage for Horse Farmers

By WALTER H. GARDNER

(Contributing Editor of Orchard and Farm)

LOOK out, Mr. Horse Farmer! You may have foiled the tractor salesmen in the past, but they're going to get you now! You may successfully have kept away from "signing up for a machine," despite all arguments as to how it would increase profits; you may have kept yourself in blissful ignorance of the profits to be procured through tractor operations—but the salesmen have found the way to prove to you the virtues of plenty of power!

WALTER H. GARDNER

And if any one of these clever young fellows is entitled to more credit than another let's ask Caspar Zwierlein of Stockton to stand up and bow!

A BIT OF HISTORY

The first tractor was a steam giant designed for the logging camps. It was soon adapted to the arduous task of pulling a harvester on the vast acreage of western grain fields. Since that day men have sought to find implements and methods that would enable them to utilize this wonderful new power and convert it into larger crops or lessened costs.

Here and there were enthusiasts who held that if it was a good idea to plow six inches it was hence twice as good to turn over twelve inches of soil. These eager ones were quickly disillusioned. Barren, unaerated, bacteria-free soil made a poor seed bed. And "deep plowing" came into general disrepute.

But here and there in California were men to preach the gospel of "deep tillage." These men insisted that deep plowing did good by breaking up the undercrust and plow sole—and then undid that good by turning to the surface the barren stratum beneath the humus. They earnestly besought the farmer to break up that crust with a knift of "subsoiler"; to let his land breathe and drink and sun itself; to increase his production through deeper cultivation rather than by acquiring more acres or by trying to turn his farm over on its back;

BIG TRACTORS TURN THE TRICK

It was only by some dramatic and wonderful performance that the minds of men were to be opened to the fact that western soils, deprived of the winter frost that breaks up all impacted strata, could be benefited by a mechanical process that would perform the same operation. And when a few very heavy subsoilers were made and tried out on the largest of the tractors the results of the experiments were on such a huge scale that people just naturally couldn't overlook the notable benefits.

It seems strange that it took so many years for those two groups to get together—the men who had the big, powerful tractors and no implements by which their strength could be translated into useful work, and the others who wanted to stir the soil to greater depths and didn't have the power available for the operation!

But the monster tractors demonstrated the virtues of deep tillage on a splendid scale. Men began to listen to the stories of increased yields, of sturdier root growth, of frost protection, of bigger fruit—and men bought heavier and larger tractors that they might apply their power to this new philosophy of farming.

AND NOW THE HORSE FARMERS

It takes plenty of power to fracture the packed sub-strata of arid fields. The big tractors proved that it could be done on a magnificent scale—the smaller tractors went ahead as fast as the proper tools were developed and did it—and now the implements are available for the horse farmer to try it out for himself.

There is a subsoiler similar in design to the tractor models, which will go eighteen inches deep in some soils behind four horses; in other fields eight horses are necessary to pull it. There are discs that replace the plow—an implement that leaves the ground level and smooth instead of ridged.

There are cultivators that are fitted with levers instead of power lift; but otherwise are equal to the tractor cultivators. Grain farmers can use these to break their ground in the fall after harvest. The operation costs less than plowing—and the ground is in shape for seeding long before the rains.

TRACTOR MEN LIKE IT

The new science of deep tillage has sold a lot of big tractors. And now anyone with four horses can apply the same principle. What has the tractor salesman to say? Ask him. He will tell you:

"Deep tillage shows how power can be converted into dollars. The harder a man works for his boss the more pay he gets. The farmer's boss is old Dame Nature—and she will pay him back for every bit of intelligent labor he gives her. Once a farmer applies the principles of deep tillage to his own particular fields and crops, he is not going to give it up; and he is going to have proved to him the more power the better the results. Two horses will suggest eight horses; eight horses are going to be replaced by a small tractor; the little tractor is going to call for a big one! It is not easy for one lone salesman to persuade a farmer to buy his first tractor, but now that farmer's own horses are going to drag him right through the front door of the tractor dealer's establishment. Let him use the horses for a while—we'll find him coming around and crying for more power."

Much of that is exactly right. This is the day of new things. Deep tillage implements—in particular the crowder or furrower—have made possible new irrigation methods that give ample moisture to thirsty trees and preserve the dry surface mulch—yet conserve water. The horse owner now can try out these methods before making a heavy investment.

Good Egg Scale

THE testing of hens for breeding purposes may include the weigh of each individual egg as well as the numerical count.

To know positively what is going into the incubator, it will be necessary to have a delicate scale balance and to weigh each egg separately. So far as we know there is no such scale manufactured; there are scales that would give the weight, but none that are especially adapted to the purpose.

The drawing shows a little home made affair that will do the work without eating into the poultryman's time to any great extent. It is made

INCUBATOR EGG SCALE

principally of wood. The base board is one inch thick, six inches wide and about a foot long. The scale bar is of tough hard wood, light but not springy, length 12 inches, width 1½ inches, thickness ¼ inch. A very small double end saw file is used for the teeter bar. One corner of the file is ground to a sharp edge; the file is attached to the lower side of the weighing bar in the exact center, with the knife edge down.

Short pieces of thin steel, bent around half-inch auger holes in the upright standards make the rests for the knife edges. These steel rests must be level across so they will be the same height.

Two holes are bored in the scale beam, one for the egg to be weighed and the other for the weight. These holes must be centered exactly the same distances from the knife edge of the teeter bar.

The weight (shown to the left of the scale) will be the weight of the egg that is wanted. It will be close to two ounces. Each breeder will establish his own standard and try to live up to it.

Large, well-conditioned eggs (other things being equal) produce well-nourished chicks—the ones that persist in growing beyond their less fortunate mates—so that the little egg scale may prove a great help in establishing a profitable flock.—H. A. SHEARER.

Weeks Practical Poultry School

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Weeks Practical Poultry School

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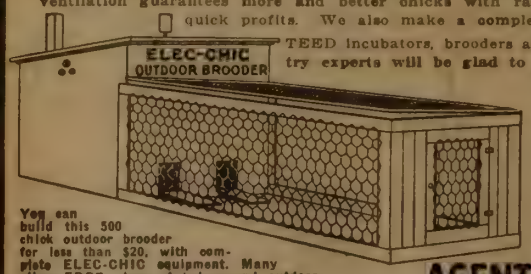

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Northern California Turning to Turkeys

Profits in Turkey Raising Prove Attractive to Sacramento Valley Farmers

THE bulk of the birds which form the basis of holiday dinners in California will not in the future come from the southern part of the State, judging by the interest in this branch of the poultry business manifested by Sacramento Valley ranchers. The price of these toothsome fowls during the season just passed was about twice what it was before the World War, while there has been no corresponding increase in production costs.—*The Editor.*

TEHAMA COUNTY is one of the sections of Northern California where a great and growing interest is taken in raising the turkey, that noble bird which graces so many Christmas and Thanksgiving feasts. Extensive grain fields, which often are infested with grasshoppers and other edible insects, furnish much cheap feed for these fine fowls. Turkey prices have not slumped during the past few years like those of many other farm products, being in fact about 100 per cent higher than they were eight years ago.

DIVIDES PROCEEDS WITH OWNER

From 1500 to 2000 turkeys are grown each year on W. P. Hammond's Elder Creek ranch in Tehama County. The birds are cared for by a competent poultryman, who divides with the ranch owner the proceeds from the sale of stock, one party furnishing the labor and the other the feed.

The turkey's troublesome tendency to trespass on neighboring grainfields is curbed by a movable wire netting fence, which is moved from one place to another as successive areas are pastured. This plan not only lessens the cost of caring for the flock, but also avoids possible trouble with neighbors, who sometimes suffer loss from the depredations of birds which have wandered from the home range.

TURKEYS ARE GOOD RUSTLERS

The main thing to avoid in choosing a base for turkey growing operations is dampness, which is this fowl's worst enemy. It is possible profitably to grow them in confinement, but as a rule it pays much better to provide them with ample range.

Turkeys are good rustlers and on an average farm will find their own feed until fattening time, when they need a little extra grain to fit them for market. However, they fall an easy prey to coyotes and other predatory animals and therefore need close watching or careful fencing. Herding turkeys is an excellent occupation for children during the summer vacation on large ranches or where there is much outside range available. A good dog may prove a valuable aid in handling the flock.

"The chief difficulty in turkey culture," states a successful grower, "is to get the poults over the first month of their existence, which is their danger period. Close confinement and unsanitary surroundings are the cause of much of the mortality among the young turks.

"There is a great deal of disagreement among growers as to best methods of care and feeding of the youthful birds, which are fed nothing at all for the first thirty-six hours. We have found well-baked bread the best feed for them until they are able to eat wheat and cracked corn. The batter may be made of either wheat flour or corn meal and mixed with buttermilk, to which is added soda, salt and an egg or two. A dish of sand and lime and plenty of fresh water should be kept before the growing fowls and the utmost cleanliness observed in the care of their quarters."

EARLY BIRDS TOP MARKET

Because of the demand for large birds at Thanksgiving, early-hatched poults generally prove the most profitable, although the birds are more easily started after the weather gets warm and dry.

One gobbler should be mated with not more than fifteen hens, according to an experienced breeder. The latter will begin to lay fertile eggs within a fortnight after mating and will produce a dozen and a half eggs before becoming broody. It is a good plan to gather the eggs as laid, mark them with the date of production and place them in a cool, dark place until needed for hatching. The oldest eggs should be used first and turned daily until the poults appear, which will be in four weeks.

Chickens and incubators may be used for later hatches, but turkey hens make the best brooders and to them should be entrusted the care of all the young. Don't be discouraged by a large percentage of mortality among the frail young birds, as they are the most delicate of all the food fowls and animals which are propagated artificially.

A number of growers are very successfully solving this problem by mixing wild blood with domestic stock. The wild "toms" are mostly from stock originally captured in the Southwestern States.—ARTHUR L. DAHL.

HARNESSING HAT CREEK

Farmers living along Hat Creek, Shasta County, are planning to install a number of water wheels for the generation of electricity and operation of machinery, as a result of demonstrations made by A. S. Stirniman, agricultural extension specialist.—DONALD ASHTON.

This splendid specimen of the turkey tribe has reason to be proud of the fact that he commands a higher price than any other kind of poultry. Turkeys are truly kings of the feathered world and reward those who master the secret of raising them successfully.

The attractiveness of the fine California farm home shown below is enhanced by the splendid flocks of turkeys feeding in the foreground, not to mention the "bunch of money" they represent. Turkey production in most parts of California does not equal the demand for this popular product.

Harvesting Golden Nuggets

Pushing aromatic life this man an employee in California's gigantic million-acre citrus kingdom.

California's Citrus Crop—58,000 Cars

THOUSANDS of workers find employment in picking and packing California's citrus crop—a vast, golden fleece which long ago excelled top wool and valley the State's production of yellow metal.

The oranges grown in a single county now bring in more money than all the gold mined in the State. At present the navel remains in vast quantity.

In spite of the severe freeze of January, 1913, which cut the orange crop down one-half and the lemon crop another, the State received $12,000,000 for last year's citrus production, higher prices having compensated for lesser production. The trees have recovered so nicely that the present crop is estimated at 58,000 cars, which is only 7000 cars less than the bumper crop two years ago.

The size of the fruit now being harvested is unusually large, which means both growers and consumers as well as producers and packers have no good and the outlook encouraging.

CITRUS FRUIT SAVED

Important progress has been made in salvaging cull fruit, a single concern selling 8000 tons of oranges the past year.

The costly lessons learned in grievous during the 1913 and 1916 freezes have resulted in a large number of groves being insured against frost in spite of the installation of orchard heaters, of which 100,000 have been sold by one organization during the past few months.

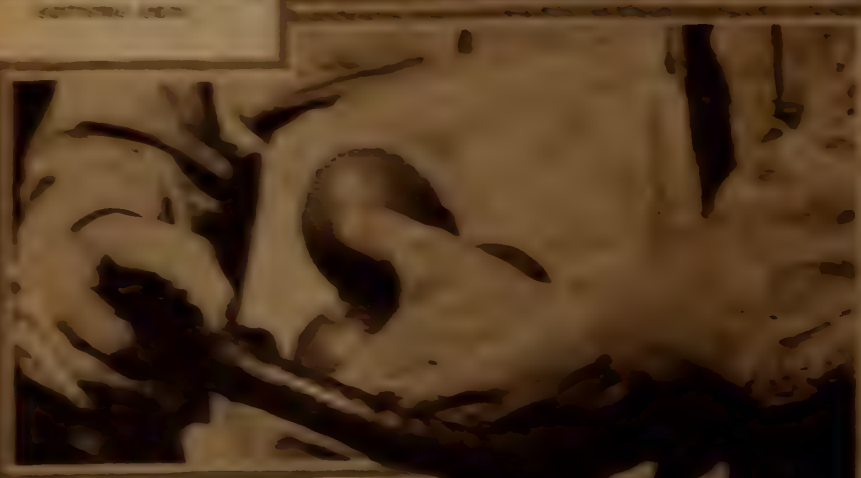
A quarter of a million Californian acres are devoted to the growing of oranges, lemons and grapefruit. It is estimated $200,000,000 is invested in this great industry and that consumers pay $500,000,000 a year for the output.

MARKET CROP COOPERATIVELY

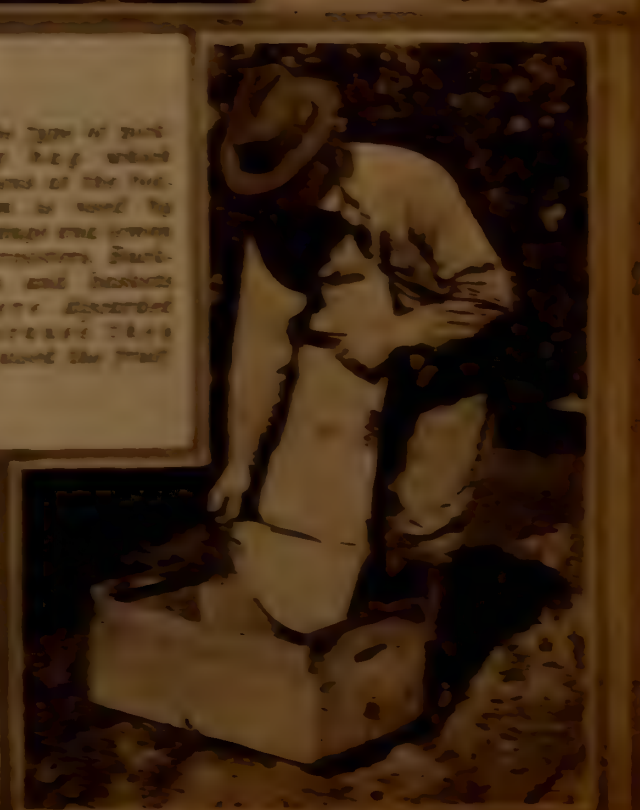
It is said seven out of every ten

The skin is scarred since the fruit which is thereby protected from the injury formerly resulting from long stems. Cotton gloves are worn by pickers and shears by the foreman.

Specially made shears may now encircled the finger and thumb for pruning citrus fruit, which are handled with common care.



Instead of dropping citrus fruit into receptacles or mere vessels, as in olden times, packing now takes place at centrally located sheds, by process involving. Estimated one million every year of the Californian orange and lemon harvest.



The type of pack used here which means at the bottom is used by orange and lemon associations. Baskets and hampers were discarded because they bruised the fruit.

Modern Packing Methods

California oranges, lemons and grapefruit are marketed under the famous "Sunkist" brand by the California Fruit Growers' Exchange, one of the world's oldest, largest and most successful agricultural co-operative concerns.

Orange picking begins in November and lasts practically the entire year, although the bulk of the crop is harvested in the winter and spring, the navel crop preceding the Valencias. Lemon trees bear blossoms, green fruit and ripe fruit every month in the year.

Practically the entire citrus fruit crop is picked, packed and marketed by private or co-operative companies, relieving the grower of all but production problems. Mexicans do most of the picking, under careful supervision.

PACKERS EARN GOOD WAGES

Both pickers and packers are required to wear cotton gloves, which protect the fruit from finger-nail injury. Experience has demonstrated the utmost care is necessary in handling citrus fruits to prevent cuts and bruises, which formerly caused great loss by subsequent decay.

The packing is done mostly by women and girls, many of whom by piece work earn a great deal more than the guaranteed minimum wage of $16 a week. Long experience enables packers to wrap each orange or lemon and place it in the box with almost incredible rapidity.

A large percentage of the orange packers are professionals, who devote most of their time to this work, going from one district to another as their services are required. Many wives and daughters of growers, however, pick up a nice "bunch of pin money" by helping prepare the citrus crop for market.

GROWERS OWN TWO SAWMILLS

California orange packers are a superior class, far above average girl factory workers in Eastern cities. The former labor under pleasant, sanitary conditions in a land of sunshine, and earn good wages. The loose fruit and packed boxes are handled by men, who nail up boxes and load cars.

A branch of the California Fruit Growers' Exchange known as the "supply company" supplies members with box shook, nails, wrapping paper and other packing-house supplies. The exchange owns and operates two large sawmills at Hilt and Susanville, Northern Califor- *(Continued on Page 14)*

California citrus fruit is hauled from orchard to packing house in substantial picking boxes on wagons or trucks fitted with bolster springs, to prevent bruising.

Every orange, lemon or grapefruit is inspected carefully and graded by hand. It has been found that women do this work more efficiently than men.

Women and girls pack almost the entire California citrus crop, acquiring a deftness and dexterity which is really marvelous.

After being carefully cleaned and graded for quality, the fruit is mechanically sized for packing.

The packed boxes are carried over roller conveyors to the nailing press, where the cover boards are fastened in place with almost incredible rapidity.

"AGRIPICTORIALS"

A good example of inter-cropping shows alfalfa being grown between the rows of trees in a young orchard near Sacramento. In such cases liberal irrigation is necessary.

A "two-story" bougainvillae vine, which was a mass of purple bloom in December, beautifies barn on F. C. Hayeman's San Fernando Valley orange ranch.

This giant horseshoe, between a beautiful concrete pergola and a lawn fence made of the same material, should bring good luck to the Azusa orange ranch which is thus adorned.

These fine mule colts are not from Missouri, but the Sacramento Valley, where mules perform much farm work. They're fast "growing into money"

At the left—A milking machine being easily operated by a modern milkmaid, in the Sacramento Valley. Dairymen everywhere are turning to mechanical equipment as the means of cutting labor costs and gaining release from drudgery.

Monorail Hand Truck for Handling Milk

ALONG the Columbia River, between Portland and Astoria, the railroad crosses long stretches of swampy ground. Little development work has been done in the way of draining the land and clearing it of timber and brush. Improved farms are few and far between. Dairying is the chief agricultural industry. One of the greatest difficulties encountered in this work is the daily transportation of milk and cream to shipping stations, as the annual rainfall is ninety inches and the roads are generally muddy and at times impassable.

W. DeJong, a Brownsmead rancher, solved the problem by building a small hand truck to run on one of the rails of the railroad. The truck consists of a two-inch plank a foot wide and six feet long, with a notch in either end, in which is fixed a six-inch wheel with flanges to keep it on the rail. Just behind each wheel a 1 x 12 x 30-inch board is fixed in an upright position, being held in place by three-cornered pieces of board, 1 x 12 x 24 inches, nailed on either side.

The truck is balanced and pushed along by holding one of the end boards. With this truck several cans of cream are transported daily three miles to Blind Slough and from there shipped to Astoria, where the cream is used in making milk chocolates. DeJong's boys have become experts in hopping over the ties and attain surprising speed. An aproaching train can be seen for several miles in either direction, so there is little danger of an accident.—O. H. B.

Testing Cows for Profit

AS a result of testing 21,000 cows for butterfat production, it has been estimated that each 50 pounds of annual butter production indicates $16 income over feed cost.

Poultrywoman Succeeds

DURING the month of January, when there was several inches of snow on the ground in Lassen County, 100 buff Orpington pullets belonging to Mrs. C. D. DeForest of Johnstonville, laid an average of 69 to 80 eggs per day. This enterprising poultrywoman has for eight years been breeding from high-class stock and culling her chickens systematically. As a result, her birds have won premiums at the Lassen county fair, and she is credited by the Lassen Farm Bureau with having the best laying hens in northeastern California, considering the size of her flock.

Mrs. DeForest's methods differ radically in two respects from those of most commercial poultry producers: she raises a meat breed and uses hens instead of incubators for hatching eggs. The chicks are mothered by hens instead being artificially brooded. Mrs. DeForest has five pens of breeding stock with roosters from official trap-nested hens having records of 200 eggs or more per year. These males were shipped in from Iowa and Missouri.

HENS HATCH 2500 CHICKS

About 2500 chicks are hatched each year. Two hundred hens are being used for hatching and brooding purposes this year. Each hen has a separte coop and small runway. The chicks remain here with their mothers until well developed, after which they are given the run of the orchard.

More than 1500 accredited baby chicks from Mrs. DeForest's flock are being distributed by the farm bureau among its members for the purpose of starting new flocks of pure-bred buff Orpingtons. Each member of the Lassen union high school poultry club has obtained fifty chicks from Mrs. DeForest's acredited breeding stock. Some of the club members will rent the mother hens until the chicks are feathered out, while others will find different hens to care for their chicks.

—FERN SHARP.

Ducks Penned and Loose

LOOSE ducks for growing and laying is the recommendation of J. W. Focht of Tulare County, but penned ducks for fattening. He has kept ducks where there is plenty of water for them, and while they are out where they can get in the water all the time they will not get fat. However, such treatment is fine to produce vigor, and all right for growing ducklings.

When you want to fatten a duck to eat that is something different. Hardly a creature will put on fat as quick as a duck, provided it is fed right and kept right. A week's good feeding will make a thin duck as fat as can be desired.

A very satisfactory method, according to Focht, is to keep the ducks penned all day, with plenty of good drinking water, but none that they can play in, and then let them out for a few minutes toward evening, so that they can wash and refresh themselves, without giving them time to start frolicking and working off their gains.

Melons are said to be fine for ducks, though not in large quantities, for chickens. In fact, melon seed are said to have caused the death of chickens.—Tulare Farmer.

All the Gold mined since 1885 would be required to pay for One Year's Dairy Products.

The United States is a great gold producing country; and yet, according to Dr. Larson, head of the U. S. Dairy Division, it would require all the gold produced in the United States since 1885, up to the present time, to pay for the farm value of one year's dairy products.

Dairying Pays Best

During 1922, grain marketed through dairy cows has returned its owner 32% more than if marketed through beef animals; 28% more than if marketed through hogs, and 41% more than if marketed as grain.

Yet in spite of this enormous production and relatively greater profit, dairying has not been overdone. Dairy products are higher in price than a year ago, there are less in storage, and consumption is steadily increasing.

Cream is Gold

If every cream separator user thought of gold in place of cream, every separator would be selected only on the basis of greatest skimming efficiency and durability, and not for some "talking point" or "low price." No one would deliberately throw gold away, and yet there are hundreds of thousands of worn-out and inferior cream separators in use today, wasting cream twice a day, 365 times a year.

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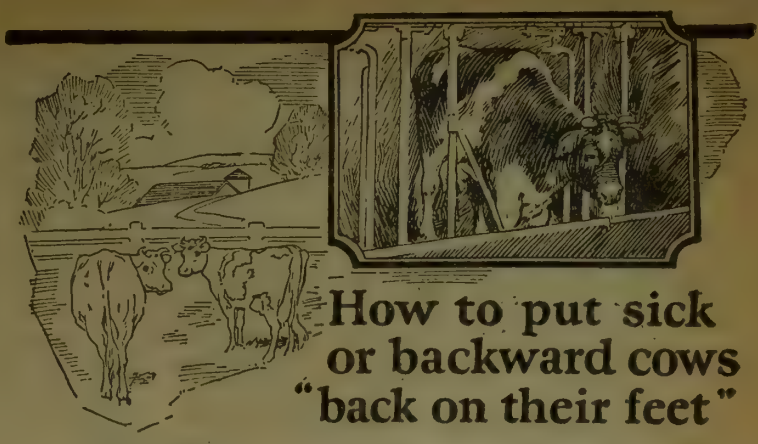

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Besides a wealth of useful general information it will tell you about the wonderful cow medicine, KOW-KARE and its use in the treatment of *Barrenness, Abortion, Retained Afterbirth, Scours, Bunches, Milk Fever, Loss of Appetite*, etc. The book also explains how cows can produce vigorous calves and remain strong and healthy. Just two tablespoonfuls of KOW-KARE two weeks before and two weeks after calving does wonders in building the perfect milk-making machine.

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Give Kow-Kare a trial on backward milkers. Feed dealers, general stores and druggists sell the large package, for $1.25; medium size 65c. If dealer is not supplied we will mail, postpaid, on receipt of price.

DAIRY ASSOCIATION CO., Inc. Lyndonville, Vt.

Wholesale Distributors of Kow-Kare and Bag Balm for California,
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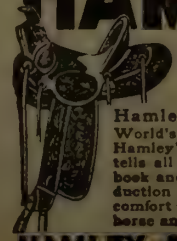

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WANT to hear from owner having farm for sale. Give particulars and lowest price. JOHN J. BLACK, 110th Street, Chippewa Falls, Wisconsin.

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNown, 367 Wilkinson Bldg., Omaha, Neb.

NURSERY AND GARDEN STOCK

BERRYMAN'S Bushes Bear Big Berries. You read the illustrated editorial in this magazine of Dec. 24 under above heading. Write for prices on Mammoth Thornless Blackberry and the New Del Rosa Red Raspberry plants. E. C. Berryman, R. 2, Highland, Calif.

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CARMEL MAMMOTH BRONZE TURKEYS, BEST IN CALIFORNIA; GOLDBANK-COPPER KING STRAINS; BABY TURKS AND EGGS. WONDERFUL FOUNDATION STOCK AT REASONABLE PRICES. ORDER NOW. Casa de Rosas, Carmel-by-the-Sea, Calif.

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"BOB" JONES' CORNER
Little Stories of Farming

By ROBERT E. JONES

THE MORE ALFALFA, THE BETTER—It is a good sign for the prosperity of a community when alfalfa is planted. D. N. Dorman of Los Angeles, head of the great Crescent Creamery organization, tells me there are increased plantings of alfalfa in the Imperial Valley. More alfalfa means more dairy cows, and dairy cows mean the building up of the land. Imperial can grow cotton, and this is no fling at a legitimate industry. But it is fair to say that Imperial will get along better year in and year out with more alfalfa and more dairy cows. Sad experience is the best teacher.

BOB JONES

FARMERS AT SACRAMENTO

We often hear of the "Farm Bloc" in Washington. To most of us, this public notice of the strength of the farmer at the National Capitol indicates the farmer is taking things into his own hands. Politics touches all of us, and the farmer must be in to get fair recognition; shrinking violets are beautiful, but usually they are plucked. Now that the California Legislature is in session, it is well for the California farmer to know that he is efficiently represented at Sacramento; there the "Farmers' Legislative Committee" is established, with R. N. Wilson on the job. Wilson is well informed, both as to the needs of agriculture and as to methods of getting these needs before those who can furnish the cure. He is aggressive and diplomatic and the right sort of a man to have representing the farmers' interests. He is a broad-gauge fellow, who can see the welfare of the State first, as every farmer wants him to see, but who also has a keen smell for bugs in bills.

THE FARM COLONIZING PROBLEM—George Kreutzer is in the East looking over the field for settlers to buy land at Delhi, the California State Colony. Dr. Elwood Mead, the father of the State land settlement idea in this State, sent him there to interview some of the prospects who have asked about California farms. At the same time a number of big land owners in California are trying to get together in an association which proposes a joint effort to attract settlers from the East. These men represent the projects that have the approval of the State Real Estate Commissioner. J. V. Mendenhall of the Holland Land Company, H. B. Klingensmith of the Sutter Basin Company, L. A. Nares of Fresno and Bruce Cornwall of San Francisco are some of the leaders. This is a good sign—the effort of big land companies to get together to work out a sound scheme to put practical farmers on California lands. The very fact that they have been able to sit down at the same table and talk it over is a good sign. It is important that we get good farmers for California and induce them to continue here in the particular branch of agriculture with which they are familiar. It does not help much to set a good Wisconsin dairy farmer to growing oranges; he should stay with the dairy.

PIGS AND THE WAR

Pigs were responsible for the great World War, according to S. Zekitch, a Serbian student at the University of California. Serbia and Austria-Hungary quarreled for the decade before the war over the hog business, and it was this bitter rivalry that ultimately touched the spark that started the war, he asserts.

TO ENGLAND FOR SETTLERS

British Columbia has gone to England for settlers. Hon. T. D. Pattullo, Minister of Lands and Forests, points out in England that British Columbia has some 200,000 acres in the Stuart River district open for settlement at prices ranging from $2.50 to $5 an acre, and fruit land in the Southern Okanagan district at from $175 to $350 an acre. Settlers with $2500 capital are wanted.

MERRITT HOLDS THEM

Rice growers of the Sacramento Valley are passing the molasses to Ralph P. Merritt, formerly Food Administrator of California and formerly a number of other useful things, for holding the marketing organization together. Merritt recently published his report showing the association is in good shape. The yield and quality of the crop this year both are reported good. Prices for paddy have been at from $2.35 to $2.50, and a number of good sales have been made through the organization. Merritt has been a big man for the rice organization because of his strong personality and also his high standing at Washington. Rice is a difficult crop to handle through a co-operative organization, because the market is largely controlled by the Orient, where labor is cheap. The association rapidly is working toward a quality product, the standardization of grades and the time when California rice may be marketed on quality.

THE EMPIRE OF IMPERIAL

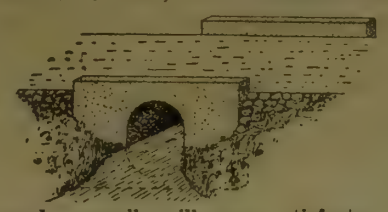
Recently I made a trip into the Imperial Valley. The thing that strikes me is the futility of other parts of California trying to grow winter vegetables on a commercial scale in competition with Imperial. January in Imperial reminds one of April in the Sacramento and San Joaquin valleys, and the nights are not so cool. It seems that down in the Imperial deciduous trees and vines are never quite sure as to when they should shed their leaves, for the winter months are so much like summer; even the human being who has a calendar about him doubts the figures. Imperial is truly a wonderful county, with opportunity for development beyond the dreams of the most ardent booster. It has been a bonanza country. But I learn in talking to the farmers, bankers and business men that those days rapidly are drifting away. What the valley needs—and the era seems to be coming—is more farmers who will make livestock raising and dairying their major activity and use a portion of their acreage to grow annual crops, such as lettuce and cantaloupes. The dairy cow is needed, not only as a stabilizer, but also to furnish fertilizer.

Concrete Culverts

FOR both farm use and public roads concrete is material widely used for permanent culverts.

The illustrations show a simple form or design for a road culvert. It holds the road bed at the sides as well as supporting it.

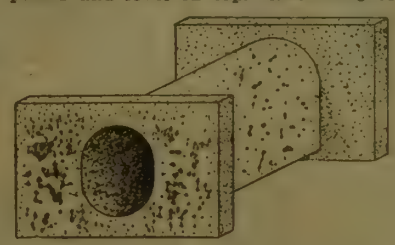
Concrete for culvert building should be made somewhat richer than for ordinary farm walls or foundations. A mixture of 1-2-3, if the materials are



good, generally will prove satisfactory—with a top coating of 1 part cement to 2 parts fine clean sand, troweled on the exposed parts while the first work is still damp.

A wooden form is necessary to arch over the opening. Circles or half circles are cut out of inch boards and placed in the ditch or open drain. Then boards are placed on the round disks to form the sides and top of the arch. These boards should be cut to even lengths to butt against the end boards.

The ends are built up to the top of the intended wall at each end of the culvert. These end forms are made plumb and level on top. Each side of



the road the form is made the same height. Then the inside forms are set against stakes placed from eight inches to a foot inside of the outer form boarding, to make the side walls the proper thickness to match the size of the culvert and the width of the road.—HERBERT A. SHEARER.

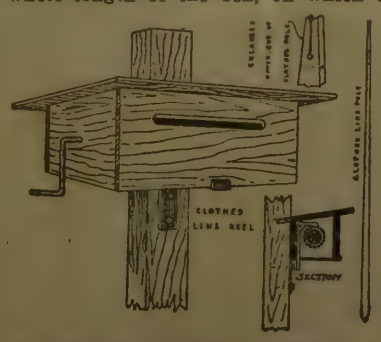
Clothes Line Reel

A SMALL manila rope makes the best clothes line, but it will not last long if left out in all kinds of weather.

The drawing shows a neat, weather-proof box with a reel to quickly wind the line on a roller, where it remains ont of the dust and rain until wanted.

The box is two feet by three feet, and one foot deep inside. The weather and water-proof cover lifts off to get at the roller when necessary; it is held in place by cleats that fit either inside or outside the box.

There is a wooden roller, about four inches in diameter, that reaches the whole length of the box, on which to



wind the line. The slot in front of the box is two feet long, so that there is a margin of six inches at each end to prevent the line from running off the ends of the roller. There is a ratchet and pall at the crank end of the roller to hold the line and to stretch it taut by straining on the crank after the line is looped over the pins in the clothes line posts.

After stretching, the ratchet holds the entire line without any other fastening.

All of the posts should be set in concrete, with strong cross arms bolted to the posts.

Clothes poles should be of light, straight-grained wood, made smooth, eight feet long, with a half-inch auger hole, bored four inches from the top. A narrow slot, cut with a rip saw, lets the line down to the auger hole.—H. A. SHEARER.

Worth 50 Cents a Chick

Free Advice From Successful Poultry Woman Leaves No Excuse for Losing Your Hatch

I would like to help poultry raisers, especially the women, save their baby chicks. I used to lose most of my hatch until I found an easy and simple way to hatch strong chicks, prevent white diarrhea and other chick diseases, and raise 98% for feeding or laying. Every chick you lose really costs you 50 cents. So many people, knowing my success, asked me to tell them how that. I printed the directions in a little book that I will send you free. It isn't a bit complicated or troublesome to read. Just send name today, a postcard will do, and I am sure this information will be of great help, and I will be mighty glad to do this for you. BESSIE B. CARSWELL, The Poultry Woman, 218 Carswell Building, Kans. City, Mo.

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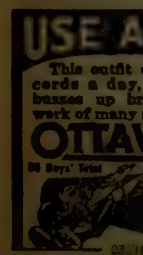

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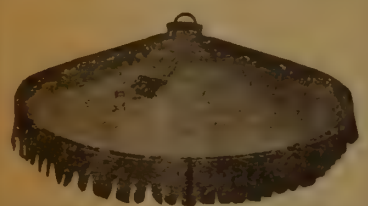

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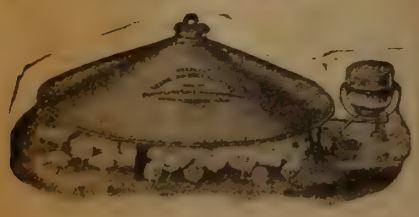

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What Does a Post Hole Cost?

ASK the rancher who has a wooden fence around his 40, 80 or 160-acre farm what it has cost him for post holes, and the chances are he will tell you he has no idea, but that it was "a-plenty." If he will take the time to analyze his expenditures in connection with installing and maintaining these wooden fences, he will be amazed at what the item of post holes alone has amounted to, writes a subscriber who has made a study of this question. The labor cost on the average California farm is estimated at 25 cents for each hole, or about $13 to enclose one acre.

A manufacturer of steel posts points out that the labor cost of installing the posts for an acre, exclusive of setting corner posts in cement, may be as little as $1. He asserts the average man can drive from 200 to 400 of the steel posts in a day (they require no digging of holes), the work accomplished depending, of course, upon the nature of the soil and topograpy of the land.

The steel fence, of which there are types and forms adapted to every farm requirement, is rapidly increasing in popularity. It is easily and quickly erected, handsome in appearance, practically rustproof and, best of all, lightning proof. There are no holes to dig, except at corners, for setting corner posts and braces. All the other posts are quickly driven by means of a steel sledge. Anchor plates, riveted to the posts, hold them securely in place after being driven to the required depth. Once the posts are driven, it is comparatively an easy matter to stretch the fencing, tie it to the posts with special wire locks and the job is completed. Such a fence, it is pointed out, is hog tight and rabbit proof, as well as very attractive.

The increased sale value of a well-fenced farm is unquestionable. The buyer feels the owner must think well of the investment or he would not have gone to the expense of putting a permanent fence around it.

Bee Notes—Without Stingers

By J. D. BIXBY SR.

ANSWERING BEE QUESTIONS

The editor of this department will be glad to answer any bee questions through the columns of Orchard and Farm. Personal answers may be obtained by mail when time-saving is essential. My letters may smell of the smoker or bee-glue, as I still manage 300 colonies of bees.

KILL BEE ENEMIES

Swallows, lizards nd toads destroy many bees. Kill these pests with a small rifle or shotgun. A lizard will plant himself in front of the entrance to a bee-hive and snap up the nectar-laden bees as fast as they arrive. Lizards may be good for the garden, but not for the apiary.

SORT OUT POOR COMBS

Sort over the empty combs, sending all poor ones to the wax melter. One keeper sorted out over 700 inferior combs; most of these were very black or contained a large percentage of drone comb. He had the wax made into foundations and sold at a price which netted 42 cents per pound for the wax.

U. S. IMPORTS HONEY

Porto Rico and Hawaii shipped into the United States during August, 1922, 272,000 pounds of honey and 12,000 pounds of beeswax.

STAR THISTLE HONEY

A Butte County subscriber writes: "Star thistle makes delicious honey, which compares favorably with sage honey for slow candying and staying qualities. Pure thistle honey does not candy the first year. It can be eaten 365 days in the year without claying. It is of a greenish-yellow color, which renders it unpopular for bottling, but its superior quality more than makes up for its poor color."

MAKE A FRAME CLEANER

It pays, and pays big, to clean all the bur-combs and bits of wax from the tops and end-bars of frames. This not only facilitates handling honey in the busy season, but also saves the lives of hundreds of bees that might otherwise be crushed. An ordinary barrel-head scraper filed down to a tongue, just long enough to reach to the lower surface of the top-bar, say three-quarters of an inch, and the width of the space between the top-bars make a good cleaner. This leaves a wing on each side of the central tongue, so that two top-bars and the space between are cleaned at one sweep. The bees can be smoked down and the bur-combs quickly removed. Two persons can do this work to better advantage than one. Enough wax is generally secured to pay the cost of labor.

TRAP CATCHES HONEY THIEF

A Riverside County beekeeper, whose apiary was being raided by some kind of a marauder, set a bear trap and captured a man whose leg was broken by the trap.

BEE PRICES ARE LOWER

Bee prices are about 25 per cent lower than last season. Two-story, ten-frame colonies in good hives, new, are selling at $7.00 to $7.50 each. Ordinary ranch bees are changing hands at $3.00 or less. Hives and fixtures are slightly higher priced than a year ago, because the cost of both labor and lumber is greater than a year ago.

KEEP HIVE ENTRANCES CLEAR

Grass grows rapidly at this season and hive entrances are apt to become obstructed by such growth. Take a smoker and a sharp sickle and clear a small space in front of each hive. A little later a mattock or spade can be used to enlarge this space to about two feet square. If the grass gets too high the scythe should be used to cut grass between rows of hives. Nothing frays out the wings of worker bees quicker than flying through tall grass to reach the hive entrance—and a bee with damaged wings is no better than a dead one.

BEES' SPRING HOUSE CLEANING

Get the ranch bees in good shape for their harvest. Don't be afraid of them. A good wire bee hat, gloves that fasten tightly above the wrist, leggins, a good smoker and the selection of a sunny, warm day, will insure against stings.

Clean off the bottom boards and see that no spiders have located among the combs. Leave the entrance rather small and give the bees free access to the super. They will need no more attention for a month, except the feeding of sugar syrup if they run short of supplies.

Citrus Crop Large

(Continued from Page 9)

ala, which have a combined capacity of nearly a million feet of lumber daily. The exchange also owns extensive adjacent forests.

Only a small per cent of the lumber sawed by the exchange sawmills is suitable for boxes, which are made of the choicest California white pine. Large quantities of box material are purchased from other sawmills, the total amount required for the present season's crop amounting to 3200 carloads, enough to make 17,000,000 boxes. Exchange members are using 350,000 picking boxes, which are made of heavy material with reinforced corners.

From 20 to 25 carloads of box nails are used each year in making boxes to hold Sunkist fruit. These nails are made from Colorado iron and shipped here from Denver.

MANY TONS OF "WRAPS"

It is hard to think in ton terms of the little sheets of tissue paper in which oranges and lemons are wrapped, yet many tons are required for this purpose by exchange growers. These wraps are manufactured by Washington paper mills and sold by a Los Angeles firm.

The exchange's supply company furnishes growers with spray material, fertilizers, cover-crop seed, and a great variety of other articles needed in the citrus industry. The extent of this merchandising department is indicated by the fact that such things as auto tires are sold by the exchange. It has not yet been definitely decided, however, just which articles should be handled by this growers' association.

Spring Spraying

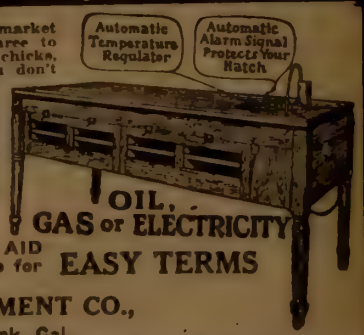
(Continued from Page 3)

by means of an oil emulsion spray in the winter or early spring. Miscible oil, a term applied to certain forms of oil emulsion containing carbolic acid, is very satisfactory. Lime sulphur is a good remedy for San Jose scale and for brown mite, but is of little use in controlling black scale and other lecanium species.

In conclusion there are three spray materials in general, that are of importance in the spring spraying program: Lime sulphur, Bordeaux mixture and miscible oil. Peaches should be sprayed with lime sulphur annually as the buds are swelling in the spring; apricots may be benefitted by an application of Bordeaux mixture at the same time; other kinds of trees which may carry an infestation of some species of scale insect or brown mite in the egg stage, should be sprayed with oil emulsion.

GET $1.00 to $3.00 per Doz. for YOUR EGGS

Why sell your eggs on the cheap Spring market when you can hatch them and make three to ten times as much profit selling baby chicks, broilers, fryers, roasters, pullets? If you don't produce any eggs yourself, buy them from us or your neighbor and hatch and brood in the famous ELEC-CHIC incubators and brooders, and make as much as $2 profit on each dozen eggs you handle. ELEC-CHIC is simple, easy and inexpensive to operate. Perfect automatic control of temperature, moisture and ventilation. Automatic Alarm Signal protects your hatch or brood.



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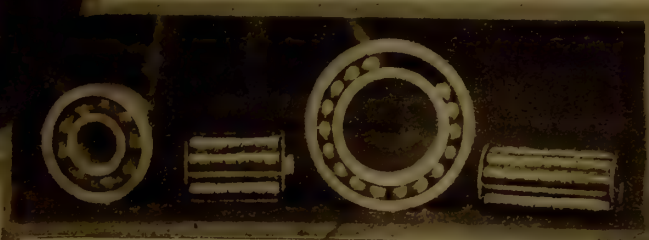
Overhauling the Tractor.

AFTER a season of hard work, the tractor deserves at least a thorough inspection, and probably some mechanical attention. The illustrations show some of the points to observe in overhauling. Photographs were taken by G. L. Goodmanson, ORCHARD and FARM photographer, through the courtesy of E. J. Stirniman, in charge of tractor schools for the Agricultural Engineering Department, University of California.—*Herbert A. Shearer.*

Showing effect of bad piston rings, which reduce compression, waste power, dilute oil and collect carbon.



Roller and ball bearings should be taken out, cleaned and examined for cracked or broken parts. There is no part of a tractor that cannot be removed, although only an expert should take apart the delicate magneto.

Fitting new pistons in rebored cylinders. This tractor owner is scouring the pistons by hand to make a more perfect fit and to allow for heat expansion when the engine is in operation. Machine work seldom leaves cylinders sufficiently smooth.

The crank shaft should be taken out and cleaned and the journals carefully calipered to see if they have worn true.

The cam shaft is the boss of the engine and should be examined carefully to see if all cams point in the right direction, properly to time the feed and exhaust of the motor. Look for soft cams that have become worn. The boxings and gears also need thorough inspection.

Cutting carbon loose from the cylinder head with a putty knife. This operation needs to be performed several times a year on a hard-working tractor. Carbon is unburned fuel, a waste and a nuisance. It causes much serious trouble if not given attention.

Grinding and setting valves. This operation should be performed with a backward-and-forward motion, rather than a continuous turn in one direction. See that the valve spring stands straight with the stem. The special tool shown above is not essential. A stick or rod with two prongs may be rolled between the hands.

Examining a timer. This one proved to be dirty and greasy, but not badly worn. A little gasoline as a cleanser sometimes prevents damage.

Examining carbureter. The fine wire sieve should not be allowed to clog up or become broken.

Auto Trades Need Men

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I consider your training was worth five years' ordinary shop experience to me in quick advancement.

Please give my best regards to all the instructors. Yours very truly,

PAUL BRIGGS.

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Dept. 73, 811 So. Figueroa St., Los Angeles.

Wright D. Fernley,
National Graduate

Made His Dream Come True

Increased Earnings 100 Pct.

Bountiful, Utah, Oct. 2, 1921.

Mr. J. A. Rosenkranz, President,
National Automotive School, Los Angeles.

Dear Mr. Rosenkranz:

I have been talking things over with Mother tonight and thinking of the two short years ago before I attended your school. I well remember how I used to dream of earning 75c or $1.00 an hour and of paying an income tax, and now all my dreams have come true.

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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

FEBRUARY 25, 1923

Woman Develops Antelope Valley Ranch

"She's Too Busy to Be Lonesome"

By O. H. BARNHILL

FROM a life of leisure in Boston and Virginia to stock and hay ranching in the Antelope Valley, Southern California, was quite a change for a woman of culture and refinement, but Miss Lydia G. Weld negotiated the transfer successfully and happily. How about loneliness?

"Too busy to think of such a thing," smilingly replied the manager of the Weld ranch, looking out over the flocks, fields and orchards. "Farming, I find, is intensely interesting, with something doing all the time. On a place like this there is surely no lack of variety, which they say is the spice of life."

Miss Weld's venture resulted from a trip which her brother, Rev. George Weld, made to the Antelope Valley five years ago. It was in the springtime, when the valley is beautiful with wild flowers, blossoming trees and green fields. The reverend gentleman, who is rector of the Episcopalian church at Montecito, fashionable suburb of Santa Barbara, was so favorably impressed with the valley that he purchased 400 acres of sage brush land ten miles west of Lancaster, and sent for his sister to superintend the task of transforming the virgin soil into a productive farm.

FARM ADVISERS PROVE HELPFUL

Lack of agricultural knowledge and experience did not daunt the Eastern lady, who donned khaki dress and stout shoes, rolled up her sleeves and went to work. Luckily, she had a capable foreman. From him and the efficient Los Angeles county farm advisers Miss Weld learned the useful art of governing growing things. A housekeeper looks after indoor duties, leaving the mistress' spare time free for reading and recreation. Rev. Weld expected to take his sister's place on the ranch during part of the summer months, but found his ecclesiastical duties too heavy to permit of prolonged absence.

How have the many farm problems been solved by the lady superintendent and ministerial owner? Possibly you, gentle reader, contemplate conquering the desert and making it blossom as the rose—or alfalfa. Let us take a look at the Weld ranch and see if we can pick up any profitable pointers.

DEVELOP IRRIGATION WATER

The first thing to provide was water. Thirty years ago an army of homesteaders, encouraged by a few exceptionally moist seasons, filed on a good share of the Antelope Valley and tried dry farming, with disastrous results. Then they experimented with pump irrigation, but failed because the motive power—wind—was entirely inadequate.

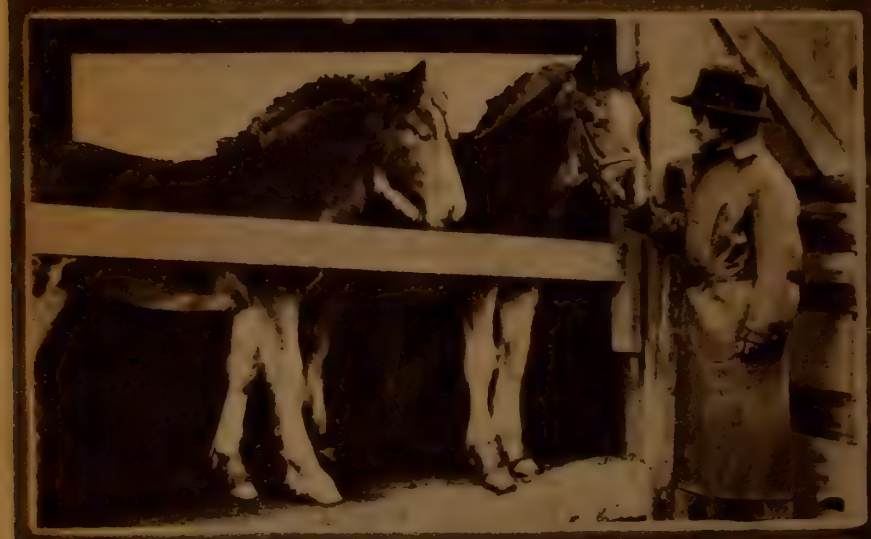
Strong winds are common in that part of the country, but cannot be depended upon, since there are calm spells when windmills do not lift enough water for livestock. Electric power lines had not reached the valley thirty years ago and gas engines had not been invented. The homesteader army therefore was forced to move on, sadder and wiser, convinced that the time had not arrived for the development of the valley.

The Welds have one 10-inch well 450 feet deep, on the east eighty, and a 16-inch well 550 feet on the home half-section. The casing for the latter cost a mint of money, having been purchased at war-time prices, but provided passageway for an unlimited supply of life-giving liquid.

Two reservoirs were constructed, one a hundred feet square, the other 200 by 250, and about eight feet deep. The bottoms were cemented with sticky adobe soil. *(Continued on Page 13)*

Here is a winter view of the barn, bunkhouse, pumping plant and a portion of the large reservoir, which covers over an acre of ground.

Miss Lydia Weld and one of her pets. She usually is accompanied by one of her fine collie dogs.



Two of the four splendid Belgian colts which are being raised to replace the work horses on the Weld ranch. The alfalfa crop, however, is always moved to market by auto trucks. No barbed wire fencing is used, because of the danger of injury to livestock.

This is Jake, the big black billy goat, and part of the flock of sheep, which twice a day he leads to pasture and brings safely home. The coyotes are all afraid of Jake.

Four hundred tons of baled alfalfa hay is the capacity of this barn, which also shelters the work horses, milk cows and much farm equipment.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
FEBRUARY 25, 1923

A New Marketing Association Is Launched

Southern California Peach and Apricot Growers Organize—Determined to Secure Fair Prices for Their Products—Plans Now Perfected

By ROBERT W. HODGSON

Agricultural Extension Service, University of California

OUT of the unsatisfactory experiences of the past three years, during which Southern California growers of canning peaches and apricots have been receiving from one-half to two-thirds the price paid for the same grade of fruit in other parts of the State, have arisen definite plans for a new marketing organization.

ROBERT W. HODGSON

Although previous efforts to organize such an association have met with little success, the seriousness of present conditions and the character of the men behind the new movement, render it practically certain that a grower-owned and controlled selling agency soon will begin to function.

Of all the marketing problems affecting deciduous fruits in the southern part of the State, the selling of canning peaches and apricots has occasioned the most concern to growers and at the same time has been the most neglected.

The handling of citrus products, apples and dried fruits has been worked out through such organizations as the California Fruit Growers' Exchange, the Deciduous Fruit Distributors, Inc., and the California Prune and Apricot Growers' Association. But with more than 50,000 acres now in peaches and apricots and more being planted every year, the problem of profitable disposition has grown to a point demanding satisfactory solution.

MUCH MONEY AT STAKE

To reach this solution in the case of a crop, the value of which was estimated for the past season at more than $6,000,000, is no small task. But the seventeen men constituting the organization committee, which has been at work for two months under the leadership of Dr. H. S. Gordon of Nuevo, believe they have accomplished their purpose.

The organization as planned will be a "non-profit, non-stock agricultural co-operative marketing association," incorporated under the laws of California, with membership limited to growers of apricots or peaches.

NAME IS SELECTED

The name will be the Southern California Apricot and Peach Growers' Association. Its business activities will be confined to Santa Barbara, Ventura, Los Angeles, Orange, San Bernardino, Riverside, San Diego and Imperial Counties, with headquarters in Los Angeles.

The new organization will confine itself to the business of marketing the canning of apricots and peaches of its members and will commence business provided 75 per cent of the canning apricots and peaches or either of these fruits is under its control prior to March 31st of this year.

Each member will have one vote. Provision has been made for the holding of the first general meeting immediately after the last day of March, for the purpose of electing a board of seventeen directors who will be chosen from among the members, four from a district made up of Riverside, San Diego and Imperial County, five from Los Angeles and Orange Counties, and four from Ventura and Santa Barbara Counties.

BOARD WILL HAVE CONTROL

This board will have control of the business of the association, subject to the by-laws which will be adopted at the organization meeting immediately following the membership campaign.

In addition to stabilizing the price, the growers plan to standardize their product and to advertise Southern California as a producer of quality apricots and peaches, believing these measures will encourage the growers in their efforts to produce quality fruit by the assurance of fair returns and at the same time enable the canners to operate their plants to capacity on good fruit bought at fair values. Price fluctuations during the canning season have been disastrous to growers and canners alike in the past, and that canners now without plants in Southern California will be encouraged to enter this field is the belief.

The leader in the movement is C. G. Hamilton, for many years connected with growers' co-operative marketing associations in the capacity of organizer and manager of the Hemet Orange Growers, Hemet Walnut Growers and Hemet Apricot Growers' Association, and for the past six years a director of and in charge of the Southern California district for the California Prune and Apricot Growers' Association. Mr. Hamilton is acting as secretary of the organization committee.

BIG MEN BACK MOVEMENT

Prominent among those interested is Dr. H. S. Gordon, a grower of Nuevo, who is serving as chairman of the organization committee, and is well qualified for this position, having been in charge of the growers' association of his community, which for a number of years has sold the products of its members.

The Los Angeles County members of the committee are: R. L. Owens, Van Nuys; Chas. B. Sexsmith, Owensmouth; Harry Lee Martin, Los Angeles; Mark Grimes, Van Nuys, and Milton Frater, Pomona, all of whom are growers well known in their respective communities.

The Organization Committee has secured the services of George E. Farrand, who is well known in Southern California as the legal adviser of the California Fruit Growers' Exchange, and of the California Walnut Growers' Association, to handle the incorporation and other legal phases.

Articles of incorporation have been filed and plans now are being formulated for active organization to begin as soon as proper authorization has been received from the Corporation Commissioner. It is expected the new organization will be ready to handle the crops of 1923.

It Pays to Hitch the Hog to the Dairy Cow

Skim Milk and Buttermilk Complete Swine Ration —How to Figure Their Value

By PROF. E. L. HUGHES

University Farm, Davis, Cal.

SKIM milk and buttermilk, we believe, are the best protein feeds for swine, especially young pigs. This is because these feeds most nearly resemble sow's milk, and contain various essential elements of growth. There is little difference in the feeding value of skim milk and good buttermilk.

In bringing 90-pound pigs up to 200 pounds, the South Dakota experiment station found that it required 315 pounds of corn and 864 pounds of buttermilk per hundred pounds of gain, while 312 pounds of corn and 859 pounds of skim milk were needed to produce a like amount of pork. The average daily gain in both cases was about one and two-thirds pounds.

The Ohio experiment station found that 100 pounds of pork were produced with 326 pounds of corn and an equal amount of skim milk. Practically the same gain was obtained with 261 pounds of grain and 789 pounds of skim milk and with 226 pounds of corn and 1128 pounds of skim milk. Each lot of 10 pigs weighed 52 pounds each and were fed 87 days. The first lot gained 1.05 pounds a day, the second 1.17 pounds, and the third 1.30 pounds.

MILK CAUSES RAPID GROWTH

The Ohio experiment indicates that the larger the proportion of skim milk fed, the more rapidly the pigs gain in weight, but the value of this feed in reducing the amount of grain required is greatest when a smaller proportion of milk is fed. If one has an abundant supply of buttermilk or skim milk, or can purchase these products cheaply, they may successfully be fed in large quantities.

Most pork producers figure that it is about right to feed three pounds of skim milk to one pound of barley or corn.

One way to figure the exact cash value of dairy by-products as hog feed, when grain is selling at a certain price, is to find out how much barley or corn the milk will replace. A summary of eight experiments where corn was fed with tankage, as compared to corn fed with skim milk to fattening pigs, shows that 753 pounds of skim milk replaced 36 pounds of tankage and 91 pounds of corn. The following table gives the results of these experiments:

Ration	Av. Daily Gain	Grain required per 100-lb. gain
Lot No. 1		
10.6-lb. corn to 1-lb. tankage	1.202	378.38 corn 35.74 tankage
Lot No. 2		
10-lb. corn to 26-lb. skim milk	1.513	287.2 corn 753.25 skim milk

Counting corn at a cent a pound and tankage at three cents a pound, the 91 pounds of grain which the skim milk saved was worth 91 cents, while the value of the 36 pounds of tankage, which the milk replaced, was $1.07, giving the milk a total value of about $1.98, or 26.3 cents per 100.

Referring to the preceding figures, it will be seen that the pigs which received milk made the fastest growth. When this advantage is credited to the milk, the latter acquires a greater value than that indicated by the amount of grain and other feed replaced, because of labor saving and other resultant advantages. It would be difficult to reduce these items to an exact dollar-and-cents basis.

At the California experiment station two lots of twenty pigs each were fed on barley, skim milk and tankage. The first lot consumed 445 pounds of barley and 666 pounds of skim milk per hundred pounds of gain, while the second bunch of shoats ate 498 pounds of barley and 19 pounds of tankage in making the same weight increase. This test would seem to indicate that skim milk is less valuable when fed with barley than when consumed in connection with corn.

Six hundred and sixty-six pounds of skim milk had the equivalent of feeding value of 43 pounds of barley and 19 pounds of tankage in producing 100 pounds gain.

Counting the barley at a dollar a hundred and tankage at three times that price, the amount of milk mentioned would be worth only one dollar, or 15 cents per hundred pounds. It should be noted, however, that—as was the case in the Ohio experiments—the pigs grew more rapidly when fed skim milk than when the latter was absent from their diet, which would indicate an actual value for this feed somewhat in excess of the price mentioned.

PORK PRICES AND MILK

Another way of figuring the value of 100 pounds of skim milk as pig feed is to multiply by five the pound price of pigs, when the milk is fed alone; if fed in connection with corn, barley or similar material, multiply by six. This method of calculating the feeding value of dairy by-products was advocated by the late Governor Hoard of Wisconsin.

According to Gurler, the value of skim milk when fed with corn equals half the market price of corn per bushel. In my judgment, however, the best way to determine the feeding value of dairy by-products is to base estimates on the average of various feeding experiments, as pointed out in this article.

Care should be taken in using milk for swine feed to see that the utensils are kept clean. Skim milk or buttermilk from cows infected with tuberculosis should be pasteurized before being fed to pigs.

With an increased number of dairy cattle in our State and with a higher milk yield per cow, it is logical to expect that more skim milk will be available from year to year. This valuable supplement to corn, barley and other feeds should be used to their own advantage by California swine raisers.

And Here Is the Evidence!

This fine pen of junior purebred barrows (Duroc-Jersey), which was part of the University of California exhibit at the Chicago International, received skim milk in conjunction with other feeds before and after weaning.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

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GEORGE GRANT, Art Director.

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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

REAL "HICKS" ARE IN CITIES

That "New York is the biggest boob town on earth" is the assertion of Raymond Hitchcock, the well-known actor—a New Yorker born and bred. "Why, if you put one of our superboobs on a train and tell him to watch for the potato trees as you whiz along, he'll do it—yes, sir, he will!

"And yet they make fun of what they call country jakes, and think anyone living outside of New York is a fool. Thousands of New Yorkers," he added, "think all milk comes from cans; they've never seen a cow!"

More truth than poetry, Raymond. We see your Western travels have broadened you a bit!

RAISINS CHEAP IN ENGLAND

If California raisins were sold in London at the same price which is being obtained for the best imported stock from Africa and Australia, growers would receive only two to five cents a pound for their product. The fact that London raisin prices today are similar to those which prevailed in the United States in 1895, indicates that foreign growers have not benefited by efficient co-operative marketing organization, according to those who have investigated the situation. The grape industry in California, had it not been for co-operative marketing, probably would have been in a state of complete demoralization today.

THE LURE OF THE LAND

In the series of posthumous lettetrs that are being published, the late Franklin K. Lane, Secretary of Interior, refers often to his desire to give up public life and retire to a little piece of California soil. Having experienced about all that's worth while of public life, he, like many others, felt the call to get back to the soil—the beginning and the end. It is just because there is in every one of us a desire to own and till a bit of land that farming news is the most interesting news of all. It is interesting to the city reader as well as to the country reader. Only, like all news, it must have that touch of humanity to be interesting, for readers are interested in life and not in lifeless statistics.—"BOB" JONES.

OPPOSITION AS A TONIC

"Don't be afraid of opposition; no enterprise worth while ever has thrived without it," said J. A. McNaughton, general manager of the Los Angeles Union Stock Yards, in a recent address to newspaper men. "Competition is the life of trade; out of controversies grow great results; a good fight is a tonic," epitomized the dynamic head of this new enterprise, upon which Chicago capitalists have expended more than $1,000,000. Some difference of opinion, indeed, has existed over the advisability of having a central market at Los Angeles, but receipts of live stock to date have exceeded the expectations of the management, Mr. McNaughton stated. Plans have been laid for the expenditure of many millions of dollars more in creating a central manufacturing district similar to that in Chicago, which will be adjacent to the "Yards."

"What's New?"—Keeping Abreast of Agricultural Progress

Bulls Boost Butterfat

BY the use of a purebred sire it has been found possible to increase the average butterfat content of milk of the herd from 3 to 4 per cent, besides greatly augmenting the flow. Because of these and other advantages, Washington farmers placed 220 purebred bulls in their herds the past year.

Team Hauls Carload of Wheat

A 30-HORSE team driven by Ralph Moorehouse for Steiner Brothers recently hauled in eight wagons 1144 bushels of No. 1 hard wheat—enough to fill a railway car—over country roads twenty-two miles from the Buffalo Hill district to Vulcan, Alberta. This unusual feat of driving was witnessed by 1500 persons who gathered at the edge of Vulcan to witness the unusual sight.

Important Reservoir By-products

DUCK hunting, fishing, boating and bathing are some of the pleasure by-products of a farm reservoir. The men especially enjoy bathing during the summer months. A flock of wild ducks sometimes settle on the water, and some farmers establish wild flocks from captured young, clipping their wings when they are old enough to fly. Fish will escape into irrigation ditches and afterwards die, unless the reservoir outlet is protected with a screen.

New Oregon Butter Records

VIVE LA FRANCE, the celebrated Oregon Jersey cow, recently completed her sixth consecutive test period, during which she produced about 900 pounds of butterfat. This makes a total of 5314 pounds to the credit of this remarkable animal, more than any other cow has ever produced in six consecutive years. Darling's Jolly Lassie, a senior three-year-old Jersey, owned by Pickard Brothers, of Marion, Ore., has produced 1050 pounds of butterfat in a little over 11 months, exceeding all Jersey competitors in her class.

"Horsetail" Switches Farmers

"A WELL-ESTABLISHED infestation of 'horsetail,' also called joint-grass, not only takes the crop, but also depletes the vigor of the land, robs the soil of moisture, lays a mortgage on the land for an indefinite term of years, and claims all the labor and expense of attempted cropping as interest," declares J. B. Hickman, Monterey County horticultural commissioner. This weed pest may be eradicated by keeping the stems cut off, but it must not be allowed to grow above the ground.

Cull Lemons are Salvaged

A LARGE tonnage of cull lemons was salvaged the past season by the Exchange Lemon Products Company at their Corona plant. Essential oil of lemon is made from the peel, and citric acid from the juice. E. P. Cassel, field manager of the company, is of the opinion that citric acid never seriously will compete with fresh lemon juice. There is a wonderful field for making pectin from cull oranges, Mr. Cassel believes, as a single Los Angeles firm uses 15 tons of this chemical yearly in the manufacture of jelly and similar products. More than 6,000,000 pounds of citric acid is used annually in the United States, principally for beverage purposes. The Corona plant extracted about 1,000,000 pounds last year.

Cow Enters 1000-Pound Class

ARALIA DE KOL MEAD 2d, a Holstein cow owned by Morris & Sons of Woodland, has recently finished a 365-day test with a record of 26,938 pounds of milk, which contained 1304 pounds of butter. This entitles her to a place among the nine California Holsteins in the 1000-pound class. There are only 75 cows of all breeds which have produced this quantity of butter in one year.

Aralia is 7 years old and weighs 1700 pounds. During the last eight months of her test she ran in the pasture with the rest of the herd and was milked four times a day. Her grain ration consisted of ground barley, oats, bran and linseed-oil meal, 12 to 20 pounds a day. This was supplemented with all the alfalfa hay she could eat and roots and corn silage during two-thirds of the year.

Prevents Bee Poisoning

THE spray poisoning of bees may be prevented by mixing with the spray solution a preparation called "milkol" at the rate of one pint of the latter to 100 gallons of the former, according to B. A. Slocum, extension specialist from the Washington Agricultural College, who reports that H. N. Paul of Mabton, saved nearly all his bees in this manner the past year.

Two hundred colonies yielded an average of 96 pounds each of extracted honey. It is believed that no bees would have been lost if there had been enough milkol to supply all the orchardists within one and one-fourth mile of Paul's bees.

The blooming alfalfa beneath the fruit trees was covered with bees, but as the spray rigs moved along the bees flew away and did not return until the spray poison had disappeared, because the spray solution had been treated with the preparation mentioned. It is claimed that beekeepers of the Yakima Valley lost $200,000 worth of bees and honey in 1921, as a result of spray poisoning.

New Stump Burning Method

THE new Zyssett stump burning system is attracting a great deal of favorable attention in Oregon, where the agricultural extension service of the O. A. C. at Corvallis, has been putting on a number of successful demonstrations. One of these tests was held in Tillamook County, where there was three inches of snow on frozen ground and a strong wind blowing. Great fir stumps 6 to 12 feet through were burned successfully. A hole was put through a 12-foot spruce stump which many considered too wet to burn. The Zyssett burner consists of a heavy metal furnace, into which is fitted a pipe to force the fire through the stump. Dirt is banked around the base of the stump, as in the char-pitting method.

Threshed Alfalfa Is Popular

THRESHED alfalfa is being used as a combination litter and fertilizer by Edward Insley, of Covina, whose hen and orange ranch has attracted the attention of leading agriculturists in America and abroad.

"I have been able to buy threshed alfalfa for $14 a ton, delivered, which is cheaper and much better than oat, wheat or barley straw," stated Mr. Insley. "While it may not be as valuable for fertilizer as straight alfalfa hay, it makes an excellent litter and undoubtedly is very beneficial to the orange grove."

The rapid growth of the alfalfa seed industry in the Southwest has made available large quantities of the threshed legume, which is finding ready sale at a price netting a good return to the grower in addition to his revenue from seed. Fruit growers, confronted with a shortage of bean straw, are willing to pay a good price for the material, but few secure the double benefit obtained by Mr. Insley, who is successfully combining orange growing and egg production on his interesting Southern California ranch home.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

X—J. D. BIXBY SR.

MR. BIXBY is recognized as one of America's leading authorities on bee keeping. His eighteen years' experience in California qualifies him particularly to write for local producers. His articles are instructive to the novice and of intense interest to the commercial apiarist as well.

J. D. BIXBY

Since 1886 Mr. Bixby has been engaged almost continuously in commercial honey production in Iowa, in New York and on the Pacific Coast.

He established the "Western Honey Bee," leading advocate of the industry, and was for six years its editor, making it a practical and financial success. In 1912 and again in 1919 and 1922 Mr. Bixby lectured on bee culture in the extension department of the University of California. Previous to 1918 he was deputy bee inspector for seven years.

Probably no man in California is more thoroughly informed on all branches of the honey business, from the fundamentals of production to marketing. And certainly no man writes in a more interesting and helpful style. Mr. Bixby's bee articles are another exclusive feature of ORCHARD and FARM.

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES

ASPARAGUS IN MERCED

Will Morrison, who is developing a farm along the Merced River bottoms near Snelling, is planting some asparagus. It is said that asparagus does very well in this portion of the San Joaquin Valley. Morrison is the son of a Southern California farmer who has gone North and now is aiding in the development of the great interior valley. Merced hopes to have a cannery, for a number of other farmers have planted asparagus, and a cannery is a necessary adjunct to asparagus growing. The Sacramento-San Joaquin delta now supplies about half of the asparagus grown in the United States.

A FRUIT DYE

Jay Page of Redlands, a man who has been in citrus culture and the growing of semi-tropical fruits all his life, tells me that somebody has discovered that pomegranates make a desirable dye. The work is yet in the experimental stage, but seems to promise a better market for this odd fruit, which will grow in California from Yuba County to Imperial. At this time there are very few solid blocks of pomegranates, for most of the fruit growers aim to put only a few boxes in their cars along with the staple deciduous fruits, such as pears, plums, peaches, etc. The pomegranates are used largely for table decorations, although there is a certain table demand, especially on the part of foreigners in the East.

AN IMPERIAL VALLEY HOME

W. G. Herdman of Holtville, now a successful dairyman with some fine Jerseys, many of which are purebred, was in city life for 20 years before he went to farming. With his arrival in California he settled in San Diego County and farmed for a while. But he felt that the opportunities in Imperial Valley were greater, and bought a place near Holtville. On visiting his place one is struck by the provision that has been made for comfort in a hot country. He picked out a farm with a grove of eucalyptus trees already pretty well along. In the midst of this grove he built his little home, which is a house of four rooms, surrounded by a wide, screened veranda. This cozy home is just right for a warm climate. It has an abundance of shade, plenty of openings for the breeze, and yet is far enough from the road so as to not catch the dust, which is a bugbear in Imperial. Mr. Herdman built his home for $800, and a jewel of a place it is. He also has a fine grove of trees to furnish shade for his cattle.

"LOSING" MONEY ON GRAPES

A Sacramento Valley newspaper states that the grape growers of California lost $6,000,000 this year because the grapes were not all harvested when the rains began. The statement is made on the estimate of E. E. Kaufman, of the Federal and State crop reporting service, that approximately 100,000 tons of grapes remained unshipped when the rains began. That the grape growers lost this amount of money is not literally true, however, for they never had it. And rain damage in the fall season is always a factor in the regular operation of the grape industry. If rains or frost did not come, California would be shipping grapes direct from the vines all through the winter. There is some tribute in grapes not harvested paid to the rain each season, but Jupiter Pluvius compensates for this loss in green feed for cows.

YOUR GARDEN of FLOWERS

by Helen Temple

IN MOST sections of California spring has come, and we may work in our gardens with that thought uppermost. Planting in the interior, however, is not yet as extensive as in Southern California and along the Coast. Setting out hardy seedlings, sowing in the open and preparing the beds for later planting, coupled with setting out bulbs is quite enough to keep one busy in those sections where unexpected frosts come along and nip tender plants in March or April.

HELEN TEMPLE

Slow growing plants, such as the snapdraggon, scabiosa, verbena and salpiglossis should be started in the greenhouse or under glass late this month or early in March if possible. This will give them time to develop into sturdy little plants for transplanting in May or early June. The varieties which germinate quickly, such as poppies, alyssum, etc., will do just as well if planted late in May.

Out-door sweet peas are to be planted this month. I planted sweet peas in December, January and February and expect to plant more in March of this year. Those planted in December germinated in just ten days, despite the cold nights. I have found sweet peas to be "our one best flower" for cold weather planting in the interior as well as the semi-tropical regions of California.

When following a line of planting, such as a succession of sweet peas, I put out the hardiest kinds early in the winter, following these with the giant Spencers and fancy new varieties.

BULBS TO PLANT NOW

Dahlias often are planted at this time of the year, but I have found the June-planted Dahlia almost as well developed in September as those started in February; therefore, one need not rush the season in dahlia planting. May is recommended as the best month.

The caladium with its "dignified ears" usually is used as a screen for the unsightly, although quite necessary water pipe and faucet in our garden. Caladia succeed best in a warm situation where there is an abundance of water. This plant grows readily in almost all varieties of California soils, but makes the best development in a good, rich loam that does not sour easily. Where it is frosted down in winter, it comes up again in the spring, although in milder regions it grows year after year without loss of foliage.

Fancy-leaved caladia are not hardy. They make excellent greenhouse plants and have become quite popular for window decoration. They may be planted outdoors in a protected location if they are lifted in the fall when the foliage dies down. They demand a rich, porous soil and must be kept moist. They are left in the pots when storing away in the fall, the pots being laid on their sides in a dark, frost-proof place. Re-pot in fresh soil, in the spring.

SET OUT AMARYLLIS

This is an excellent time to set out amaryllis bulbs, their growing season being from early spring until September. Do not try to force them; they have a set time for beginning growth and flowering and dying down, even in California. Use precaution in watering. When flowering begins, a little liquid manure now and then is beneficial at time of irrigation. Keep the soil moist, but not wet. They are unlike the caladium in this respect. Withhold water in the fall until the foliage dies down, then lift and store. Use a medium rich soil. They succeed best in a warm, sunny situation. The potted amaryllis is set away in the pot during the rest period; it is not necessary to re-pot oftener than every two or three years.

CANNAS IN CALIFORNIA

Cannas can't be left out of our gardens. They will do well if planted now. They thrive best in a deeply-spaded, very rich soil, in full sunshine. Plant them about six inches deep and twelve inches apart. Do not mix up your colors or the effect is lost. In our semi-tropical regions, the Coast and mild interior, it is unnecessary to lift and store cannas oftener than once in three years. However, where the frost cuts down the tops, it is advisable to lift and store the bulbs in clumps until February or March, then divide them, leaving two buds to each piece.

TUBEROSES DEMAND SUNSHINE

Tuberoses succeed best in a moderately rich soil, with protection from the wind, preferring full sunshine in the milder sections. Water moderately and keep the surface soil loose. The "everblooming" tuberose is quite as attractive as the double variety and does not die down.

The doubles die after blooming and must be replaced with new bulbs. Plant tuberoses any time from February until August. Is not necessary to lift and store the everblooming varieties unless the weather is unusually cold. I succeeded best with the tuberoses which were set less than two inches deep out of doors. Those in pots for winter blooming are not started until July or August.

German and Japanese Iris may be planted at this time of the year. They succeed best in a loose, rich soil, and must have quantities of water during their flowering season. Set them about a foot apart, covering with two inches of soil. In the interior regions they should be mulched during the winter, and if the beds are exposed to extreme heat of the summer sun provide a straw mulch during July and August. Iris should be lifted and reset every third or fourth year.

One seldom thinks of the Iris without thinking of Gladioli. Begin planting gladioli in February, and, for continuous bloom, continue planting at intervals of two weeks until July first. Gladioli are most easily grown, succeeding in any good garden loam in a sunny situation. Set the bulbs about six inches apart and four inches deep. When buds appear, water liberally. During the summer, mulch with cow manure. This furnishes protection against the sun and also provides food for the flowering bulbs.

February-planted bulbs should bloom in May. When flowers wither, cut out the stems, thus conserving all the strength of the plant toward making new bulbs. In the fall take up gladiolus bulbs, dry thoroughly and store in a warm, dry place.

POINTERS ON LILIES

Although lilies require very little attention after planting, they must be "planted right." Prepare the soil thoroughly and do not disturb the bulbs for at least five years. Proper drainage must be *(Continued on Page 12)*

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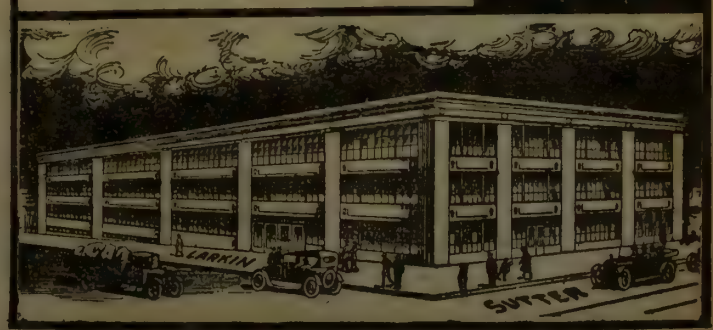

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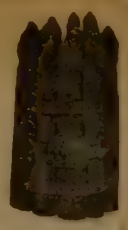

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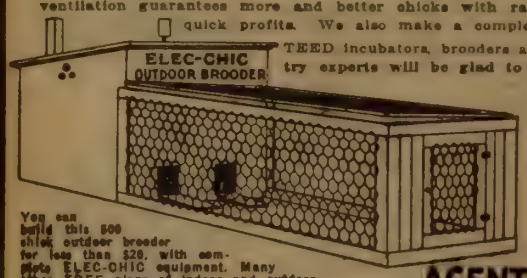

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Control Poultry Roundworms

By STANLEY R. FREEBORN
University of California Agricultural Experiment Station

THE control of worms in the flocks probably constitutes one of the most perplexing and at the same time one of the most serious problems with which poultrymen are forced to contend. The intestinal roundworm is the slender white worm the length of one's finger that is so often found in the intestine of autopsied birds. Its ally and close relative, the cecum worm, is not so well known, for although it is fully as common as the intestinal worm, its habitat renders it less conspicuous. Because of its small size, in fact, it generally passes for a young intestinal worm.

The presence of these worms, especially in large numbers, invariably causes the infested birds to be stunted, unprofitable and an easy prey to the attacks of infectious disease. This is particularly marked in the case of roup, which often clears up almost spontaneously after the victims have been treated successfully for worms. It has recently been discovered that the dreaded "blackhead" of turkeys cannot be given to healthy birds unless they are infected with cecum worms.

Adult intestinal worms deposit myriads of tiny, hard shelled eggs, which pass out with the droppings of the infested birds.

These eggs are particularly resistant to heat, cold or chemicals — so much so that no practical methods as yet have been devised whereby they may be killed and the coops or ground frequented by infested hens sterilized.

After a few days' exposure to the air there develops within the egg shell a tiny, active worm, and if the egg is now eaten by another bird, the egg hatches and the young worm begins its existence in the intestine or ceca, as the case may be.

Young birds seem much more susceptible to worm infestation than older stock, for which reason many commercial poultrymen make a regular practice of treating all pullets for worms just before they are transferred to the laying houses, a wise precaution that should be widely adopted.

Many preparations now are on the market as poultry worm remedies, and many of the standard drugs that have proved successful as vermifuges in other animals have been recommended and tried as poultry vermifuges, but none has proved as successful in the elimination of these worms as nicotine.

WET MASH UNPOPULAR

In 1916 the California Agricultural Experiment Station recommended the use of tobacco stems steeped in water and mixed into a wet mash. This treatment was found to be highly satisfactory in removing the intestinal worms, but did not materially affect the cecum worms, and on account of the combination with tap water and the heat of steeping, the amount of nicotine immediately available to the treated birds was great enough to be slightly toxic.

This, together with the prejudice against a wet mash and the decrease in egg production caused by the toxic effects of the nicotine, hindered the general acceptance of the treatment.

The next year J. J. Bergstedt, a commercial poultryman, experimented with commercial tobacco dust as a substitute for the wet mash treatment. Finding this was successful, the Experiment Station, after several trials, recommended to the poultrymen of the State that they use commercial tobacco dust as an ingredient of the mash at the rate of 2 per cent of the total weight for a period of a month.

Treatment following this general recommendation is now in general use throughout the State and has been widely advertised in all parts of the country. But, despite the large number of satisfactory trials reported from various points, an insistent minority constantly reported failures. The California Agricultural Experiment Station, which felt a certain responsibility for this type of treatment, then decided to undertake a series of experiments to determine the actual efficiency of the tobacco dusts and the cause for the failures that were constantly being reported.

A large number of birds heavily infested with worms were confined in wire bottomed cages, beneath which pans were placed to retain the droppings and any worms that might be passed by these birds. Different types of tobacco dusts containing different percentages of nicotine then were mixed with the mash that was fed to these birds.

For each type and strength of tobacco dust three mixtures were made with the mash—one containing one-half pound of tobacco dust to a hundred pounds of mash, another containing one pound and the last two pounds of tobacco dust to the hundred pounds of mash; or, in other words, ½, 1 and 2 per cent mixtures of tobacco dust in the mash.

This medicated mash was kept constantly before the birds for a month. Each morning the droppings were collected and the worms that had been expelled counted; at the end of the month the birds were killed, autopsied and the number of worms still present counted. The result of these trials showed that all the birds that had been fed on mash containing two pounds of tobacco dust to the hundred pounds of mash had been entirely freed of intestinal worms, in every case in which the tobacco dust contained not less than 1½ per cent nicotine.

HIGH PERCENTAGE EFFECTIVE

In the series where less than two pounds of tobacco dust to the hundred pounds of mash was used, only partial success was encountered except in the dusts having a very high percentage of nicotine. The result on the cecum worms was almost as satisfactory; in the 2 per cent mixtures, where the nicotine content of the dust was not less than 1½ per cent, the control averaged from 80 to 85 per cent perfect. This was rather surprising in the light of previous failures to control this parasite with other vermifuges, owing to its secluded point of attack in the ceca.

Dusts containing less than 1½ per cent nicotine were only partially successful in removing the worms, even when administered as 2 per cent of the mash. These failures of the low nicotine content dusts led to a clew as to the reported failures from the field.

Most of the commercial tobacco dusts contain, when packed for shipment, from 1½ to 2½ per cent nicotine. Exposed to the air, tobacco dust loses, at room temperature, from 10 to 15 per cent of its nicotine per month. At smaller but none the less persistent loss takes place when it is stored in the usual container—a paper sack within a burlap sack.

DUSTS PARTIALLY SUCCESSFUL

With this information at hand, many of the reported failures were investigated. A large number were caused by the use of tobacco dust left over from a previous treatment and stored for months, and even years, in an opened container.

Not a few were found to be caused by tobacco dust recently purchased that either had been held too long in the storehouses or had lacked the necessary *(Continued on Page 14)*

Nicotine Will Do the Work

AT least that's the conclusion of Professor Freeborn, who recently has conducted exhaustive tests with tobacco products for the control of roundworms. That unsatisfactory results obtained by many poultrymen have been due to faulty materials and methods is his assertion, substantiated by the important facts and figures here presented.

—*Editor.*

Solving Citrus Problems on Big Acreage

Spending Money to Make Money

THE advantage of large-scale farming, backed by ample capital, is well illustrated by the experience of the Azusa Foothill Citrus Company, which has spared neither time, labor nor expense to find out which orchard practices are most profitable on 500 acres of orange and lemon groves in Los Angeles County. Smaller operators will be interested in the conclusions reached by this big company.

By O. H. BARNHILL

"IT IS not true that orange growing is a rich man's game, but it is certainly necessary to spend money liberally on a citrus grove in order to insure profitable production."

This is the opinion of C. A. Griffith, president and manager of the Azusa Foothill Citrus Company, a corporation which has 500 acres of orange and lemon trees adjoining the town of Azusa on the east.

When it comes to spending money, Griffith ought to know what he is talking about, for the immense sums which he has invested for his company in fertilizers, tractors, frost fighting equipment and other things necessary for successful orange orcharding make the corn belt farmers who are getting into the citrus game feel that they have taken an expensive plunge.

PRODUCTION COSTS HEAVY

"Many newcomers do not realize how much money it takes to insure maximum production," explains Mr. Griffith. "The original cost of an orange orchard is so great and the overhead expense so large that unless it produces regularly big crops of high-priced fruit it is a losing proposition, as many have learned to their sorrow.

"Take the item of frost fighting, for example. Last year we burned fourteen carloads of oil in three nights, but we saved 85 per cent of our crop, which brought a fair price, because more conservative growers did not heat their orchards. This year we are equipping some of our groves with heaters of a new design, which when perfected will mean quite an advancement in orchard heating. They will consume less oil, make no smoke and—best of all—hold enough fuel to keep Jack Frost at bay until the sun comes to our rescue."

FIGHT FROST SUCCESSFULLY

The heaters mentioned were described in a recent issue of Orchard and Farm and are the invention of Paul Bulkley, who at the time of the writer's visit was engaged in working out new plans for the improvement of the heater. Distillate is used, experience having demonstrated that it is poor economy to burn crude oil, on account of the large amount of waste material which the latter contains.

"The old idea of making a smoke smudge has been found to be all wrong," declares Mr. Bulkley. "The latest improved heaters make practically no visible smoke and produce the maximum amount of heat from a given quantity of fuel."

The Foothill company's expenditures for fertilizers also are considered excessive by many less successful orchardists. The idea that an orange tree is a delicate feeder finds no favor with Mr. Griffith and Charles Stewart, his capable superintendent. They buy both manure and commercial fertilizers by the carload and spread them on thick, considering the fertilizer bill the last thing to be cut by the knife of economy.

LIBERAL MANURING PAYS

On some of the groves eight inches of cow manure is placed in deep furrows eight inches wide on the bottom. These large furrows are opened with a double mold-board plow, which is preceded by a subsoiler. The latter cuts off many roots which throw out masses of rootlets into the trenchful of manure and feed directly upon the nutrition contained therein.

The furrows are run midway between the rows of old trees and close to the young trees, the idea being to put the plant food where it will do the most good. On other blocks the manure is scattered on the surface of the ground. This work is done in the summer.

Commercial fertilizer is applied broadcast in the spring, then disked and plowed into the soil. Enough blood, tankage, fish meal, guano and cottonseed meal to make two pounds of nitrogen per tree are used, in addition to the stable manure.

Partial view of grove, showing protected young trees and new district high school.

Filling lug boxes with large, luscious Azusa Foothill oranges.

Manager Griffith and Superintendent Stewart inspecting oranges.

Secretary Murray Vosburg checking up shipment of Red Shield lemons.

On some of the lighter, sandy soils two cover crops are grown each year, one of purple vetch or melilotus indica in the winter and lima or black-eye beans in the summer. Vetch or melilotus are grown on the heavy soils.

SWEET CLOVER COOLS GROUND

Sweet clover, melilotus alba, has been tried with good success as a summer cover crop. The roots go down three to four feet, much deeper than Hubam clover, although the latter makes a larger growth above ground.

"We expect to sow sweet clover on some blocks for experimental purposes as soon as the fruit is off the trees," said Murray Vosburg, secretary of the company. "It will slightly increase the irrigation expense, but covering the ground with a heavy mass of green vegetation during the hot summer weather tends to reduce the temperature and may make a difference in the setting of fruit."

"TRAP-NESTING" ORANGE TREES

M. B. Rounds, entomologist, is employed by the Foothill company to control insect pests and plant diseases, solve pruning problems and in other ways assist in the top-notch production program. A complete record is kept of each individual tree, unprofitable specimens being rooted out, if they do not respond to special treatment.

In order to make the trees do their level best in *(Continued on Page 18)*

Commodious packing house of the Azusa Foothill Citrus Company, showing "reefer" which has been loaded with golden fruit for shipment to distant markets.

Modern-Labor-Sa

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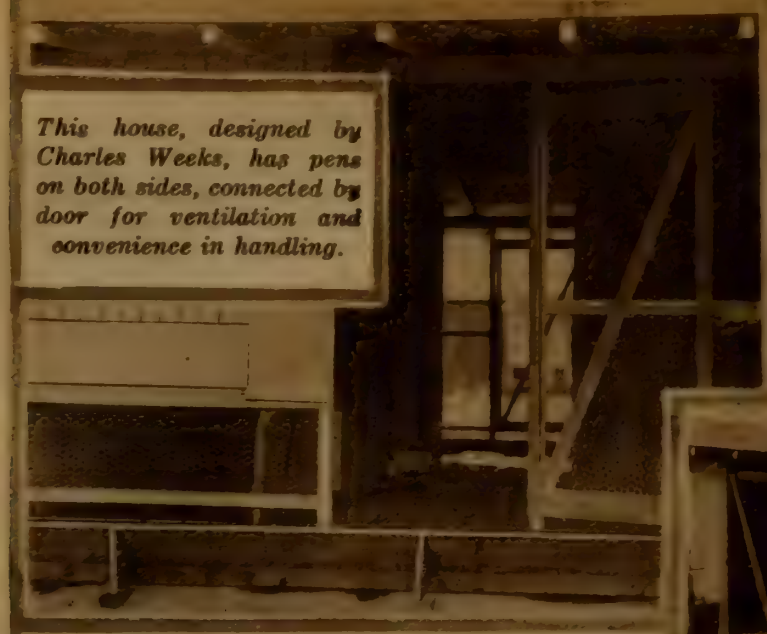

This house, designed by Charles Weeks, has pens on both sides, connected by door for ventilation and convenience in handling.

The Weeks poultry house consists of units extended to a great length, reducing construction costs.

An electric hover is a feature of this modern plant. A colored bulb furnishes the warmth. The floor is of sand. At first the chicks are held close to the hover by means of a "fence" of tarred paper, which gradually is enlarged and finally removed.

This mash box, used for young chicks, has a revolving roller on top, which prevents their perching upon it and fouling contents.

Extending along the entire length (both sides) of the Weeks house is this trough for green feed, filled from cart or litter-carrier, outside.

Filling buttermilk barrel from auto truck tank. The barrel is handled by means of the overhead trolley. Right: Filling a trough in laying house.

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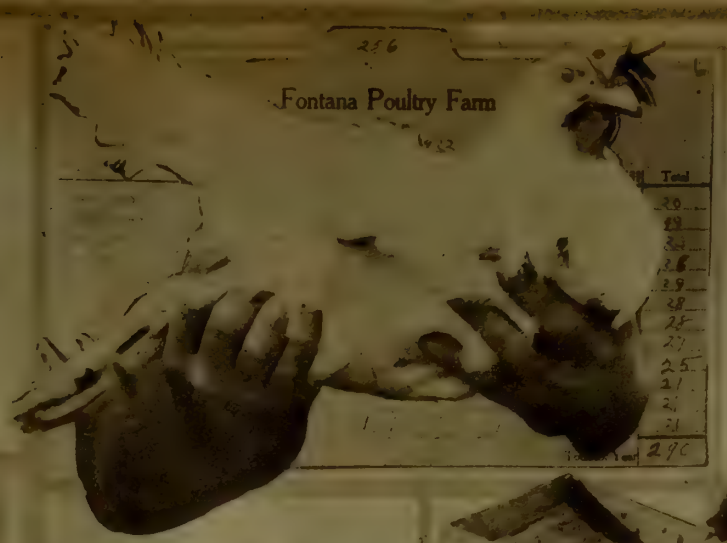


"Lady Fontana" and her 290-egg record, which shows that she laid continuously throughout the year.

Ed Hauser, Fontana poultryman, inspecting card system hen record, kept in metal boxes as a protection against fire and mice.

Both feed and litter at Fontana ranch are moved by this handy mechanical carrier, which runs on an overhead rail.

Grain hoppers, conveniently placed, save steps at feeding time. Scratch feed is mixed before being placed in hoppers.

Automatic watering jars, which are placed on a bench, to prevent being fouled with litter.

The litter-carrier also handles egg-crates, which are filled directly from the nests.

Culling a Fontana flock. As the poor layers are discarded they pass through a runway directly into the coops in which they are conveyed to market, the aim being to save all unnecessary time and labor.

The Electrical Horse in the House

Electricity Is Lightening the Housework Burden of the Farmer's Wife

MECHANICAL power in the form of electricity is entering the country home, where it receives a royal welcome from the farmer's wife. The tractor and gas engine are having their inning in the fields and farm yard; now electrical current is vitalizing and vivifying the rural residence, lighting rooms and lightening labor.

By WALTER H. GARDNER

THE numerous electrical appliances which are being installed in Pacific Coast country homes show how the burden of housework at last is being lifted from the shoulders of the long-suffering farmer's wife, who in olden days got little out of life except board and room.

Modern farm machinery, especially that which is driven by gas engines and pulled by tractors, has worked a veritable transformation in present-day agriculture. Similar conveniences now are being extended to the farm home, where they have long been needed and are made most welcome.

The extensive development of hydro-electrical power in California and adjoining States during recent years has made possible the electrical wiring of a goodly proportion of Pacific Coast farm houses.

Let it be admitted that electrical appliances save more time for the "women folks" than for the farmer or the men of the household, but is it not true that the shortening of household tasks which make for the convenience of the housewife is immediately reflected in her greater cheerfulness and in a strengthening of the companionship and wifely interests which she adds to the partnership?

To be sure, the "household rate" is somewhat higher than the "power rate," but it is possible to make almost every household task cleaner, quicker and more convenient by the expenditure of a few dollars a month for electricity. It is interesting to discover how reasonably such work in the kitchen can be accomplished.

Electricity is measured and billed by the kilowatt. A kilowatt means "1000 watts." A watt is the rate of work done by a current of one ampere under the pressure of one volt. In California homes the maximum charge for one kilowatt is less than 10 cents.

Most electrical appliances and most light globes bear a plate or tag or label showing their electrical consumption in watts. A 40-watt light globe, for instance, will consume one kilowatt in 25 hours. If it costs 10 cents for that kilowatt, it costs but 4-10 of a cent per hour to burn the light.

A six-pound iron will consume 400 watts in an hour. It costs 4 cents, then, to operate it continuously for that period; but the wise housewife removes the plug when her iron is thoroughly heated and only connects it when it begins to cool, so that 4 cents ordinarily will cover two hours of ironing.

Of the many appliances now used, statistics are not available as to the distribution of appliances among the farms, but in the residences of a representative city it has been discovered that one family in nine has a toaster that three families in nine have clothes washers, one family out of two has a vacuum cleaner, one family in twenty has a percolator and the same number have electric sewing machines, one family out of three owns a fan, and there are three houses with electric irons for every one without them. Electric refrigerators and ironing machines are more rare, but they are coming into greater use.

CALCULATING THE "KICK"

One kilowatt hour equals more than one and one-third horsepower hours. That's enough energy to carry 88 tons of coal up eight flights of stairs. It's enough to hold the Overland Limited at a speed of 60 miles an hour for 100 yards. That same kilowatt of electricity as applied to ordinary household tasks will in one day make eight pieces of well-browned toast and one quart of breakfast coffee; it will vacuum-clean one big room and take care of one hour's ironing; it will do a washing equal to twenty sheets, run a sewing machine two hours and burn two light globes in the evening.

Surely, the housewife on the farm is entitled to all the labor-saving conveniences of her sister in the city—and perhaps more. An electric iron is a wonderful convenience. An electrically operated refrigerator is expensive at first, but will some day return its cost in the food it saves and the health that it insures. An electrically operated air compressor will provide water under pressure throughout the house. An electric heater may solve the problem of "that" cold bedroom.

The farmer who invests a dollar for electricity for the household can regard it, if he wishes, as an expenditure for luxury, but his wife will, perhaps, say with Mark Twain: "Give me the luxuries of life and I can get along without the necessities!"

This unique cupboard provides a place to keep the electric iron, which may be put away while hot. The box is lined with asbestos and metal.

The electric ironing machine for flat pieces takes much of the drudgery out of wash day in modern farm houses

And as for the washing machine—well, it has passed from the luxury to the necessity class in the opinion of most housewives

Even a little girl can manage the convenient portable sewing machine, which makes such quick, easy work of stitching

—Illustrations, Courtesy Western Electric Co.

Making Money on Melon Seed

Butte County Grower Piles Up Profits With the Free Help of Visitors

LAST year Fred Donner, of Butte County, sold $1000 worth of melons and $2000 worth of seeds from a 15-acre crop. The principal melon grown is the Klondike, a long, green, small-seeded, thin-skinned watermelon chock full of the sweetest meat that ever pleased a palate. The seeds of this melon bring 75 cents a pound; Excell, 60 cents; yellow casaba, 40 cents; Persian muskmelon, $1. The latter is a large melon with a strong, musky flavor.

Seeds for planting are first soaked in water and then drilled in rows ten feet apart about the first of April. Plants are thinned out to six feet apart. A common mistake is to get the rows too close together. The writer recently visited a very successful Oregon grower—Fred Rapp, of Jackson County—who started in the melon business by planting the hills eight feet square. Now he plants them ten feet each way and next year he is going to put them twelve feet apart.

Another mistake is cultivating too deep, which destroys many of the roots, and still another error is to irrigate by running for a short time a ditch full of water close to the row. A neighbor who did this found his customers complaining of poorly flavored melons. A better way is to run a little water for a long time midway between the rows. This gives most of the soil a chance to become moist by capillary attraction. Some growers raise a row of corn to shade the melons, but abundant vine growth protects Donner's fruit from sunburning.

But how does he get the seeds out of the melons? Part of this work is willingly performed by Donner's guests, who number as high as 500 per day, 65 having been on the place at one time. The secret of his popularity lies in the fact that he gives everybody all the melons they can eat, providing they leave the seeds on the table. Electric lights strung above the festal board enable city visitors to come out after supper and fill up on melon before bedtime. Melons are sold at a cent a pound, buyers being asked to return the seeds. A record is kept of all guests and customers, which makes possible the catching of an occasional crooked customer.

Seeds, rinds and what pulp remains are thrown into a barrel, a few buckets of water added, and the mass allowed to stand a few days. Fermentation takes place, loosening seeds from the pulp, the latter being scraped with the fingers from the rinds. The good seeds sink to the bottom when the contents of the barrel are stirred, after which the pulp, water and rinds are poured off. A hand-made, gas engine-driven machine is used to grind up uneaten melons.

Seeds are dried on frames covered with wire screening, and shipped in coffee sacks to wholesale dealers. The latter grade the seed, which runs 99 per cent good.

Mr. Donner is one of the 126 farmers living on the State land settlement at Durham, which he finds a better place to grow melons than the Imperial, San Fernando or San Joaquin valleys. A number of Klondikes weighing 80 pounds each have been grown, the largest tipping the scales at 105 pounds. These melons are so sweet that the sugar sometimes oozes out at cracks and forms little, black drops of crude sugar.

In 1919 Donner raised a $50,000 crop of beans, but before they could be marketed the price dropped so low that he got nothing for his labor. Another man made $100,000 growing beans during the war, then lost it by staying in the game too long. He is now working for wages.—O. H. B.

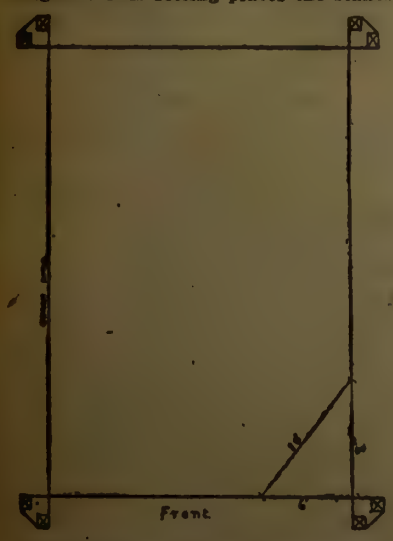
This is one case where harvesting the crop is most enjoyable! The fortunate harvest "hands" benefit by the elimination of the middleman and consider it a privilege to assist the grower without pay!

Staking the Foundation

"SQUARE, level and plumb" are the rules to follow when staking the foundation for a farm building. But a solid wall that positively will not settle is another rule equally important.

Use a long chalk line to determine the front line of the new building, to get it square with the property, and the right distance from other buildings.

Then set the stakes as shown by the diagram. This setting places the stakes



outside and away from the digging so they will not be disturbed.

To measure accurately without having to go over the measurements several times to verify them, make two long poles, one the exact length of the foundation wall across the front and the other the exact length of the side wall. Make these by nailing together enough narrow strips of inch boards to gain the desired length.

First set the front stakes, making them solid and plumb, outside the line as shown. Then square one side with the front by using the "6, 8 and 10 rule"; that is, first measure six feet from the corner, where the lines cross, and stick a pin through the line. Then measure eight feet along the other line and place another pin. If the distance diagonally across from one pin to the other pin is 10 feet, the corner is square, and the distance may be measured for the other two sides.

The squaring measurements must be accurate. For a large barn, it is better to double the rule and use 12, 16 and 20 feet to get the square of the first corner.—H. A. SHEARER.

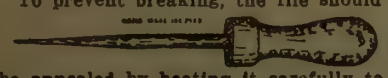
Manure Spreader Pays

LABOR saving is not the only advantage a mechanical manure spreader possesses over the pitchfork method. The value of a ton of barnyard fertilizer is greatly enhanced if it is spread thinly and evenly over the ground. The more spreaders there are in use, the less manure will be left to leach away in yards and feedlots. A big stock farmer says that for his men a spreader has changed manure-hauling from drudgery to interesting employment. "They say they like to see the darn thing work," he explains.

Home-Made Ice Pick

AN old, round file or a broken fork tine makes a good ice pick. The file should be ground smooth on the grindstone or emery wheel and the point made sharp and slim.

To prevent breaking, the file should



be annealed by heating it carefully to a cherry red and cooling slowly in a thick bed of hot ashes.

To set the newly made pick in the handle, bore a small hole the necessary depth, being careful to keep to the center, and then ream out with the file shank. The last quarter inch or so should be driven to make it fit tight. To prevent splitting, the handle may be wound with several laps of soft copper wire.—H. A. SHEARER.

IMPROVES 2477 CHILDREN

As a result of hot school lunches provided for 10,586 Washington State school children through the efforts of the Extension Service, 2477 were reported in improved health.

Kill The Squirrel!

It costs a dollar to feed a squirrel.
It costs two cents to kill him.
LET'S KILL HIM!

THE ground squirrel in California destroys annually $30,000,000 worth of farm products. In combating the ground squirrel

AERO BRAND CALCIUM CYANIDE

continues to prove its efficiency. Its use is simple. Merely insert from 1½ to 2 ounces (a large spoonful) of flakes in every opening, and cover the hole securely with a shovelful of earth. In contact with the moisture of the earth it generates Hydrocyanic Acid—an extremely poisonous gas which diffuses quickly throughout the burrow and which no animal can withstand.

100 pounds will treat 800 to 1000 holes. With this product there is no storage or handling problem. It is non-explosive and non-inflammable. Supplied in 25, 100, and 200 pound drums.

Write today for price list and any further information desired.

ADDRESS DEPT. O,

AMERICAN CYANAMID COMPANY

AZUSA, CALIFORNIA

FARMERS' CLASSIFIED MARKET PLACE

CLASSIFIED RATES

60 cents a line (average 7 words). For white space, cuts, or display type, most is computed according to total space occupied by advertisements.

Advertisement must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

FARMS FOR SALE

The Charles Weeks System of Intensive Poultry and Berry Farms

ONE ACRE AND INDEPENDENCE, OR The Fine Art of Earning a Comfortable

Living on One Acre in California.

For those who desire to dwell in sunny California without living up hard-earned capital.

Charles Weeks, for 18 years proprietor of the most intensive Egg Farm in the world and founder of the famous CHARLES WEEKS POULTRY COLONY at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles.

Write for literature.

OWENSMOUTH, CALIF.

ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate; fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

SMALL YOUNG ORCHARD, walnuts interset apricots, highly improved, plenty water, fine soil, well located, Ventura County. Will bear searching investigation. Prices for quick sale, terms. P. O. Box 734, Oxnard, Calif.

NURSERY AND GARDEN STOCK

BERRYMAN'S Bushes Bear Big Berries. You read the illustrated editorial in this magazine of Dec. 24 under above heading. Write for prices on Mammoth Thornless Blackberry and the New Del Rosa Red Raspberry plants. E. C. Berryman, R. 2, Highland, Calif.

EXTRA FINE RHUBARB PLANTS—Very profitable crop. Fine intercrop in young orchard. One planting lasts many years. Bears crop few months after planting. Rhubarb Association markets crop. Circular free. W. A. LEE, Box 88, Covina, Calif.

FOR SALE—Sour orange and D. Lotus Persimmon seed-bed trees; Valencias, Mission Olives, Texas Umbrellas, Wonderful Pomegranates. SOUTHLAND NURSERIES, 1967 E. Colorado St., Pasadena. Phone Colo. 6352.

NURSERY STOCK—The right kind at right prices. Get in touch with our MONEY-SAVING SYSTEM. A general line of hardy stock; 32 years in business. Send for prices, etc. CARLTON NURSERY CO., Carlton, Ore.

A1 BLACK MONUKKA grape cuttings, 12 inches long, $50 per 1000; 10,000 or more, $40 per 1000. Rush your order. W. A. LEE, Covina, Calif.

HACHIYA PERSIMMONS—Extra fine trees. Pomegranates. Circular. SHERWOOD PERSIMMON NURSERY, Fullerton, Calif.

FOR SALE—Clarkadota fig cuttings and a few rooted trees. RADIUS & POMEROY, Oakdale, Calif.

GIANT WINTER RHUBARB PLANTS—Now $1 per dozen. F. R. Walker, Puente, Calif.

Strawberry and Blackberry Plants

FOR SALE—Strawberry plants: Magoon, $4.50 per thousand; Gold Dollar and Improved New Oregon, $4 per thousand. SAM MORELL, Route 2, Canby, Ore.

FOR SALE—Cory Thornless Blackberry plants, strong, well-rooted vines, $1.50 per dozen, $8 per hundred, prepaid. F. DREW, Route 1, Box 141, Hermosa Beach, Calif.

CORY'S Thornless Blackberry plants from vines that produced 8 tons per acre 15 months after planting. WM. MORTENSON, Vine St., Lodi, Calif.

FOR SALE—Oregon Improved Strawberry plants, 80c per 100, $4 per 1000. Special rates on larger consignments. W. RATTDUFF, Occidental, California.

50,000 CHOICE, inspected, loganberry plants. Unusual low price. Harry Lanum, Rt. 4, Salem, Oregon.

CORY THORNLESS BLACKBERRY—Heavy producer. Large plants. Low prices. CHAS. E. MORTENSON, Lodi, Calif.

FIELD AND GARDEN SEEDS

DAIRY PERUVIAN ALFALFA SEED—Recommended by the U. S. Department of Agriculture and successful farmers. Apply for samples and prices. E. F. SANGUINETTI, Yuma, Ariz. The Home of Hairy Peruvian.

MISELLANEOUS

"LOST HEIRS"—A book filled with names for lost heirs and missing kin from different parts of the world. Chancery Court of England, Ireland, and Bank of England unclaimed dividend list included. Write for free bulletin. INTERNATIONAL CLAIM AGENCY, Dept. 535, Pittsburgh, Pa., U. S. A.

POULTRY

PROFITABLE POULTRY and CO-OPERATIVE ELECTRIC HATCHERIES—70,000 superior chicks, turks, ducklings every week, from long-established, mature, proven flocks of splendid, persistent, unforced egg-production. Regular customers take half, spread their growing satisfaction with continued use of our 180-290 egg W., Brown, Buff Leghorns; Barred, W. Rocks; Reds, Anconas, Minorcas, Wyandottes, Brahmas, Andalusians, Ducklings, Turks. To date we've quadrupled our bookings (for every month till June) over former years. WHY? Pleased customers reorder, and their friends; prices surprisingly low, esp. for quality, profit; carefully pack, meet trains, avoid chilling; gladly supply 20 to 10,000 lots; for 25 years imported, trapnested, selected, mated for vigor, growth, beauty, heavy winter-laying. Please state definite wants. Write: Profitable Poultry, BOX O, 18 N. Fair Oaks, Pasadena.

BABY CHICKS

The kind that live and thrive, lay and pay. We hatch from purebred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 12½c; Reds, 16½c; Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELEC-CHICK HATCHERIES, Dept. "L," Burbank Calif. Reference: State Bank of Burbank.

KEEP YOUR MIND OFF THE HATCH WITH A CHARTERS INCUBATOR.

It's the famous CHARTERS REGULATOR that does the trick. The heat in the egg chamber is automatically kept so uniform that variation is not more than half a degree. Send for our free catalog, which tells the story. CHARTERS MFG. CO., SANTA CRUZ, CALIF.

OFFICIALLY Certified White Leghorn baby chicks hatched in the world's largest electric hatchery. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Write for prices, literature and booking dates for spring delivery. Safe arrival guaranteed. Established in 1898. A quarter of a century of constructive and efficient service to the poultry industry. MUST HATCH INCUBATOR CO., 432 Seventh St. Petaluma, Calif.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

BABY CHICKS—Now booking orders for S. C. White Leghorn and White Plymouth Rock baby chicks and hatching eggs. Our stock has been carefully bred for heavy layers and are now mated to males bred from high trapnested stock. Baby chicks, January and February delivery, $18 per hundred; after March 1st, $15. For hatching eggs, write for quotations. HOPLAND STOCK FARM, Hopland, Calif.

WHITE LEGHORN BABY CHIX from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: February, $16; March, $14; April, $12.50; May and June, $12. Safe arrival of full count live, strong chix guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 418 Sixth St., Petaluma, Calif.

GET GOOD CHICKS—White Leghorns, R. I. Reds, Barred Rocks. From heavy layers, electrically hatched. All sturdy youngsters. Safe arrival guaranteed. Also White Leghorn hatching eggs. Write for circular. Early chicks pay. The J. H. Stubbe Poultry Ranch and Hatchery, P. O. Box 67C, Palo Alto, Calif.

BABY CHICKS—R. I. Reds. Utility stock. Large, dark birds; grow into broilers fast and are heavy layers. White Leghorns from selected breeders. Capacity 50,000. Attractive prices o n large orders. Also booking orders for 10 and 12 weeks old. W. L. pullets, any quantity. Anderson's Hatchery, Modesto, Cal

BUFF LEGHORNS ONLY!

BABY CHICKS, $16 per hundred. Don't buy chicks till you get my free circular. MRS. W. T. WHEELER, Berkeley, Calif., Rt. 1, Box 496-E.

STURDY BABY CHICKS—S. C. White Leghorns, White and Barred Rocks, R. I. Reds, Anconas, Black Minorcas and Buff Orpingtons. PURE BREED HATCHERY, Breeders and Exporters of Poultry Breeding Stock, Route 1, San Mateo, Calif.

BROWN LEGHORN PRIZE STOCK BABY CHICKS AND EGGS. GREAT OPPORTUNITY TO QUALITY BREEDERS. WE OWN CREATOR, INGOMAR, FIREFLY—BEST ON COAST. Casa de Rosas, Carmel, California.

CHICKEN FEED CUTTER—Only $8.50. Hundreds used. Prepaid anywhere. Write for Feed Cutter catalogue. ARNOTT & CO., Inc., Wholesale Implements, 112-118 S. Los Angeles St., Los Angeles.

WORLD'S RECORD—Santa Cruz doesn't certify its chicks, but has taken a world's record for White Leghorns in 1922. Dependable Hatchery, 18 Grant ave., Santa Cruz, Calif.

SOMETHING GOOD in WHITE LEGHORN CHIX—Best strains at reasonable prices. All popular varieties hatching each week. LINGO-DELL RANCH, Eleventh and Verdugo Sts., Burbank, Calif.

BABY CHIX—R. I. Reds, Barred Rocks, Buff Orpingtons, Anconas, Black Minorcas, Golden Buff, White and Brown Leghorns. SANTA CRUZ BEST and TURKENS. ENOCH CREWS, Seabright, Calif.

SANTA CRUZ CHICKS from our purebred flock of 2-year-old W. L. hens mated with cockerels from 265-egg hens and up. Prices are right. T. E. BLAKE, Santa Cruz, Calif.

WHITE LEGHORNS, R. I. Reds; hatching eggs; hoganized stock on free range. Strong, vigorous birds, roosting in trees. H. KOCH, Montara, Calif.

POULTRY

MR. AND MRS. POULTRY FARMER—

The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than those we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been Hoganized. Prices for February are as follows:

	50.	100.
White Leghorns	$7.00	$13.50
Rhode Island Reds	9.00	18.00
Barred Plymouth Rocks	9.50	18.50
Anconas	9.00	18.00
Brown Leghorns	8.00	15.00
Buff Orpingtons	9.50	18.50

May we not have your order again this year? Conkey's Buttermilk Starting Feed will raise healthy chicks.

ANSEL W. ROBISON,
1196-98 Market St., San Francisco, Calif.
P. S.—WE ARE THE PACIFIC COAST AGENTS FOR BUCKEYE INCUBATORS AND BROODERS. SEND FOR CATALOG.

"QUALITY" BABY CHICKS

Turkeys, Ducklings

If you want any, don't just buy anywhere, but get them direct from the incubators of a hatchery where "Quality" is the watchword. Our "Quality" chicks are electrically hatched, strong and sturdy, and from good stock. All leading varieties. We specialize in very choice S. C. White Leghorns from hens of very heavy egg-yielding reputation. Hatching eggs and electric brooders. Write for prices.

Artesia Hatchery (Electric)

BOX 146, ARTESIA, CALIF.
Capacity, 125,000 eggs.

White Leghorn Baby Chicks and Hatching Eggs

From TRAPNESTED STOCK.

Our 1923 annual illustrated mating list now ready. Send for a copy. WE GUARANTEE SATISFACTION.

INWOOD LEGHORN FARM

C. E. ARMSTRONG
CORVALLIS, OREGON.

WHITE LEGHORNS—Chicks and hatching eggs from individually selected, orchard range birds. An unusually alert, vigorous egg-laying strain of real merit. Progressive poultrymen demand the best. Surprisingly low prices; ask for them. Curtis White Leghorn Ranch, R. 2, Box 29, Gardena, Calif.

WHITE LEGHORN BABY CHIX, Tancred strain. Hatched from our own eggs, exclusively, from two-year-old carefully selected hens, mated to vigorous cockerels on free range. Inspection invited. Pullets for future delivery. Send for circular. DEL MONTE POULTRY YARDS, Box 275, Monterey, Calif.

THE SALES HATCHERY, Petaluma, Calif., can supply you after April 15 with "A" and "AAA" grade White Leghorn chix. Accredited by Sonoma County Farm Bureau. Everything as represented and safe delivery guaranteed. Write us now, stating your requirements, so we can send information and quote interesting prices. 35 years' experience.

S. C. W. LEGHORN BABY CHICKS. Are you looking for quality? Our large pedigreed hens are mated to Oregon Agricultural College and Tancred strains. No lights used. Inspection solicited. Prices reasonable. DINIC HATCHERY, Petaluma, Calif.

BABY CHICKS—Hatching eggs from Hoganized flocks, fully matured breeders. Barred Rox, R. I. Reds, Minorcas, Brown and White Leghorns. Safe arrival and satisfaction guaranteed. TOBENER HATCHERY, Route 2, Box 306, San Jose, Calif.

WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

BABY CHIX—W. Leghorn, B. Leghorn, Ancona, B. Rocks. All 2-year-old free range stock. Orders taken for pullets. CHOWCHILLA HATCHERY, Chowchilla, Calif.

BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

S. C. WHITE LEGHORN BABY CHIX from our own bred-to-lay stock. Our prices are right. Model Poultry Farm, W. C. Smith, Prop., Corning, Calif. Established 1904.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, California.

TURKEYS, DUCKS AND GEESE

TURKEYS—PUREBRED GIANT BRONZE GOLDBANK KING-COPPER KING STOCK, sired by our champions, imported direct from Madison Square Garden, America's premier poultry show. A PUREBRED SIRE ADDS MUCH WEIGHT AND IMPROVES FLOCK. FEW LEFT at $30 each, immediate delivery. Stock and egg circular on request. BRONZE KING FARM, Merced, Calif.

CARMEL MAMMOTH BRONZE TURKEYS, BEST IN CALIFORNIA; GOLDBANK-COPPER KING STRAIN; BABY TURKS AND EGGS. WONDERFUL FOUNDATION STOCK AT REASONABLE PRICES. ORDER NOW. Casa de Rosas, Carmel-by-the-Sea, Calif.

DOGS

DOG OWNERS' TEXT-BOOK FREE. Expert advice on proper care, training and feeding. Free with 3 months' trial subscription to America's popular dog and hunting magazine. Send 25c today (coin or stamps). SPORTSMAN'S DIGEST, 606 Butler Bldg., Cincinnati, Ohio.

LIVESTOCK

COMPLETE DISPERSAL—125 registered Holsteins, C. W. Anderson herd, Burbank, Calif., February 27-28, at public auction. 31 females in this offering sired by Sir Pietertje Ormsby Mercedes, Sir Pietertje Ormsby Mercedes 37th and Sir Pietertje Ormsby Mercedes 41st, making greatest offering of Ormsbys ever made by one breeder in a single sale in America. Entire herd just passed absolutely clean tuberculin test. Sell subject to retest by buyer. Write for catalog to Sale Manager, CALIFORNIA BREEDERS' SALES AND PEDIGREE CO., 211 Ochsner Bldg., Sacramento, Calif.

IF YOU WANT TO BUY OR SELL registered or grade cattle of the dairy breeds, or registered cattle of the beef breeds, write to the largest and strongest livestock sale service in the West—CALIFORNIA BREEDERS' SALE AND PEDIGREE COMPANY, 211 Ochsner Bldg., Sacramento, Calif.

RABBITS, PIGEONS, DEER

FOR SALE—Cheap—Thoroughbred Flemish Giant breeding does and bucks, all ages. The big kind. MIKE DITZEL, 936 Maple Ave., Los Angeles, Calif.

KODAKS, CAMERAS, SUPPLIES

FREE EASTMAN CAMERA

Have your Kodak finishing done by experts.

Winstead Photo Finishing Co.

Box 116, Los Angeles, Cal.

"We put the snap in snapshots."

Write for our new price list and how to get the free camera.

CIGARS AND TOBACCO

KENTUCKY NATURAL LEAF TOBACCO—Chewing: 5 pounds, $1.75; 10 pounds, $3. Smoking: 5 pounds, $1.25; 10 pounds, $2; 20 pounds, $3.50. Send no money. Pay when received. FARMERS' CO-OPERATIVE TOBACCO UNION, Paducah, Ky.

NATURAL LEAF TOBACCO—Chewing, 5 pounds, $1.75; 10 pounds, $3.00; 20 pounds, $5.25. Smoking, 5 pounds, $1.25; 10 pounds, $2.00. Pay when received. TOBACCO GROWERS UNION, Paducah, Ky.

HOMESPUN TOBACCO—Chewing: 5 lbs., $1.75; 10 lbs., $3; 20 lbs., $5.25. Smoking: 5 lbs., $1.25; 10 lbs., $2; 20 lbs., $3.50. Send no money; pay when received. CO-OPERATIVE TOBACCO GROWERS, Paducah, Ky.

BEES AND HONEY

BEEKEEPING pays. Pound package swarms shipped to points west of Rockies, $3 each; with Italian queens, 50c extra. Delivery guaranteed. Information and prices free. SPENCER APIARIES CO., Sawtelle, Calif.

IMPLEMENTS AND TRACTORS

USED FARM IMPLEMENTS, Harrows, Cultivators, Plows, Tractors, Tractor Tools. Save half price. ARNOTT & CO., Inc., 112-118 S. Los Angeles St., Los Angeles. Between First and Second Sts.

HELP WANTED—Instruction

$35 WEEK easily earned. Learn dressmaking-designing at home. Learn while earning. Big spring demand. Sample lessons free. Write immediately. FRANKLIN INSTITUTE, Dept P589, Rochester, N. Y.

Garden of Flowers

(Continued from Page 5)

provided. If your soil is heavy and holds the water, dig a deep trench, and fill in three or four inches of gravel before adding the soil. To succeed with lilies, the soil must be rich and friable. For lilies our heavy soils should be mixed with at least one-third of well-decomposed cow manure. They should be set about six or seven inches deep, filling in around the bulbs with clean sand. As they increase rapidly and must be undisturbed for such a long period, lilies should be planted 14 to 15 inches apart. They become more valuable with the years, and certainly must be included in all our permanent gardens. California native lilies are among the most beautiful known.

COVER ILLUSTRATION

They're all reading the ORCHARD and FARM section! In fact, James F. Conley, prominent California rancher, says it's the first thing he looks for every Sunday. Staff photographer G. L. Goodmanson caught him in the act!

Send for my FREE Catalog
Red Top Steel Fence Posts and Farm Fencing
HARRY BAYLIES, The Fence Man
432 Pacific Finance Bldg., Los Angeles, Cal.

Subsoiling Alfalfa

REMARKABLE results in subsoiling alfalfa have been obtained by George Gerlach on his farm near Tracy, the yield being thereby increased from three and one-half tons to ten tons per acre. Standards were run at a depth of fourteen inches two feet apart, requiring eight horses to pull through sandy clay loam. Frankheimer Brothers of Stockton subsoiled alfalfa twenty-four inches deep with a 75-horse power tractor, which was overloaded by the work, and similarly good results were obtained.

Mr. Gerlach was led to subsoil his alfalfa by an experiment in irrigating. Noticing that the water was very slow to sink into the soil, he dug a hole two feet deep. The water ran into this hole and spread through the subsoil six feet on all sides. The alfalfa made a very heavy growth on this spot, although the surrounding plants were thin and weak. It was found that the water had been wetting only the top six inches of soil. After subsoiling it went down six feet.

The surface soil is packed by stock tramping it in winter, when the alfalfa is pastured, and by heavy machinery during the several harvest seasons. Neither water nor plant roots can penetrate the plow sole thus formed.

An alfalfa field which has been subsoiled should not at once be irrigated, as the soil is liable to run together and become solid. It should be let stand as long as possible, to permit weathering and crumbling of the broken soil particles.

Protection from Electricity

A SUBSCRIBER, C. H. Crampton of Chico, Cal., advocates a very simple and effective method of protecting stock from lightning, by setting steel or iron posts at intervals along the fence.

Another scheme described by Mr. Crampton is to take a length of common or barbwire, bury it deep enough to touch moist soil and extend the end a few inches above the fence posts. Lightning always takes the most direct path to earth, he points out, and it will naturally follow the wire fence until it comes in contact with the wire conductor, whence it will be guided to the ground.

COTTON GROWERS FEAR WEEVIL

Cotton growers of the Imperial Valley do not regard the new railroad which is to be built at once from Calexico to the Gulf of California as an unmixed blessing, fearing it will result in the introduction of the boll weevil, which infests some of the cotton fields south of the line.

TESTED COWS SELL WELL

At a recent sale of milk cows 14 animals which had test records brought an average of $122 each, while 12 which had no records sold for $66. Buyers are willing to pay well for production proof.

Citrus on Big Acreage

(Continued from Page 7.)

fruit bearing, Mr. Griffith and his associates realize that the men behind the trees must be kept in the pink of condition, physically and mentally, and in the morale which actuates their efforts. In line with this policy, one of the finest recreation halls and swimming pools to be found on any industrial plants of similar size has been installed.

WELFARE WORK PAYS WELL

The hall is a beautiful cement structure, with fireplace, pool table, library, writing tables and radio apparatus. The nearby cement-lined pool is set in the midst of a grassy lawn and filled with pure, clear water for the cleansing and refreshment of the orchard workers. The latter respond to these efforts in their behalf by giving their employes loyal and efficient service every day in the year.

Although a large share of the company's trees have not yet come into bearing, the crop this season will amount to about 100 cars of navels, 150 of valencias and 40 cars of lemons. Last year, in spite of the freeze, 100,000 boxes of fruit were shipped.

A Successful Woman Farmer

(Continued From Page 8)

which was hauled from a nearby alkali flat. An eight-inch layer of this material was harrowed and tramped until thoroughly compacted.

PLANT 100 ACRES ALFALFA

A 12-inch Layne-Bowler deep well turbine pump, electrically operated, lifts three feet of water into the larger reservoir, which covers over an acre, in 24 hours. This equals one inch of rainfall on 40 acres in one day. The water is lifted 65 feet. Farm-made cement pipes are used in lieu of open ditches.

It was decided to make alfalfa the main money crop. One hundred acres were accordingly leveled and planted to this valuable forage plant, which is cut every 28 days, from April till September—six 1¼-ton crops per year. Water is run over beds two rods wide and 250 feet long. The alfalfa fields get most of the summer water, while the orchards are irrigated during the winter months.

Twenty acres of four-year-old Bartlett pears, with Anjou and Nelis interplanted for fertilization purposes, are expected to add materially to the farm income. A large family orchard of mixed tree fruits and a Muscat vineyard soon will furnish a welcome addition to the pantry supplies.

GROWING GOOD BELGIAN COLTS

One hundred fifty acres of land is devoted to wheat and barley, which is fall-planted and grown without artificial watering. Part of the barley is made into hay for farm feed.

When it came to deciding whether horses or tractors should be used the former were chosen. "We had to have horses to handle our alfalfa, as we have not found tractors a success in working this crop," explained Miss Weld. "During the time when the alfalfa is not being harvested or the meadows renovated it would not pay to feed six idle horses while tractors were being used; therefore, the latter are dispensed with entirely."

How about hogs? "We used to grow them," related the farm lady, "when they sold up to 18 cents, live weight, but when the price dropped to 8 cents, without a corresponding decrease in grain costs, we discontinued pork production."

SHEEP PROVE PROFITABLE

A small flock of sheep constitutes one of the best paying departments on the Weld ranch, 40 ewes adding $700 to the farm income last year. The way this "second fiddle" feature was added and is managed constitutes an interesting chapter in the farm's brief history.

"A neighboring sheep man lost most of his lambs one year, because feed was so scarce the ewes could not properly care for their young," related Miss Weld. "We took five of the little lambs and fed them milk. Others were added, until we had a nice flock.

"The sheep were Navajos, an Indian breed which is hardy and prolific. One ewe sometimes gives us two pairs of lambs in a year. We bought a purebred Dorset ram and the result of the cross is a very superior early market animal. The lambs weigh 80 pounds when four months old and the price is now 14 cents a pound. We sold one six-months-old wether for $14. We bought ewes when they were cheap—$6 each—and now have 100 sheep producing high-priced wool and mutton.

WOOL NETS 35 CENTS POUND

"Jake, our big, black goat, solves the herding problem. During the summer he takes the sheep out to pasture at sunrise, returning with them about 8 o'clock. The sheep lie in the shade until 4 o'clock in the afternoon, when Jake takes them out again until sundown. We have two good collie dogs, but the ewes fight them.

"Our dogs divide the farm with an imaginary dead-line, which neither dares to cross. When we see a dog's tail sticking up out of the alfalfa and moving around we know the owner is nosing along behind one of our Flemish giant rabbits, which has escaped from its hutch. One day a rabbit crossed the dead line and was killed by the other dog.

"We get 35 cents a pound for our wool by sending it to a mill and having it made into blankets, robes and batts, which we sell to our neighbors. We get $12 for a plain double blanket and have sold twenty of them. None of the Western woolen millers care to do custom work; therefore, we have to send the material to a Wisconsin firm."

ALFALFA BRINGS HIGH PRICES

A substantial barn 60 by 80 feet was built when labor was cheap at a cost of $1100. Wide sheds extend the length of the building on either side, one sheltering milk cows, the other horses and machinery. The main part of the barn consists of a hay mow, which is open from ground to roof, without interfering timbers. The capacity of the mow is 400 tons of baled hay. Last year's crop was sold at the barn to a neighboring dairyman for $25 a ton. Most of the Antelope hay crop is hauled in auto trucks to Los Angeles.

A two-story residence, bunk house of equal proportions and a bungalow guest house complete the building equipment of the Weld ranch. All the buildings are well painted and everything about the place is kept in good order. Woven wire fences are used instead of the barbarous barbed variety. The dogs and goat keep away the coyotes, but jack rabbits are a great pest. Forty automobile loads of Los Angeles sportsmen drove up one day and killed 1700 rabbits.

COMING FROM GUERNSEY ISLE

E. H. Mahy of the Island of Guernsey is coming to California next fall, according to the California Development Association, bringing with him twenty pure bred pedigree Guernsey cows of the highest quality. He has not yet decided in what part of the State to locate.

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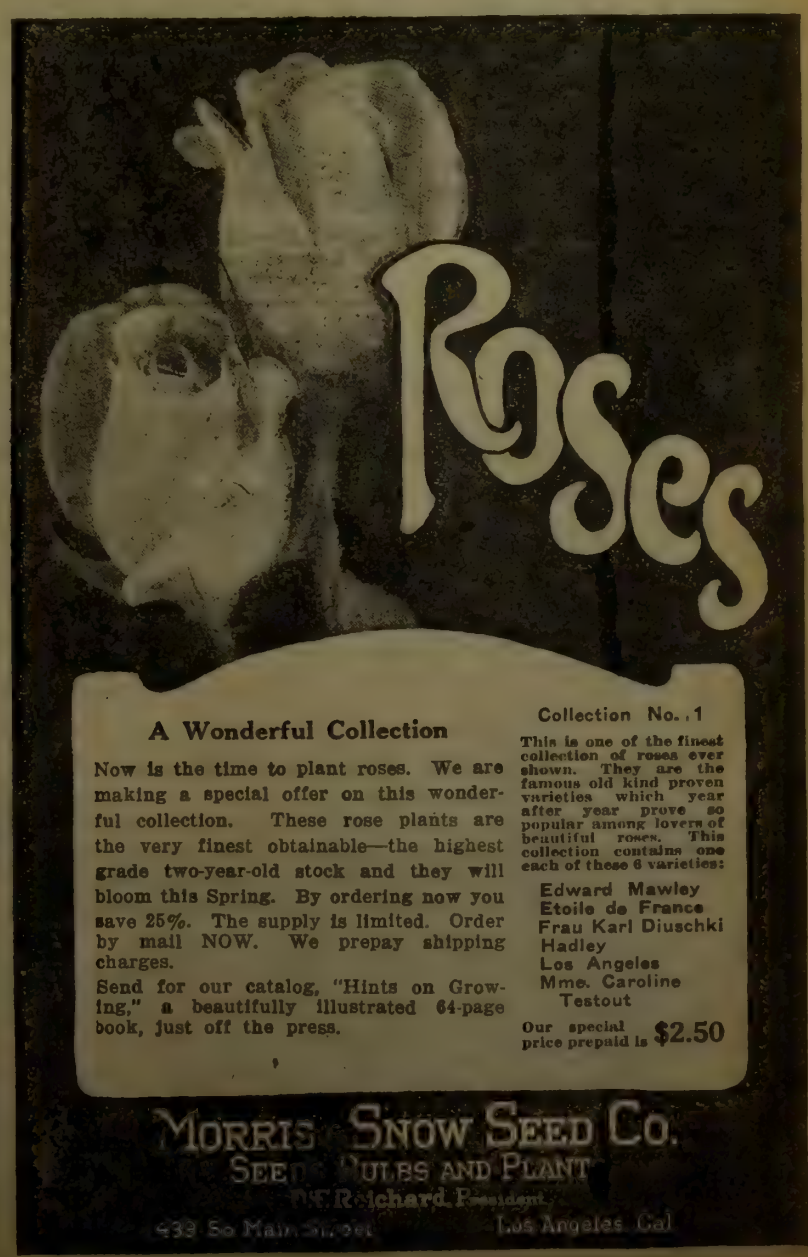

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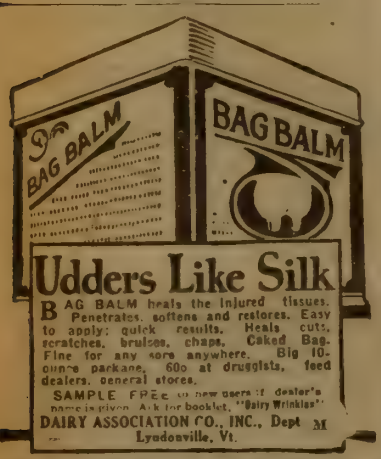

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Manufacturing Prize Honey

By J. D. BIXBY SR.

NOW is the time to prepare to win honey prizes at the fall fairs. The first essential for making prize honey is to have clean, new quarters for the bees. The hive and its inside fixtures must be clean, the alighting board and the ground about it free from mud, dust or blowing sand.

The old colony must comply with these conditions as nearly as may be possible. The bees should be good hybrids; that is, a cross between Italians and common brown bees. Pure Italians cannot be depended on to produce white wax, although for general commercial production they lead all other strains. The good old California hybrid excels all others in the production of fine white comb honey.

About thirty days before the surplus season arrives go over your yard and mark the number of frames containing sealed brood in each hive. From all those containing less than four frames, remove every frame of sealed brood, shake off all the old bees and add the frames to those containing four or more frames, until each has its full complement of frames, less one, which is left for the storage of pollen. You have thus strengthened the strong and weakened the weak, which is the second most important step in prize honey production.

USE NEW, CLEAN HIVES

Place on each reinforced colony a super of brood combs, to give the queens more room. All your profits will come from these reinforced colonies. The reduced colonies may also be supplied with an extracting super. For the next six weeks the bees will probably need no attention.

Watch the strong colonies for swarms, as the swarm is your chief instrument of success. When a swarm appears, hive it on the old stand in a bright, clean hive, or new frames of foundation, with only one drawn, empty comb in the broodnest. Have this comb clean and comparatively new and do not use a frame of brood.

Place the old colony on a new stand. It will need no attention beyond an extracting super for three weeks. If you can use the frames of brood from the old colony for nuclei or to strengthen weak colonies, brush every bee from them into the new swarm. This method gives the entire force of the old colony to the new swarm.

SULPHUR SUPERS CAREFULLY

If you want comb honey place on this new swarm at least two supers of new, clean sections. As fast as the bees begin working in the supers place another empty one below.

For extracted honey, put on a set of new, clean combs, or alternate the drawn combs with sheets of foundation. Put a queen excluder below the extracting super to keep the queen down.

When the comb honey is taken off use bee escapes to avoid smoking, and be prepared to sulphur each load of supers as it is brought in; otherwise the lesser wax moth is certain to deface the capping in a few days. I use about one-half pound of sulphur to each 128 feet of space and usually leave supers in the frames over night. Take great care in scraping and casing the sections. Better employ women for this job; their fingers are lighter and cleaner.

Don't use a capping melter for extracted honey. Drain cappings, and have everything clean. Make the boys wear oilcloth aprons and don't smoke your supers too much.

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Poultry Roundworms

(Continued from Page 6)

nicotine content at the start. In no case was a failure located where tobacco dust containing 1½ per cent nicotine used as 2 per cent of the mash was employed.

Manufacturers now are required by law to state the nicotine content on the outside of every package, but the majority still retain the practice of stating that their product contains not less than a small amount of nicotine and then pack a heavier content of nicotine to cover the possible loss.

Jobbers and the larger retailers could well afford to have their supply analyzed, and the poultryman should always specify and insist that the tobacco sold him, either in original containers or mixed with his feed, should contain not less than 1½ nor more than 2½ per cent nicotine. This strength of tobacco dust mixed as 2 per cent by weight of the mash will insure satisfactory results in worm eradication and will not cause any decrease in egg production or loss in weight of growing stock.

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Hemp--A New California Crop

By H. A. WADSWORTH
Engineering Department, University of California

BY REASON of its climatic requirements, hemp — hitherto practically overlooked by California farmers — now promises to become one of our most important crops.

Test plantings in the Sacramento Valley have shown it to be ideally adapted to planting where summers are hot, irrigation water plentiful and land comparatively high priced.

Because of the cost of processing the plant in order to separate the fiber from the long silk, production on a large scale has been limited principally to such nations as India and Russia, where labor is cheap. However, machines known as "decorticators" have been perfected, assuring the development of the industry in California.

CULTURE OF THE CROP

In this State hemp must be irrigated. In this connection, careful preparation of the land is essential, for uneven distribution of water usually results in an uneven "stand." Usually the land is laid out by the "border" method; that is, with long, narrow "strips" extending down the slopes, similar to those used in alfalfa fields.

An excellent seed bed is essential, for hemp seed is very small and two inches is as deep as it should be planted. At this depth the seed must be in moist soil and covered with fine loose dirt. Irrigation just before planting affords the best soil conditions for the seed.

The seeding itself is done with a four-inch grain drill run across the borders. Fifty pounds of seed per acre is planted. This heavy seeding is necessary in order that the plants may be crowded and assume a tall, spindling growth. Reducing the rate of seeding or using a six-inch drill in place of the four-inch gives the plants a tendency to grow stocky and to branch out, instead of standing erect. Each branching breaks the fiber and reduces its quality.

CAREFUL WATERING ESSENTIAL

The first irrigation may be delayed until the plants cease their vigorous growth. Permanent stunting is, of course, to be avoided, but reasonable delay in the first irrigation often results in a better established root system.

If the irrigation before planting has been thorough, the plant may be two feet tall before the first irrigation is necessary. The subsequent irrigations usually follow at intervals of from two to four weeks, according to the soil type and the weather. The crop must be kept growing steadily.

When the majority of the hemp is in bloom, which is about 100 to 110 days after planting, it should be cut with a self-rake reaper, or similar machine that leaves the hemp stalks straight and evenly spread.

CUT CLOSE TO GROUND

If the land is smooth and level, the plants may be cut close to the ground, leaving only a short stubble. Every inch of hemp stalk left on the stubble means a loss of fiber.

The reaper, which is pulled by four horses or a small tractor, cuts about six or eight acres a day and throws the hemp stalks in gavels (bundles). When they are "field dry," which is in about one week, the stalks are spread out upon the ground to "ret" by rain or flooding. The stalks are spread with an iron hook in the form of a half circle about two feet in diameter fastened to the handle or stick about three feet long. One man can spread about two acres of hemp per day.

Retting is a process of fermentation of the gum that holds the fiber to the stem. Dew, rain or flooding brings this about. Generally during the month of October and the early part of November enough rain, about two or three inches, falls in California to ret the hemp.

When the hemp is taken up it must be dry. The hooks are used to gather the stalks into convenient bundles of about one foot in diameter. These are bound with binder twine or a few hemp stalks in the same fashion as grain bundles were tied in the old days. After tying into bundles the retted hemp can be hauled to the decorticating station and stacked until worked by the machines.

For those areas in California, where rain is so infrequent as to make natural retting a very slow process, such as the Imperial Valley, a dry-stalk decorticator has been designed. This machine will separate the fiber from stalks direct from the field.

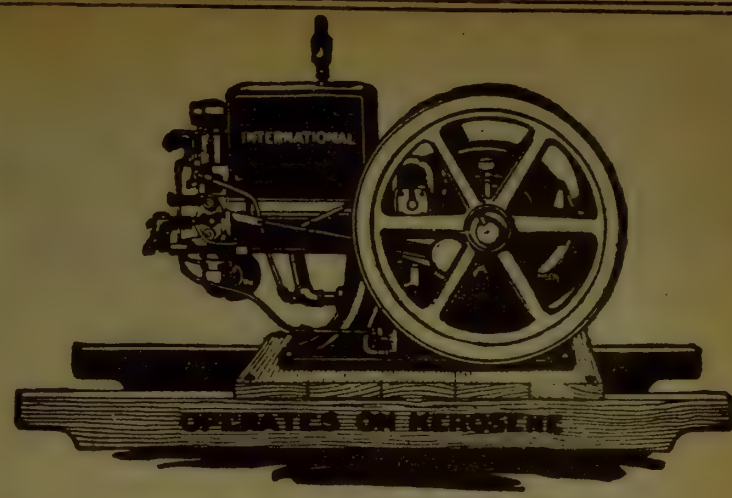
FIBER USED EXTENSIVELY

Hemp fiber is used for a great variety of purposes, such as the manufacture of the coarser grade of table linens and towelings, crashing, canvas and many other textile goods commonly made of flax, such as machine sewing thread, shoe and harness thread, carpet warp yarns, fish-nets and fish-lines.

The most extensive use of hemp fiber is for the production of commercial twines and sewing yarns for grain bags, as it excels greatly in tensile and torsal strength any other material that could be used for these purposes.

Farmers and land owners interested in this profitable crop may visit the fiber plantation of G. William Schlichten at Davis, California, and see the growing of hemp.

Hemp field in the Sacramento Valley, showing part of the crop standing and part lying in "gavels" ready for "retting," which separates the fiber from stalk.



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Beautifying Home and School

By LEWIS Y. LEONARD

Farm Adviser, Sacramento County

DURING the past three years a great deal of interest has been taken in beautifying farm homes, schools and churches in Sacramento county. People have marveled to note the transformation effected by the planting of a few trees, shrubs and flowers, intelligently chosen and properly placed.

Left—Everybody "pitches in" to beautify the school grounds. Above—Showing what a little shrubbery will do towards changing a house into a home.

It is the common belief that $100 spent for this purpose adds from $500 to $1000 to the value of residential property, or grounds used for community purposes.

Where the latter are beautiful the work usually is done co-operatively, which results not only in the material improvement of public property, but also in a livelier interest in community projects by those who help in the work. In the case of a school house, cntributions to the improvement fund are made by the trustees, parent-teacher association, farm bureau, civic club or similar organizations.

A day is set when all who are able and willing to help in the good work, come and donate their services in planting trees and shrubbery, repairing or building walks and fences, grading the grounds and helping in any other way needed. One of the pleasant features of such an occasion is a big picnic or cafeteria dinner, to which all contribute and do justice.

PLAN PLANTINGS CAREFULLY

The only thing to fear in such movements is that the live plants and trees which have been set out be neglected afterwards. It should be the duty of a small committee to see that everything planted is kept green and growing and given other necessary attention. Needed funds should be provided for this purpose.

The services of an expert landscape gardener should be secured, if possible, to plan the plantings and select suitable varieties, as mistakes here are apt to prove costly.

For the rural home, the natural method is generally preferred, in preference to formal planting. Nature is imitated as nearly as possible in the former plan and nothing set out in straight, regular rows. The trees appear in groups or clumps and the shrubbery is massed along walks, driveways and buildings in such a manner as to bring out beautiful features or conceal undesirable ones.

While it is well to bear in mind that "the curved line is the line of beauty," the walks and drives should be put where the people are going, rather than where it is thought they should go. The grading should be done in such a manner as to leave rolling contours, rather than level spaces, as the former are more pleasing to the eye.

Beginner Should Have $2500?

C. L. SEAGRAVES, Santa Fe colonization agent, believes that a man should have at least $2500 before starting to farm in a new community in California. He is also of the opinion that one-fourth of a 20-acre fruit farm should at first be planted to alfalfa and some cows and pigs kept to help pay expenses while trees and vines are coming into bearing.

Farmers' "Phun Nites"

TWELVE recreation programs—"phun nites" they are called—were held by the Butte County Farm Bureau the past year, under the direction of Gustavus Schmeider, supervisor of that department and physical education in the rural schools. Five farm centers staged community Christmas pageants, which were planned by this enterprising worker.

CANNERS HELP GROWERS

The Canners' League of California has contributed $500 to help pay for apricot field tests to be conducted by the State University Extension Service in Alameda County.

It's up to the
SAMSONS

In an emergency, much depends upon your tires. Will they hold—*or will they skid?*

Samsons don't skid! When the brakes go on, you can feel the *burly Tread* take hold and grip the road.

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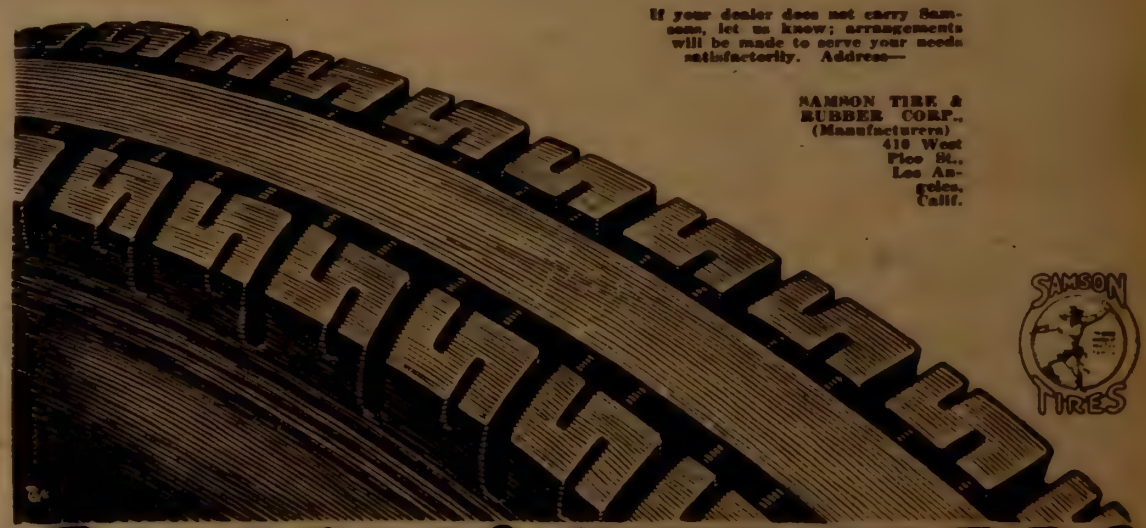
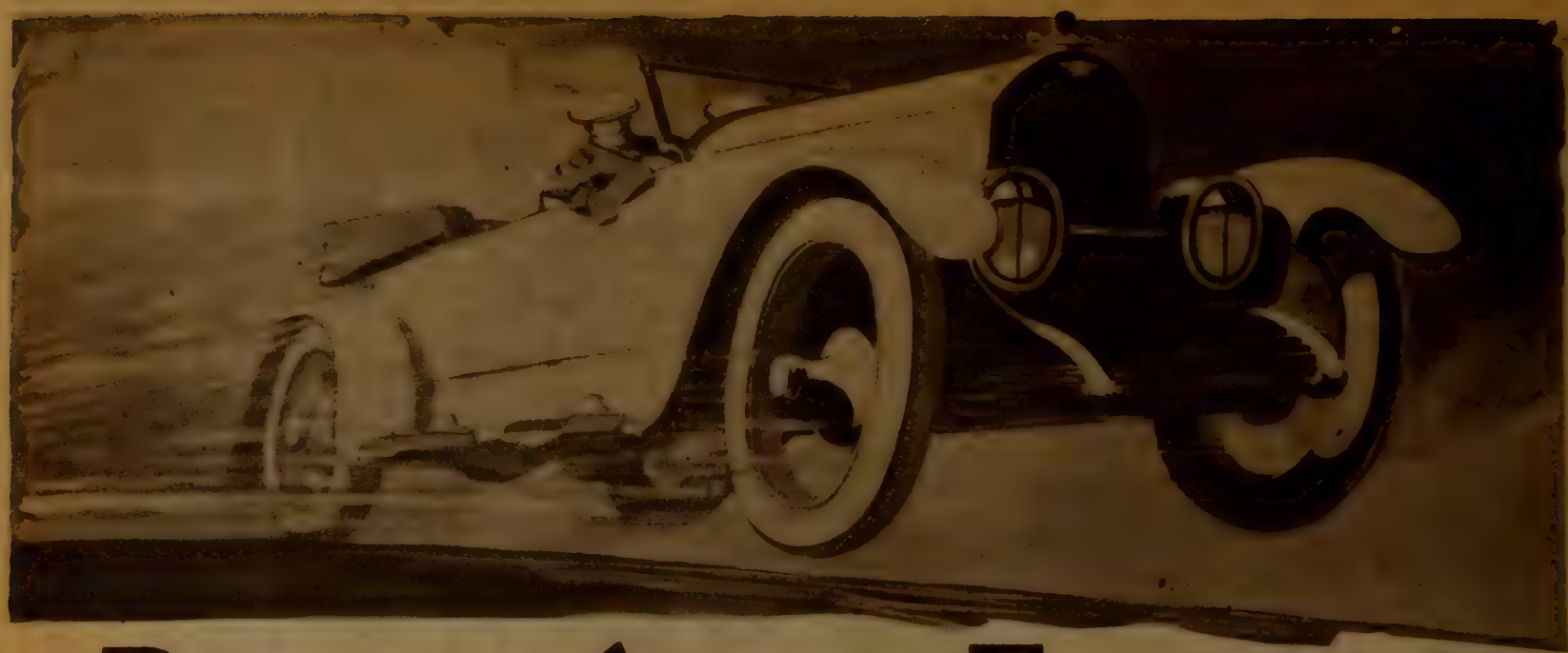


SAMSON SUPER SIZE—CORDS

ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

MARCH 4, 1923



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Time flies! An opportunity here today is gone tomorrow. A few weeks ago men just like you mailed the coupon below. They received the big, wonderful, illustrated book of automobile facts and opportunities. They decided to be auto experts. They came to the big, busy, bustling city, Los Angeles—to National Automotive School, the greatest institution of automotive engineering in America. And TODAY some of them have already

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Louis L. Gloskey, N. A. S. graduate, who now owns garage of his own in Temperance, Mich.

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ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
MARCH 4, 1923

Para-Dichlorobenzene, a New Soil Fumigant

A Chemical as Powerful as Its Name—But We May Call It "P. D. B." for Short—How to Use and When

By E. O. ESSIG
University of California College of Agriculture

THE use of para-dichlorobenzene as a soil fumigant to control the peach tree borer, woolly aphis, pear root aphis and other soil-infesting insects has created widespread interest in California.

Experiments conducted during the past two seasons will be of interest at this time in outlining practice for next season, which is expected to bring increasing employment of this material.

Para-dichlorobenzene is a white, crystalline substance which is insoluble in water and evaporates slowly at a temperature of 55 degrees to 75 degrees F. and more rapidly at higher temperatures.

The vapor is more than five times heavier than air and more than twice as heavy as carbon bisulphid vapor. It possesses a weak ether-like odor and is practically nonpoisonous and noncombustible.

This valuable chemical has such a long name that it seems advisable to abbreviate it, using "P. D. B." for short. Various trade names, such as Paracide, Crystal Glass, etc., already are appearing, and many others will follow.

CONDITIONS OF APPLICATION

In applying P. D. B. two things are important—soil moisture and temperature. Because gases do not readily circulate in a very wet soil, it is useless to apply para-dichlorobenzene unless the soil is ordinarily moist. This, however, usually is the case in California during the summer and fall, except just after irrigation; in such cases, a week or two following would be preferable.

The soil temperature should range from 55 degrees to 85 degrees F. for best results, for under such conditions the chemical volatilizes more rapidly and the insects are more active, requiring a greater air supply. Consequently they are more rapidly killed by the vapor.

In California the period from the first of May until November may be roughly designated as the proper time to make the applications, providing the soil temperature is over 55 degrees F. and the soil moisture is not excessive.

How Chemical Is Applied in the Orchard

Drawing shows how para-dichlorobenzene is used to destroy root insects which attack fruit trees. At the left is indicated the "death ring" of P. D. B. in two- or three-inch band on the surface of the ground. Not more than one ounce should be used for a single tree and none of the material should be nearer than three inches from the bark. At right, soil is mounded about the trunk, covering the application.

From three-fourths to one ounce of para-dichlorobenzene is sufficient to treat an average size tree. First level the surface of the soil around the base; then sprinkle the material around the tree in a continuous band two inches wide, with the inner margin two to four inches from the bark.

Cover the material with soil to a depth of from two to four inches. From four to six shovelfuls of earth usually are sufficient. Pack down well with several strokes of the shovel.

KINDS OF TREES TO TREAT

Under Eastern conditions, where the use of this insecticide has been quite extensive, it has been applied chiefly on peach trees with peach rootstocks. Eastern investigators caution against using it on trees under six years of age, although younger trees are reported treated with no injurious results in many instances.

In California, apricot trees on Myrobalan rootstock, and infested with the peach tree borer, have been treated with good results in killing the borers without injury to the trees.

Even nursery stock treated in the early summer showed no ill effects, but such work should receive more attention before general recommendations can be made.

CONTRA COSTA EXPERIMENTS

Some very interesting experiments were performed in Contra Costa County by Farm Adviser A. M. Burton in the control of the pear root aphis on three and four year old pear trees.

About an acre was treated during September and October, and in checking over the results during the latter month the writer was unable to find a single living aphid on the treated trees, while check trees in the same orchard were thoroughly infested.

Neither was there any apparent injury to the young trees, although both the pear and apple are claimed to be very susceptible to injury from the para-dichlorobenzene treatment. In fact, orchardists often are cautioned not to use it at all upon such trees of any age.

California conditions are so different from those in the Southern and Eastern States that it is to be expected we shall encounter many unusual problems in the handling of the material, and its uses may be very greatly enlarged. The writer is contemplating a comprehensive series of orchard demonstrations and experiments during next spring, summer and fall in order to have as much local information as it is possible to accumulate in that time.

NOT FOR BORERS

Para-dichlorobenzene is being recommended by some for all wood-boring insects, particularly for the flat-headed apple tree borer. This insect and the other wood borers which work above ground cannot be satisfactorily reached by the fumes of the fumigant and cannot be controlled by it!

Citrus Cover Crop Should Be Plowed Under Early

Many Reasons Cited—Danger of Deep Plowing During Bloom—Conserving Soil Moisture

By J. ELIOT COIT
Contributing Editor of ORCHARD and FARM

NOW is the time to turn under the cover crop—or just as soon as soil moisture conditions will permit. This applies, of course, to citrus orchards, and the reason is that the work should be completed, if possible, before the trees come into full bloom.

DR. COIT

Deep plowing during bloom should be avoided, because it removes a great many fine, fibrous feeder-roots just at the time the tree is under the greatest strain.

The orange tree puts out new leaves before it drops the old ones; hence the tree is carrying two sets of leaves during bloom and needs all possible root area to supply enough water and food to set strong, vigorous blooms.

SUPPLIES NITROGEN WHEN NEEDED

Then, again, it requires six to ten weeks, according to conditions, for the cover crop to decay and nitrify, thus releasing for the use of the trees the nitrogen locked up in it. The greatest need for available nitrogen is during bloom and fruit setting.

Still another reason for early plowing is that the higher quality of the humus formed by a young and succulent crop more than offsets the greater amount of poorer humus formed from a mature cover crop.

Cover Crop Ready to Turn Under

Rye sown one way and clover the other. Note clover in the spaces between rows of grain. Grove of H. C. Pegram, Porterville, Cal.

AFFECTS SOIL BACTERIA

As the crop matures, it increases rapidly in cellulose content. The decay of cellulose in the soil involves the kind of bacteria which use up the nitrates already present.

This is particularly true with grain crops, which always should be turned under before they run to head.

And lastly, early plowing-in of cover crop conserves the soil moisture. Of course, we sometimes enjoy excellent late rains, but it is running a needless risk to wait until the crop has to be irrigated before it can be turned under.

CONSIDER LOCAL CONDITIONS

The wise policy is to put the crop under as deeply as conditions will permit. Where large roots live near the surface, deep plowing cannot be done without injury and the grower fails to get as much benefit from his crop by disking as those who so manage their soils as to keep the roots down beyond the reach of the plow.

Of course, it does little harm to shear off a few fibrous feeders, provided it is done early enough to allow for their replacement before blooming time.

Development of fine, fibrous feeders in the surface soil is to be encouraged because it is there that we find the greatest amounts of available plant foods.

ORCHARD and FARM

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.
GEORGE GRANT, Art Director.

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS

J. D. Bixby Sr. — Robert E. Jones
Luther Burbank — W. S. Killingsworth
William Reynolds Butler — Herbert A. Shearer
Dr. J. Eliot Coit — Prof. F. H. Stoneburn
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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to O[illegible] and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

EGG GRADING STARTS WITH THE HEN

"It was thought at one time," points out the Poultry Producers of Southern California, Inc., "that a hen in poor condition would not lay. Now it is known ill-nourished and ill-kept hens will lay, but the eggs are of inferior quality."

Strong breeding stock is one of the essentials in producing first-class eggs. Sanitary surroundings are necessary to the health of the flock. These are but two of the factors the modern California poultryman must consider.

Other States have awakened to the advantage of quality and have organized for the purpose of competing with California producers.

This means local poultrymen must redouble their efforts to furnish Eastern buyers better eggs. The educational work of the various organizations is invaluable. Every producer should keep in touch with them.

ALL HAIL CALIFORNIA PRUNE

We have had all kinds of "weeks," from Eat-No-Meat Week during the War to Eat-More-Meat Week recently. But certainly no Nationally observed "week" will be of greater significance to California than National Prune Week, from March 19 to 24.

The success of last year's campaign suggested a greater and more comprehensive Prune Week for 1923. During the past five years, association officials declare, consumption of prunes in America has been increased from 50 to 75 per cent, largely due to advertising and publicity conducted by the California Prune and Apricot Growers' Association.

Consider the significance of this fact: A few years ago the farmer was not a factor to be considered in National advertising. Now the big campaigns of the producers' associations are among the most comprehensive appearing in American publications. Furthermore, they are studied by advertising experts all over the world as models of the newest and best in modern merchandising. "The world do move."

THE NEMATODE—A SERIOUS MENACE.

Few Californians realize the extent and severity of nematode infestation in this State. Agricultural leaders pronounce it California's most serious pest!

The United States Department of Agriculture, through its Bureau of Plant Industry, has been persuaded to appropriate the sum of $20,000 for research work in its control.

The State of California, through its specialists, D. G. Milbraith and W. S. Malloch, is carrying on investigations. Among the farm bureaus, that of Los Angeles County, perhaps, is doing the most comprehensive work along this line, having established a number of test plots that are being treated with cyanide, cyanamid, sulphur and other chemicals.

The nematode presents unusual problems. It attacks many field crops, including tomatoes, potatoes and other vegetables, and few fruit trees are spared. The apricot root seems practically immune, but peaches, walnuts, figs and other trees suffer.

The nematode is a microscopic worm, which infests the soil and usually attacks the roots or tubers, making control especially difficult. Every producer of any farm product in California should lend all possible assistance to scientists who are endeavoring to gain the upper hand of this half-hidden menace.

"What's New?"—Keeping Abreast of Agricultural Progress

Antelope Valley Ships Grapes

ALTHOUGH the elevation of the Antelope Valley is between three and four thousand feet, grapes do well there. Eight carloads were shipped out last year. Several small vineyards are being planted and promise to add materially to farm incomes.

Melons Pay Orchard Bills

J. SCHAFER, Colusa rancher, has been growing watermelons and muskmelons between the trees in his prune orchard. Practically all of his expenses during the time his trees were maturing have been paid by the sale of melons.—M. L. WILSON.

A Cattle Brand Warning

IN SEVERAL instances cattle have been lost because the brand was placed in the wrong position, according to R. M. Hagen, secretary of the California Cattlemen's Association. Mr. Hagen calls attention to the fact that the position of the brand should be considered an essential part of the brand itself.

Saving Wheat Vitamines

RECENT experiments conducted by the Ward Baking Company at a reported cost of $2,000,000 indicate that one of the chief objections to white bread—lack of vitamines—can be overcome. It is claimed that a new process has been perfected whereby all the vitamines and mineral salts contained in wheat are extracted from portions of the kernel commonly discarded and then incorporated in the flour. Small animals thrive when fed on this new kind of bread, it is reported, but die when given ordinary white bread.

Growers Sell Wool in Blankets

A NUMBER of individual California producers have marketed small quantities of wool in the form of manufactured goods, made to order by Eastern mills which specialize in this work. In New Hampshire a large number of farmers pooled their wool clip and had it made into blankets, suitings, robes and stockings. Newspaper advertising was used in a small way to move the goods, with gratifying results. The sales campaign was conducted under the auspices of the New Hampshire Co-operative Marketing Association, at Manchester, N. H.

Milk for Delicate Children

TWENTY-ONE classes for delicate children are being held in San Francisco under the supervision of Dr. William R. P. Emerson, head of the Nutrition Clinics for Delicate Children. Nine such classes are being conducted in Los Angeles, together with an equal number of special classes and two nutrition clinics. This work is being carried on under the auspices of the California Dairy Council. Milk is one of the chief articles of food given to undernourished children.

Fencing With Water Pipe

SECOND-HAND two-inch water pipe, regalvanized and set into reinforced concrete posts, will replace wooden corral fences on a Southern California ranch. The pipe is obtained from a local wrecking firm at a cost of twelve and one-half cents a foot.

"We find it difficult to build wooden fences strong enough to hold our big Belgian work horses," explains the owner. "One of them would break a board fence just by leaning against it. Furthermore, when horses haven't much work to do they are apt to exercise their teeth by gnawing wooden fences.

"It is even more difficult to confine mules in corral than to keep horses in such a place. One of my neighbors has a young mule which he says will go through any fence. We never use any barbed wire, considering it too dangerous. But we believe the iron pipe will solve at least the corral problem.

Farm Wages Take Further Drop

THE average of farm wages for the entire United States dropped from 3.1 to 6.4 per cent during the three months from October 1 to January 1, according to the quarterly survey made by the United States Department of Agriculture. As an average for the country, day farm laborers are receiving $1.98 a day without board and $1.47 with board. Farm labor by the month is paid $40.30 a month without board, and $27.81 with board.

The highest average monthly rate without board was $62.71 in the Western Division, and the lowest was $30.71 in the South Atlantic States. The highest monthly rate with board was $42.78 in the Western Division and the lowest was $21.06 in the South Atlantic Division. In hiring by the day without board, the highest average rate was $2.82 in the North Atlantic States, and the lowest was $1.40 in the South Atlantic States. With board, the highest day rate was $2.13 in the North Atlantic States, and the lowest was $1.05 in the South Central States.

New Growers' Association

THE Napa-Sonoma Growers' Association has filed articles of incorporation in Napa County. The association organized for the purpose of canning, drying, packing and handling deciduous fruits, vegetables and other agricultural products.—KATHLEEN RODD.

Frost Forecasting Outlook

A RECENT telegram from Gray Silver, Washington representative of the American Farm Bureau Federation, to Secretary Rosecrans of the Los Angeles County Farm Bureau, indicates that no further opposition is expected to the passage of the item in the agricultural budget bill providing for frost forecasting in citrus districts. The appropriation bill has already passed the House and is now before the Senate committee.

Farmers Get Lower "Gas" Price

A REDUCTION of two cents a gallon on gasoline and five cents a quart on oil has been secured from the Shell Oil Company by the Butte County Farm Bureau for its members. To take advantage of this reduction members must be paid up in membership. Gasoline and oil books are secured through the Farm Bureau office and gas and oil is paid for as used. In the event of a drop or increase in prevailing prices, the price to be paid by the Farm Bureau members is always two cents less. When gasoline is delivered in 100-gallon lots to a ranch a reduction of three cents per gallon is made.

Exterminating Border Marauders

TRAINED hunters have been stationed by the U. S. Biological Survey along passes leading across the Mexican border to capture promptly any wolves or other predatory animals entering this country. Arrangements have been made with stockmen in northern Mexico for the maintenance of hunters who work in co-operation with the Federal and State forces of the United States along the international border. A constantly recurring invasion of wolves from Mexico into New Mexico and Arizona is thus being successfully controlled. Thirty wolves were destroyed along the border without allowing a wolf to drift more than 25 miles into the United States, and only one escaped back into Mexico.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

XI—WILLIAM R. BUTLER

IN William Reynolds Butler ORCHARD and FARM has a farm management specialist of wide reputation and many years' experience. Mr. Butler graduated from Purdue University College of Agriculture in 1909. During this and the succeeding year he was a specialist for the United States Department of Agriculture, later operating a large Indiana farm.

WILLIAM R. BUTLER

From 1913 until the present, Mr. Butler has been engaged variously as farm adviser, agricultural editor, special writer on farm topics, and special investigator for the United States Department of Agriculture. His California travels have taken him through all parts of the State.

During his tenure as secretary of the Dixon (Cal.) Chamber of Commerce Mr. Butler collected material for and installed at the State Fair the Solano County fruit exhibit which attracted so much comment and attention and was awarded first prize.

Butler writes with the sympathetic understanding of one who has studied farm problems at first hand; he discovers and reports farm projects which have succeeded by reason of sound management and marketing. Having operated farm properties himself, he knows that "marketing is the better half of agriculture." The business farmer, therefore, finds his reports particularly interesting.

NEXT WEEK—W. S. KILLINGSWORTH

Extraordinary Novelties in Flowers and Fruit for 1923

30-40 Tons to the Acre

THE DIENER TOMATO

Most perfect ever raised. Firm, deep-red flesh; free from acid taste. Drought and blight-resistant. Flourishes in almost any soil. Price of the DIENER TOMATO SEED: Sample pkg. 25c; ¼-acre pkg. 50c; 1-acre pkg. $1.50.

Try the PEPPER TOMATO

A distinctive new creation, richer and more flavory than the tomato. Vigorous, free bearing and early ripener. ¼-acre pkg. 50c; 1-acre pkg. $1.50.

RUFFLED MONSTER PETUNIAS

DIENER'S (Single)

Largest and most beautiful varieties ever created. Seed in the following colors: Pink, strong veined center; Red, Variegated; White; Red, black center; Pale Lilac-pink, large veined center; mixed. For others, somewhat smaller than the Ruffled Monster, see FREE ILLUSTRATED CATALOG. Any of the above, 50c pkg.

DIENER'S PINK GLORY

The novelty Petunia for 1923. Pure flame-rose pink without a trace of purple. Flowers three to four inches in diameter. The most gorgeous Petunia ever marketed.

This seed is 50c per package.

GLADIOLI

The world's most perfect specimen—famous for color, perfection and profusion.
New varieties—1923 productions which attain new beauty, color, growth and height of spikes.
Color illustrated in our 1923 catalog.

Write Today for Our New Catalog

1923 Catalog on Request—Color illustrations and complete description of our 1923 productions in Fruits and Flowers.

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Twenty-five years of this work have given abundant proof that large profit may be obtained from the proper use of nitrogen.

Nitrate of Soda

furnishes this nitrogen in the cheapest and most available form which gives immediate and lasting results.

A new series of Bulletins with valuable information on the growing of all crops is now being issued. They will be published at intervals over a period of a year or more and should be in every farm library. A post card with your address asking for my *Bulletin Service* will bring them to you *Free of Cost*.

Dr. William S. Myers, Director
Chilean Nitrate Committee
25 Madison Avenue New York

Cook With Coal Oil Gas

The simplest and most economical coal oil gas burner ever known has been patented by Leonard Conow of San Francisco. This great invention is entirely different from other burners now in use. Fits any wood or coal stove. Heats oven and water-back. No priming, no roaring, no carbon. Just turn a valve and get an intense heat that is regulated at will. Cheaper than coal or wood and better. Brings happiness into the home.

To prove that the Conow Burner is exactly as represented, the manufacturers agree to send the outfit on 30 days' trial and let you see how it works before deciding to keep it. Write today for free literature, which explains all. CONOW BURNER CO., 15-A Columbus Avenue, San Francisco, Calif.

Big Money Boring Wells

Have water on your own farm. In spare time make wells for your neighbors. It means $100 extra in ordinary years, double that in dry years. No risk—no experience needed.

Outfits for Getting Water Anywhere

Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*

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Going to Build?

Send for our Price List of Lumber. We save you middleman's profit. Sash, Doors and Builders' Supplies.

Contractors' and Builders' Supply Co.
1401 Fifth St. Oakland, Cal.

HOME FARM HAPPENINGS

By ONE OF US

A GOOD YEAR AHEAD

We are looking ahead to a mighty good year. Everything indicates that 1923 will be the best that California farmers have had for some time. This has been a splendid winter for the trees—plenty of moisture and not too warm. The soil is in fine condition for field crops; the cattle, sheep, pigs and ponies are all in nice shape, and the demand is better than for some time. But, best of all, the people with whom we come in contact in any way—merchants, bankers, professional men, stockmen, fruit buyers and all—say and feel that business opportunities are on a very decided increase and that we are entering an era of prosperity.

SPRAYING WET TREES

We had a terrible time getting our spraying done this winter, because of rain and fog and north wind. Some of our neighbors have gone right ahead and finished up the job, and we are wondering whether they are right and we are wrong, or the reverse. We have felt that we did not want to put the dormant oil spray and Bordeaux mixture on trees that were wet with dew or fog or rain. The bark must be dry, we believe, in order to get to the eggs and scale. But if it grows too late and we do not do any spraying at all we may wish we had done our best under the circumstances and let it go at that.

CALLING THE HOGS

"Poo-ee-ee-eee! Whoo-ee-ee-eeee!"

We could hear this far-reaching call repeated several times over by the big barn as we walked through the orchard to where we are clearing up some brush.

Hogs were coming on the run from all directions. Then Tom, the wood cutter, said: "John may not have much of a voice for singing, but he sure can call hogs."

On a ranch where it is advisable at times during the year to give the hogs the "run of the place" in order that they may get a lot of feed that would otherwise go to waste it is very handy to have hogs "broke" to come at call. And as Tom says, John is some caller! He can bring hogs out of the brush that he couldn't drive out in a week if they did not want to come. It keeps hogs from getting too wild to call them in every day or so and feed them a little.

COVERING EVERY TWIG

Did you ever try to cover every spot on a tree with spray material? Seems like a simple thing to do, especially with one of the new high-power machines having effective spray guns.

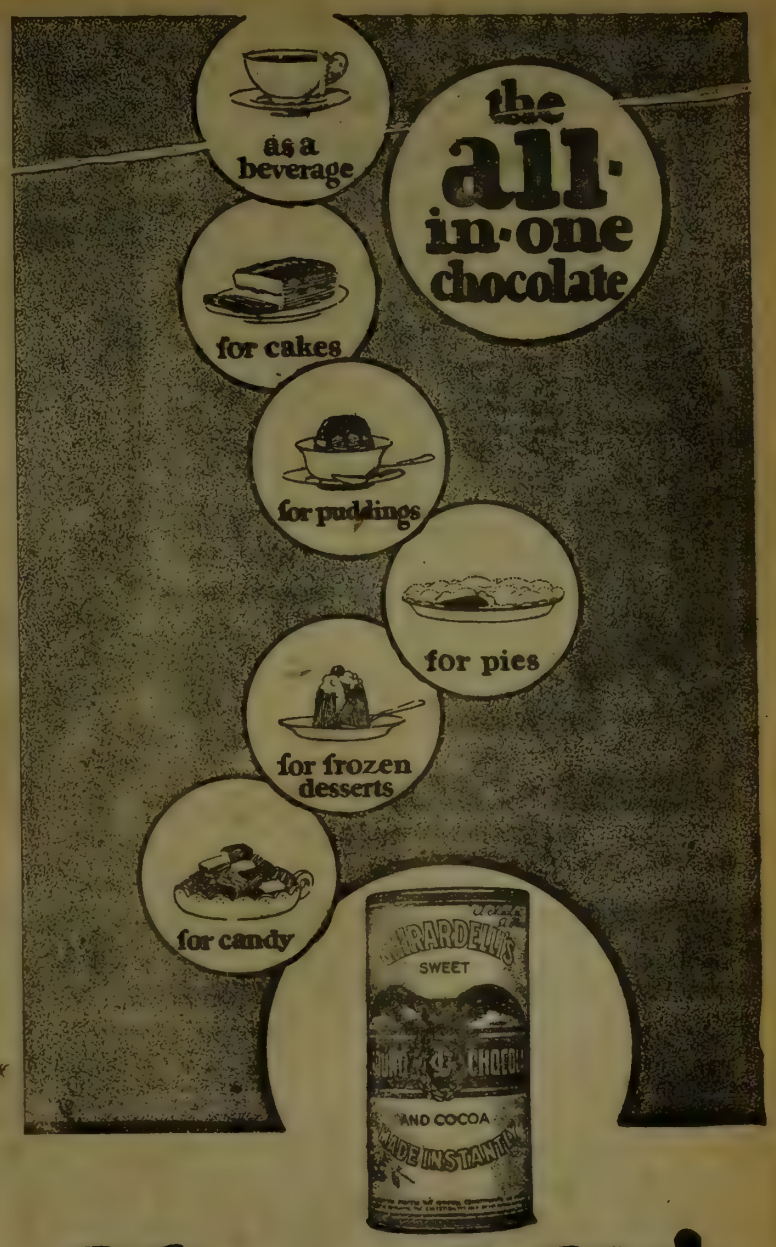
But the truth of the matter is that it is almost impossible. John said it was the easiest thing in the world to do, and if we had been real gamblers I could have won some of his money on the proposition. He was so dead-sure he could spray a tree—a good, big tree—and never miss a spot.

We haven't done it yet, but we are doing the best job the orchard has ever known—probably partly because of the contest. We have sprayed trees until it looked as though they had been ducked in the river, yet have been able to find some tip or spot untouched.

It is necessary to go almost entirely around a big tree to do anything like a good job. And one must be particularly careful to get to the outer end of branches.

We had spots of pear leaf blister mite last year on leaves on the extreme ends of limbs—not enough to do injury to that crop, but enough to keep the infestation around and to affect the appearance of the trees.

On a neighbor's orchard quite a bad infestation of brown apricot scale was cleaned up in good shape about four years ago, except for spots that were missed here and there. In these four years the pest has covered the orchard again, and an oil spray is being applied again this winter.



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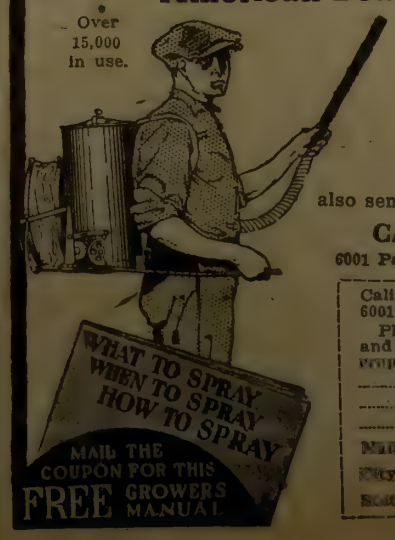

It uses Calispray Dust the sure knockout for garden, vineyard or orchard pests. Powerful bellows of sprayer throws Calispray in perfect cloud, reaching and adhering to every leaf. One man covers 5 to 20 acres a day. Don't waste time and money with old methods. Send coupon Today for booklet of great value. It's free. We also send name of nearest dealer. Write today.

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You could read all the poultry books in the world and still you would not know the answer.

To find out just how much labor and feed it takes to produce a thousand eggs a day is what you really want to know, and the truth about this is only one of the many interesting things you will actually learn at our Practical Poultry School.

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In Answering Advertisements, Please Say: "I Saw It in ORCHARD and FARM"

L. A. County Dairy Meetings

AN unusual opportunity is afforded dairymen of Los Angeles County by arrangements made for a series of meetings by the Dairymen's Department of the Los Angeles County Farm Bureau and the Agricultural Extension Service co-operating. The program will include Dr. George H. Hart, head of the Division of Veterinary Science of the University of California; Prof. W. M. Regan, in charge of the dairy work at the University Farm, Davis, and Dr. J. J. Frey, head of the dairy inspection work of the State Department of Agriculture.

Dr. Hart will discuss control of contagious abortion and tuberculosis in dairy cattle.

Prof. Regan is nationally known as an authority on dairy cattle, and is also a judge of wide reputation.

Dr. Frey is particularly qualified to talk on the best methods of handling market milk.

All meetings will begin promptly at 9:30 a.m. The schedule and program for the meetings follow:

Tuesday, March 6—Van Nuys High School.

Wednesday, March 7—Antelope Valley Union High School, Lancaster.

Thursday, March 8—Place of I. J. Scott, Chino road, half mile east of Garey avenue, South Pomona.

Friday, March 9—Los Angeles County Farm, Downey.

Cattleman's Views

"CONDITIONS for getting into the cattle business are better now than for many years," is the assertion of a prominent range man who recently has sold out his stock in Old Mexico and is organizing an outfit in California.

"Now, when prices are low and many producers are discouraged, strikes me as the very time to acquire stock," continued the veteran cattleman. "I have watched the industry for many years, and after every slump of this kind comes a period of prosperity and higher prices. See what has happened in the case of the sheep industry! Cattle are 'coming back,' sure as Fate."

Asked what he considered the best way for a man to start in the business with limited capital, the old-time rancher suggested renting land and equipment and putting most of the money into stock. "I have found," he said, "that one can lease a ranch on about a 2 per cent basis, but I don't know of any place I can borrow money at that rate. Therefore, leasing may prove the best bet in making a start. After all, it is the animals which grow into money—not the land, although nowadays the range and pasture question is mighty important."

Land Cheap in Paradise

LAND in Paradise Valley, which the residents claim is rightly named, sells for $40 to $75 an acre, depending on improvements. Most of the 11,000 acres is heavily timbered, only 3500 acres as yet being improved. The location is twenty miles north of Oroville and the altitude 1250 to 2250 feet.

Apples, pears, berries and walnuts are among the principal crops. Twenty carloads of pears were produced the past season, all but two cars going to Los Angeles.

"We have the finest kind of land for fruits, berries, nuts and grapes," advises the publicity committee of the Paradise farm center. "Pipe pressure irrigation, moderate land values; deep, fertile soil; plenty of pure, soft well water; pleasant, healthful climate; good hunting, fishing and camping; American community; co-operative marketing; churches, schools and good roads; electricity, telephones, railroad, lumber and mines. We want more people.

Killed 200 Rats at One Baiting

Dog, Ferret and Traps Failed. Amazing Virus Quickly Killed Them All. Not a Poison.

"I was overrun with rats," writes H. O. Stenfert of Redford, Mich. "Seemed to be several hundred of them. Dog, Ferret and Traps failed. Was discouraged. Tried Imperial Virus and was rid of them all in a short time. Have found rat skeletons, large and small, all over the farm.

"The year previous Rats killed 200 out of 200 baby chicks. Last year saved them all. Will send for 10 bottles for neighbors and we will clean up the whole neighborhood."

Rats, Mice, Roaches, in fact all Rodents, greedily eat Imperial Virus on bait. Sets up burning fever. Pests die outside breeding, air and water. Harmless to humans, Poultry, pets, stock, etc. Economical to use. Indorsed by Farm Bureau Experts and large, nationally known institutions everywhere.

You Can Get Yours Free

SEND NO MONEY. Write today to Imperial Laboratories, Dept. 2280, Kansas City, Mo., and they will mail you two regular $1.00 bottles of Imperial Virus (double strength). Pay postman only $1.00 and few cents postage on arrival. Use one yourself and sell the other to a neighbor, thus getting yours free. Remember, risk no money, as Imperial Laboratories are fully responsible and will refund your $1.00 on request any time within 30 days.

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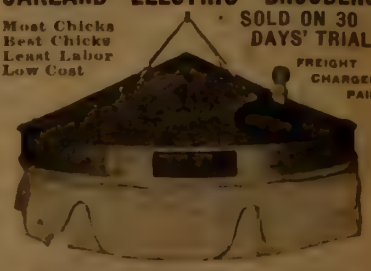

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Lice, Mites, Ticks and other pests positively will not stay on fowls where Imperial Lice and Mite Remedy is used occasionally in drinking water. Guaranteed not to affect eggs or flesh of fowls in any way. Also a splendid tonic and blood purifier. Costs but a trifle, on money back guarantee of satisfaction.

White Diarrhoea Remedy Free

At last a sure treatment for this dread disease. No mess. No fuss. Comes in condensed tablet form to be dropped occasionally in chicks' drinking water. Raise every chick hatched. Economical to use. Be prepared. These remedies should always be on hand.

SEND NO MONEY. Just your name and address to Imperial Laboratories, Dept. 2280, Kansas City, Mo., for one regular full size $1.00 bottle of Imperial Lice and Mite Remedy (double strength), and they will include free of cost, a regular $1.00 box of Imper. White Diarrhoea Remedy. Pay postman only $1.00 and few cents on arrival. Your $1.00 refunded any time in 30 days if not satisfied.

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$1350.00 six rooms Includes all lumber, millwork, doors, windows, lath, shingles, hardware, paint, gutter, etc. Built-in fixtures include bookcase, writing desk, cabinet, cooler, ironing board and medicine chest.

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Power in Spring Tillage.

In vineyard cultivation, the plow and spring-tooth combination seems ideal for certain types of soil. And this is where the small tractor shines!

The handy little track-layer gets close to the trees and is not afraid of a bit of soft ground or a nasty hill. When it takes hold, those discs "just naturally have to turn fast."

Many a California field has not known the touch of the moldboard plow for years. But the disc-type, when headed by an efficient power plant, does some jobs better and in less time.

When it comes to turning under such a heavy cover crop as this, the tractor and disc-harrow seem almost indispensable. And it isn't necessary to muzzle the tractor, either!

It wasn't so long ago that the tractor remained in its shed at bean-planting time. But we don't see how this arrangement could be improved upon!

Doing three jobs at once is nothing in the tractor farmer's life. Sometimes he adds a smoothing harrow for good measure. Here we have disc, packer and drill.

Citrus Growers Sharpen Pruning Tools

These old lemons require pruning. Tops have interlaced, interfering with fumigation

Frost Alters Pruning Practice

BECAUSE of frost injury last year, citrus growers are giving much thought to their 1923 spring pruning. Investigation has shown that freezing, like severe cutting back, devitalizes the trees; therefore moderation is recommended for the pruning program of the current season. Mr. Hodgson points out that the object of the grower should be to assist Nature in restoring normal conditions, and points out pitfalls to be avoided.

—The Editor.

By ROBERT W. HODGSON

Agricultural Extension Service, University of California

THE coming spring and summer will witness more pruning of citrus trees than since the memorable season of 1913. The reason is the same which emphasized the pruning question at that period—the disastrous January freeze.

There is an important difference in the situation this time, however. The freeze of a decade ago was followed by frantic efforts on the part of growers to destroy the tell-tale evidence by immediate and drastic pruning, a procedure now known to have added outrage to injury.

In marked contrast, following the "unusual weather" of a decade later, the majority of citrus growers last year grimly and wisely permitted the evidence of disaster to remain, and thereby gave their trees every possible chance to recover from the shock and injury so widespread as to be almost universal.

SOME GROWERS IMPATIENT

To be sure, there were those who could not endure the ever-present reminder of lost hopes and aspirations and who succumbed to the temptation of pruning. In most cases, however, the trees were given at least four to five months to convalesce before being pruned.

After one season of recuperation and with the danger of injuriously low temperature practically over, the problem of pruning now engages the attention of the citrus grower once more. And much depends upon the character of the pruning treatment. If pruning is properly done, the effects of the recent freeze shortly will be outgrown. If it is improperly done, they will remain to annoy the grower and delay the full recovery of the trees for years to come.

In outlining his pruning procedure for this season, every citrus grower should take due cognizance of the fact proven time and time again that pruning is essentially a devitalizing process, and especially so in the case of evergreen plants such as citrus.

MODERATION SHOULD RULE

The unpruned tree is always larger and, over a reasonable period of time, more vigorous than the pruned tree; and the more severe the pruning, the more repressive is the practice.

It should be remembered further that the killing back of branches caused by the recent freeze in reality has reacted on the trees in practically the same manner as a severe pruning. For these reasons and the additional one that all the data at hand clearly shows a decrease in production following heavy pruning, moderation should be the rule this season.

Where the injury has been severe, experience has demonstrated that full recovery cannot be expected for two or three years, an additional reason for moderate treatment. It cannot be gainsaid that in the history of citrus culture in California, millions more have been lost from severe pruning than from no pruning at all.

But the trees do require some pruning, a fact which needs little argument with most growers. Long experience, as well as the experimental data, indicates that regular and light to moderate pruning is the golden mean which the grower should pursue. Trees pruned in this manner are always in good condition and rarely get out of balance.

The object of the grower this season should be to aid his trees in restoring their natural balance by a light to moderate pruning, with the cuts so made as to distribute the response uniformly and without the production of growth which is undesirable and represents waste energy since later it must be removed.

The most severely injured parts should be removed first, followed next season by the elimination of others, and so on until all the injured and weakened growth has been eliminated by a gradual process, stretched out over several years. If this procedure is followed, a minimum of repression of vigor and productivity will occur and the trees will remain in good balance, come back into good bearing immediately and continue to produce new growth of a satisfactory character and with a minimum of loss of energy in the form of suckers and water sprouts.

AVOID "HEADING" TREES

"Stubbing" or heading back should be especially avoided, as this practice is extremely wasteful of strength and energy. The inevitable result is a riot of vegetative growth of a soft, succulent and altogether undesirable character, which must be removed or delay the recovery of the trees for months or years. Where branches have been killed back part way, and must be removed, care should be taken to cut to a side branch or lateral to "take the sap," and thus prevent "suckering." The vigorous vegetative shoots which have developed during the past season will require careful thinning, leaving only the least vigorous and best. These will then slow down length growth and develop into fruit wood.

Trees which were injured a year ago should be pruned as early as possible this spring in order to get the advantage of a full season's growth. They should then be given another and lighter treatment in May or June for the purpose of curbing undesirable shoots and confining the growth to the type of wood desired.

THE NORMAL TREE

Much the same general treatment is recommended for trees which were either protected by heaters or which, on account of advantageous location, did not suffer injury, with the exception that such trees usually are in fairly good balance, providing they have not been pruned severely in the past.

Regular annual—or, better yet, semi-annual—light pruning, designed to keep the trees moderately open to the penetration of sunlight, will maintain them in good bearing condition. Moreover, they will not be so large as to be unwieldy, nor expensive to maintain.

A well-pruned young lemon tree, which never will get into condition of those shown above.

A 40-year-old Valencia, too large for fumigation. Top deteriorating.

"Stubbing," which results in undesirable vegetative growth, shown in left row of oranges.

Pushing Oregon Prunes

THE Oregon Growers' Co-operative Association has done some splendid work advertising and introducing Oregon prunes, most of which are of the Italian variety. This is a large, sour sort which grows much better in Oregon, Washington and Idaho than the petite or French prune. The latter is apt to be quite small when produced in the Pacific Northwest.

C. I. Lewis, former manager of the Oregon Growers, said that one of the hardest marketing problems encountered was the introduction of a sour prune into territory where consumers had been educated to the superior advantages of the sweet variety. During the war, when sugar was very expensive, an especially strong point was made in favor of petites on account of little or no sugar being required for their consumption. The Oregon people found this argument very hard to overcome, says Mr. Lewis.

ITALIAN VS. SWEET

In spite of the claims made by the very efficient advertisers of "Sunsweet" prunes, it is a fact that Italian prunes are superior in some ways, as many people prefer the flavor of the latter, while others like tart, acid fruit better than the sweet kind. It is merely a matter of individual preference, although all sweet fruits have an undeniable advantage in sugar saving.

In striving to find a market for the large and increasing acreage of Oregon prunes, the State Fruit Association has been seriously handicapped by the competition of non-members, who have been induced by dealers to sell at less than market prices. It is obviously difficult to maintain values when others are selling the same product at cut rate prices.

The Oregon growers adopted "Mistland" as their trademark and through judicious advertising, equitable distribution and a standardized, dependable pack have built up a splendid market for Oregon prunes. This fine fruit is being shipped in carload lots to 81 cities and has reached 21 additional markets in smaller quantities.

Packing houses are operated by the association at Salem, Riddle, Myrtle Creek, Sutherlin, Creswell, Scotts Mills, Dallas, Yamhill and Forest Grove. M. J. Newhouse, the efficient manager of the dried fruit department, says their packing plants the past season for the first time all ran at capacity, due to a full crop in most localities and increased acreage.

There are now 23,564 acres of bearing prune trees in Oregon and 12,082 acres of non-bearing trees. The high prices which prevailed during and immediately after the war resulted in many large plantings of prunes in the Pacific Northwest.—O. H. B.

Vaca Valley—Famed for Fruit.

By WM. R. BUTLER

"I CONSIDER this the most practical demonstration I have ever seen at any horticultural exposition." So said Luther Burbank after having spent a good half-hour studying the Solano County plum exhibit at the last California State Fair.

Although Solano County had many products of field, orchard and garden on display, the leading feature of the exhibit was the showing of 43 varieties of plums grown almost entirely in Vaca Valley. These were shown in both standard pack crates and on plates.

Vaca Valley is one of the oldest horticultural sections of California. It has long been known as the district from which come very early cherries and plums of highest quality. This valley is almost entirely surrounded by the Coast Range and foothills, which protect it from ocean fog, from hot winds blowing from the entire length of the Sacramento Valley during summer, and from cold winds in winter and spring. On account of this natural advantage, both cherries and plums put forth blossoms at an early date and are comparatively safe against frost, thus insuring early harvests.

SOIL IS FERTILE

The soil of Vaca Valley is warm and fertile with just the proper mineral plant foods required for pitted crops like the cherry, plum and prune. Because these crops mature in this locality at such an early date, very little effort has been made toward irrigation. The rainfall, on the average, is ample for growing the crop and for producing bearing wood crop before the dry season. Every effort is made by the growers to get onto the land with moisture—conserving implements as soon as possible after winter rains, in order to maintain a mulch.

A SIGHT WORTH SEEING

The average tourist fails to see this section of well-tilled orchards, lined on either side of the road with giant Mission fig trees because it is off the main, paved highway. Either in spring at blossom time or during the fruiting season, it is one of the most beautiful spots in all of California. Take the main road leading west from Vacaville toward Winters and you pass through this wonderful valley; it's a trip long to be remembered.

During the ripening season the plum crop of so many varieties is one riot of color. Dame Nature fears no rival in tinting and painting the plums of Vaca Valley. Every color and shade of the rainbow, with the most delicate of pastel tinting, may be found here.

But why was Mr. Burbank so impressed with Solano's showing of fruit? It was a practical demonstration of natural keeping qualities enhanced by proper precooling and storage. This fruit, having been precooled and stored for more than six weeks, was taken out of storage on Thursday before the opening day of the Fair, which was Saturday, and was allowed to sweat out and dry before handling. And it was just one week after its removal from cold storage that Mr. Burbank saw the exhibit.

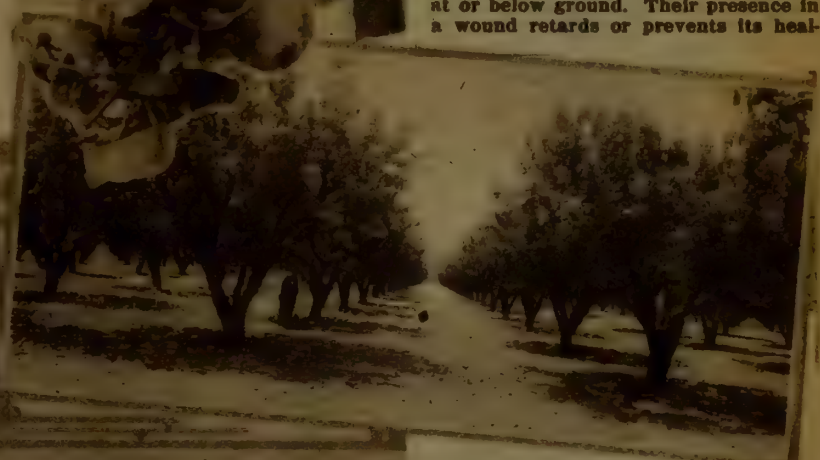
Meanwhile it had been judged and awarded sweepstakes on both crates and plates. No replenishing had been done. Growers, shippers and packers examining this and other exhibits, which had been carefully handled, were treated to a practical demonstration of results.

One packer was shown how his excellent crate of Santa Rosas stood only second because he had sliced the fruit in his effort to make a four-four pack by resting the inside rows on the tin tops of the baskets. Too loose packing also showed to poor advantage. Some of the newer varieties, as propagated by Millard Sharpe, stood up splendidly alongside of the old standard varieties, while some of the older varieties, which had been considered the best shipping bets, did not stand the test at all.

Fruit men from some of the irrigated sections admitted they could not produce any larger specimens or any better quality. We feel, after our experience last year, that plums gathered at the time they are beginning to color, packed as for market in standard containers, properly precooled and then placed in cold storage, come through and stand up better than those wrapped individually, stored in single or double layer containers and later packed in crates. At any rate, Vaca Valley fruits meet this practical test.

A cherry-picking scene in Vaca Valley, one of the earliest fruit districts in California.

One of the later plantings of plums in the Vaca Valley.



View of the famous Bassford Vaca Valley plum orchard.

Dry-yard scene on the Bassford ranch. The fruit is grown largely without irrigation and matures very early.

Inspect Now for Collar Rot

COLLAR rot of apple trees is a common cause of decline in many orchards. Occurring at or below the surface of the soil, it often passes unnoticed until it is too late. The disease appears as a rotting away of the bark at the surface of the ground. This is due not so much to any particular fungus as to the fact that a wound from any cause heals with much greater difficulty at the soil surface, particularly in heavy soil.

Wounds are caused by tillage tools, gophers, fire blight, winter injury, arsenate of lead injury and other things. All such wounds should promptly be cut clean, disinfected with Bordeaux and painted with a waterproof covering such as asphaltum tree paint. If they are not treated and the soil accumulates in contact with them, they are likely to progress and finally girdle and kill the tree. This is particularly true where wooly aphis is present. Wooly aphids spend the winter on surface roots and in wounds at or below ground. Their presence in a wound retards or prevents its healing. They are controlled by applying tobacco stems, dust, or nicotine to the soil close around the trunk.

Apple growers will do well at this time of year to make a tree-to-tree inspection of their orchards, excavating the soil, examining conditions at the collar and taking precautions to head off collar rot which usually is due to neglect.—J. E. COIT.

New Names Are Suggested

IN response to W. H. Gardner's request, several subscribers have suggested names to take the place of the terms "Subsoiler" and "Plow Sole" (or "Hard Pan"). "Subber" was Mr. Gardner's contraction of subsoiler.

M. L. D. Martin of Sacramento suggests the name "Terra-molder," meaning a plow that molds or packs the soil.

J. Jesser of Dixon says: "Why not call a subsoiler a 'Cracker,' since it makes a crack in the ground, and the plow pan 'Undercrust,' a crust under the ground." The hard pan, he points out, like the undercrust of some restaurant pies, is very tough.

Improving Horse Beans for Cover Crop

By DR. P. B. KENNEDY

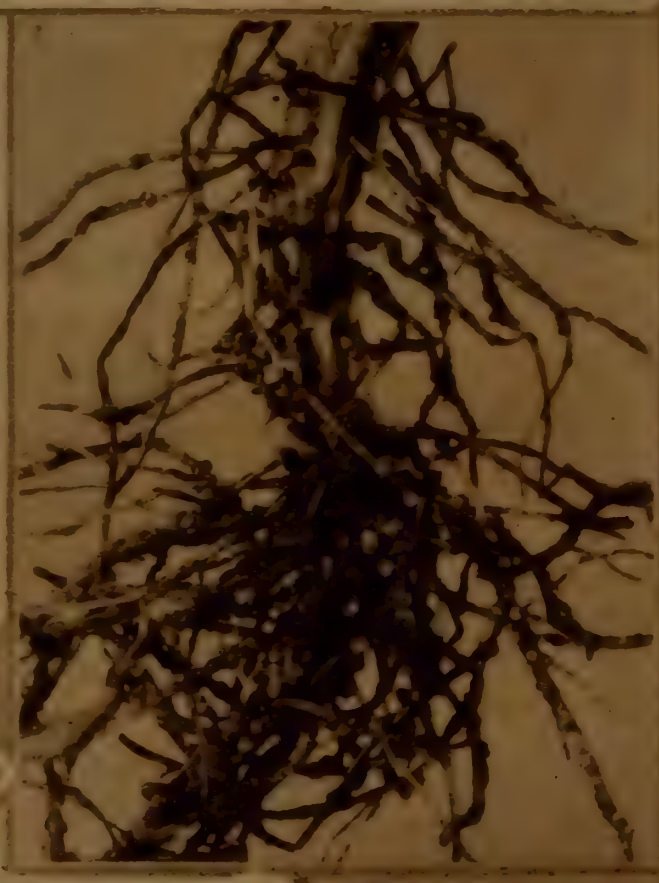
A VISIT to Southern California last winter revealed the fact that horse beans are a valuable and important crop to the fruit grower, especially in the citrus sections. In every instance where there was an opportunity to compare melilotus indica or vetch with horse beans, when grown for a green manure under similar conditions, the beans had produced the tallest growth in the same length of time.

The reason for this is that the horse bean plant will grow better during cool winter weather than any other legume.

Horse beans have not been used more extensively as a green manure crop because of the high cost per acre for the type of seed generally obtainable. The only sort available in commercial quantities in the United States has been the large-seeded varieties, which are sold at a comparatively low price per pound. Owing, however, to the large size of the seed the crop has been an expensive one to plant.

The small-seeded type of horse bean, particularly the bell horse variety, requires very much less seed per acre than common sorts, thus reducing the cost very considerably. Our experiments show that the bell type of horse bean, in spite of its small seed, produces a larger top, with a taller growth and a larger number of stalks to the plant, than the ordinary, large-seeded horse bean.

The horse bean has been cultivated since prehistoric times. There have been developed a large number of varieties and strains suitable for a number of different purposes. Some have been selected for their large size and desirability as a vegetable, being cooked and eaten when green in a manner similar to garden peas. Other varieties are suitable for mixing with oats to form a grain ration for live stock.

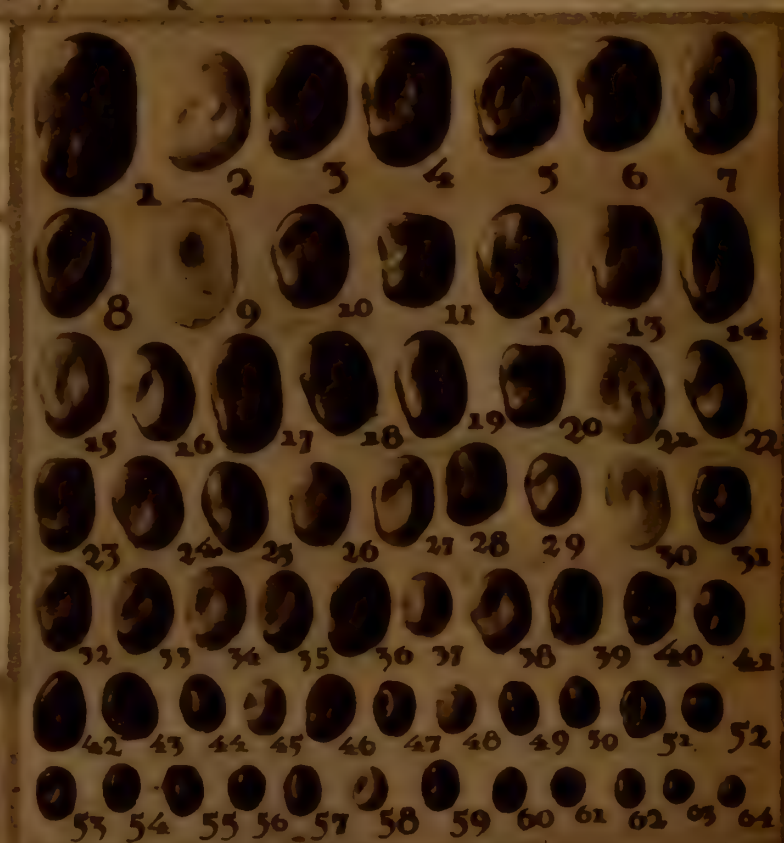


Enlarged section of root, showing nodules. This important legume, now that small-seeded varieties are available, promises to become one of our most important cover and silage crops.

This photograph shows height of plants at time of harvesting for seed.

Number 3 has 223 seeds to the pound and would require 195 pounds to the acre. Number 64, the smallest variety, has 3775 seeds to a pound and would require only eleven and a half pounds to the acre.

Taking the price of horse bean No. 3 at 6 cents per pound, the cost per acre for seed would be $11.70. Number 64 at the same price and rate of seeding would cost only 69 cents per acre.



The variation in size of different types of seed is shown graphically in the above illustration (reduced one-fourth). Number 1 has 145 seeds to the pound and Number 64 has 3775, representing a difference in cost of planting of about $12 per acre.

PLANT RICH IN PROTEIN

Horse bean seeds are used as human food, green or dry, and ground up as an ingredient of prepared poultry food or as a coffee adulterant. Frequently horse beans are roasted and eaten like peanuts. The entire plant is used for hay, silage, soiling or green manure. Both the seeds and the leaves are rich in protein.

This bean is an annual legume with erect, coarse, succulent stems and large leaves without climbing tendrils. It usually has one strong central root with numerous spreading lateral rootlets. As these roots decay they leave channels of humus in the soil. Being covered with numerous large nodules the roots can be counted upon to add valuable nitrogenous food to the soil.

The illustration of seeds numbered one to sixty-four shows the comparative size of different strains of horse beans. Number 1 is an unusually large sort and is used only as a vegetable. It has only 145 seeds to a pound and 301 pounds would be required to plant an acre, counting one seed per square foot. Numbers 2, 3 and 4 represent the ordinary large field horse bean, the one that is quite generally planted for all purposes, including cover crop throughout the State.

This estimate is based on one seed per square foot and does not take into consideration the space occupied by trees in an orchard. This space varies considerably with the kind of fruit and the age of the tree.

REDUCING SEED COST

In citrus groves a large part of the orchard cannot be planted to a cover crop as the branches extend to the ground. (Continued on Next Page)

A sack of "Bell" seed (No. 37 on the chart), produced by Frank P. Bell of San Gregorio, Cal. This type has a number of highly desirable qualities.

he quantity of seed needed varies with ie space occupied by the trees.

In old orange orchards the number pounds of seed required is reduced ery considerably, as one half of the round is occupied by the trees. When ie smallest type is developed so that can be planted on a commercial cale, the cost of seeding a horse bean over crop in a citrus grove should not xceed 50 cents per acre.

One of the beans shown (No. 37) is ie Bell horse bean now being introuced by Frank P. Bell of San Greorio, San Mateo County. It is oval in hape—not flattened—and being uniorm in size is admirably adapted to eding with a bean planter. It proices a plant with a large number of ucculent, leafy stalks, which grow om 5 to 7 feet tall. Mr. Bell is seeting annually from his fields the nallest beans, aiming each year to roduce a smaller size.

Analysis of the green material of e Bell horse bean by the California xperiment Station indicates that the rgest amount of nitrogen is added to e soil if the crop is turned under hen the plant is from 53 to 60 inches ll, with both blossoms and pods presnt in about equal proportions.

For every 100 pounds of green mateal turned under there is approxiately one-half pound of nitrogen lded to the soil. If the crop weighed enty tons per acre, 200 pounds of nitrogen would be added to that amount of nitrogen in the roots and their nodules.

HUMUS HELPS THE SOIL

The physical effect of adding to the soil a large amount of organic matter also should be considered. Experiments show that the more succulent the green manure, the more rapidly does it decay and, therefore, the more quickly are the nutrients available. Under optimum conditions of soil and moisture, the nutrients are available in from two to four weeks, with the maximum amount in from four to twelve weeks. From this time on there is a rapid decrease in the humus, so that the soil soon is ready to receive another supply.

Owing to this rapid decomposition of humus and the use of nitrates by the trees, with probable loss also by leaching, both winter and summer cover crops may be grown profitably in the same orchard year after year.

The small horse bean also is a valuable silage crop when mixed with green oats cut in the dough stage. Cows will eat it up clean and it increases their flow of milk. Horse bean and oat silage, according to analyses reported by the Division of Nutrition, California College of Agriculture, shows a higher per cent of protein and fat than Indian corn or sweet sorghum silage.

How We Use Oil for Dipping Hogs

T'S really surprising how many hog ticks and "nits" or eggs will accuulate on a bunch of hogs in a short me. We always call them lice, but n our farm the big, blood-sucking arasite that does the most damage a tick—not unlike a wood tick.

About eight years ago, when we rst started keeping Berkshires, we ut in a dipping vat with a narrow hute leading to it and a drain platorm at the outlet end. A V-shaped orral leads to the intake chute. The at is about 30 feet long and 3 feet ide on top and tapered to 18 inches t the bottom.

There is a sharp drop-off at the inake end and a slatted runway for the ogs to walk out at the opposite end. Ve have this vat filled nearly to the op with water, with a layer of crude il four or five inches thick on top. When a hog or a pig swims through his bath it comes out thoroughly oaked all over; and the movements f swimming get the oil back of the houlders and between the legs, here there are always plenty of nits." The oil smothers the adult nd growing ticks and lice, and so horoughly soaks the eggs or "nits" hat they never hatch.

When first we made the vat, we sed sheep dip and disinfectants of ifferent kinds. These kill only the iving vermin, generally, and the treatnent has to be given again in 10 days r two weeks to kill the bugs that atch from the eggs. Theoretically, his should be easy to do, but as a ule one gets busy with something lse and the redipping is put off.

Then, again, some "vets," and, I believe, some manufacturers of dip, say he prepared material does not stay otent more than a couple of weeks. o clean out the vat and put in new "dope" at each dipping is not only xpensive but also a lot of bother; herefore, for several years now we ave used nothing but crude oil, and t works perfectly.

The hogs make very little fuss bout going through; they seem to njoy it in hot weather, but we never esitate to put them through, no matter how cold the weather is. The oil melts on them from the heat of the body and no harm results.

A little care must be used in turning small pigs that get headed back to the "jumping-off" end of the vat. A shovel or pitchfork serves to turn them around and guide them up the gangplank to the draining chute. Sometimes when we have just a few hogs or pigs that are lousy and they are not handy to the barn where the vat is located we crowd them into the corner of a pen and pour oil over them—any kind of oil, almost. We use all of the refuse oil drained from crankcases to pour on hogs.—R. W. G.

Bees Pollenize Almonds

MILLIONS of bees are being shipped into Colusa County to pollenize the almond orchards in the vicinity of Arbuckle by C. L. Graham, apiarist, who says that an experiment in the Scnider grove at Davis indicated that bees increased the yield of almond trees two to three-fold. An orchard should have at least one stand of bees to the acre, he asserts. There are 11,000 acres of almond orchards around Arbuckle. Graham is buying bees in Redding and Stockton and also importing colonies from Nevada. After they have abstracted the nectar from almond blossoms the bees will be taken to Sutter County to work on the peach trees.

Protection From Electricity

A SUBSCRIBER, C. H. Crampton of Chino, California, advocates a very simple and effective method of protecting stock from lightning, by setting steel or iron posts at intervals along the fence.

Another scheme described by Mr. Crampton is to take a length of common or barb wire, bury it deep enough to touch moist soil and extend the end a few inches above the fence posts. Lightning always takes the most direct path to earth, he points out, and it will naturally follow the wire fence until it comes in contact with the wire conductor, whence it will be guided to the ground.

DE LAVAL CREAM SEPARATOR PRICES

A word about De Laval Cream Separator prices to prospective 1923 purchasers is pertinent at this time.

De Laval prices were reduced last year to practically pre-war level, allowing for increased capacity and other improvements made meanwhile.

This reduction was made in anticipation of a further reduction in labor and material costs. The reverse has happened. Labor and material costs are going up rather than down.

If they continue to do so De Laval prices will have to be advanced. They are now too low. The economies possible through greatly increased production can alone permit their remaining so.

In any event, De Laval prices cannot be reduced. They may easily have to be advanced at any time. The safe thing to do is to buy now and take no chances.

This is the more so by reason of the fact that 1923 De Laval machines are even better than ever before, that dairying was never more profitable, and that no one having use for a cream separator could ever less afford to be without the best or to continue the use of an inferior or half-worn-out machine.

Why not see your local De Laval agent at once or write us direct at the nearest address given below?

De Laval Pacific Company

61 Beale Street, San Francisco

Saved Big Veterinary Bills—Cows Gave More Milk the Year Through

Mr. C. E. Dodge of Dewittville, N. Y., is one of the many cow owners who have discovered that it pays best to PREVENT cow diseases. He knows that it is a fine thing to have on hand such a valuable medicine as Kow-Kare in the event of actual diseases, such as Abortion, Retained Afterbirth, Barrenness, Milk Fever, Scours, Bunches, etc. But he also knows that a moderate use of Kow-Kare in the feed not only PREVENTS these diseases, but greatly increases the winter milk flow. He writes us his experience, as follows:

"Since I have been on the County Farm, I have been using Kow-Kare in the dairy for the last ten years. I have 52 cows. My experience is that a few dollars' worth of Kow-Kare saves us a great many dollars' worth of veterinary bills, and also every cow in the dairy that I feed it to produces more all the year through because of the Kow-Kare. I have no sick cows or trouble, when I begin feeding Kow-Kare, from the first of January until I turn them out in the Spring."

Winter feeds are so much harder on the digestive and milk making organs of the cow that the vitality of these functions is sure to become impaired unless nature is assisted. Kow-Kare is designed primarily to strengthen these very organs so that they may throw off disease and keep up the normal milk production.

The best of it is, this valuable Kow-Kare treatment costs so little. Just a tablespoonful of the remedy morning and evening about one week in each month will keep a cow in best of health and heaviest milking. Your troubles from sick and backward cows are over when you have learned to depend on Kow-Kare.

Feed stores, general stores and druggists sell Kow-Kare; large size $1.25, medium 65c. We will send postpaid on receipt of price, if your dealer is not supplied. Write now for our valuable book, "The Home Cow Doctor."

DAIRY ASSOCIATION CO., INC.

Lyndonville, Vt.

Manufacturers of KOW-KARE and BAG BALM

FREE BOOK

Wholesale Distributors of Kow-Kare and Bag Balm for California

Germain Seed Co., Los Angeles, Calif.

CASE ORCHARD DISC HARROW

BUILT to stand the strain of severe soil conditions. Frame is exceptionally well made of best quality steel. Reinforced at points of greatest strain. Special chilled ring bearings. Discs are covered with metal shields. No projecting cups or levers to catch in low-hanging branches.

This harrow will work up close to trees, shrubs and fences. Built in 5, 6, 7, 8, and 9-foot sizes, with 18-inch discs. Write for illustrated folder. Address

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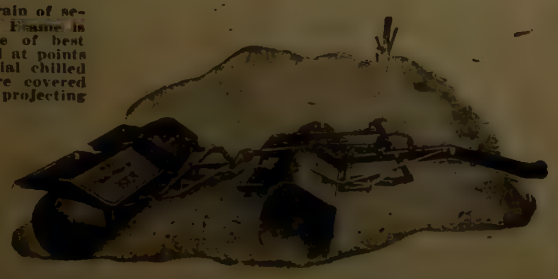

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can be "turned in" without plowing? The use of a special disc harrow DESIGNED FOR THIS SPECIAL PURPOSE has proved a greater benefit to soil and crops and a saving in costs. Growers who want their vegetation to be of greatest profit should send us a postal requesting literature.

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60 cents a line (average 7 words). For white space, cuts, or display type, most is computed according to total space occupied by advertisements.

Advertisement must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

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CO-OPERATIVE ELECTRIC PROFITABLE POULTRY and HATCHERIES — 70,000 superior chicks, turks, ducklings every week, from long-established, mature, proven flocks of splendid, persistent unforced egg-production. Regular customers take half, spread their growing satisfaction with continued use of our 180-290 egg W. Brown, Buff Leghorns; Barred, W. Rocks; Reds, Anconas, Minorcas, Wyandottes, Brahmas, Andalusians, Ducklings, Turks. To date we've quadrupled our bookings (for every month till June) over former years. WHY? pleased customers reorder, and their friends; prices surprisingly low, esp. for quality, profit; carefully pack, meet trains, avoid chilling; gladly supply 20 to 20,000 lots; for 25 years imported, trapnested, selected, mated for vigor, growth, beauty, heavy winter-laying. Please state definite wants. Write: Profitable Poultry, BOX O, 13 N. Fair Oaks, Pasadena.

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The kind that live and thrive, lay and pay. We hatch from purebred, specially selected high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest quickest profits. Leghorns, 12½c; Reds 16½c; Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELECTRIC HATCHERIES, West "L," Burbank, Calif. References: State Bank of Burbank.

BABY CHICKS -12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

WHITE LEGHORN BABY CHICKS from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: February, $16; March, $14; April, $12.50; May and June, $12. Safe arrival of full count live, strong chix. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 418 Sixth St., Petaluma, Calif.

THE SALES HATCHERY, Petaluma, Calif., can supply you after April 15 with "A" and "AAA" grade White Leghorn chix. Accredited by Sonoma County Farm Bureau. Everything as represented and safe delivery guaranteed. Write us now, stating your requirements, so we can send information and quote interesting prices. 35 years' experience.

BABY CHICKS—R. I. Reds. Utility stock. Large, dark birds; grow into broilers fast and are heavy layers. White Leghorns from selected breeders. Capacity 50,000. Attractive prices on large orders. Also booking orders for 10 and 12 weeks old W. L. pullets any quantity. Anderson's Hatchery, Modesto, Cal.

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BABY CHICKS $16 per hundred. Don't buy chicks until you get my free circular. MRS. W. T. WHEELER, Berkeley, Calif., Rt. 1, Box 496-E.

S. C. W. LEGHORN BABY CHICKS. Are you looking for quality? Our large pedigreed hens are mated to Oregon Agricultural College and Tancred strains. No lights used. Inspection solicited. Prices reasonable. DINIC HATCHERY, Petaluma, Calif.

WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

BROWN LEGHORN PRIZE STOCK BABY CHICKS & EGGS. GREAT OPPORTUNITY TO QUALITY BREEDERS. WE OWN CREATOR INGOMAR. BREEDS BEST ON COAST. CASA DE ROSAS, CARMEL, CAL.

CHICKEN FEED CUTTER - Only $8.50. Hundreds used. Prepaid anywhere. Write for Feed Cutter catalogue. ARNOTT & CO., Inc., Wholesale Jobbers, 112-118 S. Los Angeles St., Los Angeles.

WORLD'S RECORD—Santa Cruz doesn't certify its chicks, but has taken a world's record for White Leghorns in 1922. Dependable Hatchery, 15 Grant Ave., Santa Cruz, Calif.

SOMETHING GOOD in WHITE LEGHORN CHIX. Best strains at reasonable prices. All popular varieties hatching each week. LINGO-DELL RANCH, Eleventh and Verdugo Sts., Burbank, Calif.

PLANS for poultry houses! All styles, 150 illustrations. Secret of getting winter eggs and copy of "The Full Egg Basket." Send 25 cents. INLAND POULTRY JOURNAL, Dept. 63, Indianapolis, Ind.

BABY CHIX—R. I. Reds, Barred Rocks, Buff Orpingtons, Anconas, Black Minorcas, Golden Buff, White and Brown Leghorns. SANTA CRUZ BEST, and TURKEYS. ENOCH CREWS, Seabright, Calif.

SANTA CRUZ CHICKS from our purebred flock of 2-year-old W. L. hens mated with cockerels from 265-egg hens and up. Prices are right. T. E. BLAKE, Santa Cruz, Calif.

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BABY CHICKS. Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

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"QUALITY" BABY CHICKS
Turkeys, Ducklings

If you want any, don't just buy anywhere, but get them direct from the incubators of a hatchery where "Quality" is the watchword. Our "Quality" chicks are electrically hatched, strong and sturdy, and from good stock. All leading varieties. We specialize in very choice S. C. White Leghorns from hens of very heavy egg-yielding reputation. Hatching eggs and electric brooders. Write for prices.

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Capacity, 125,000 eggs.

CERTIFIED White Leghorn Quality Chicks at Utility Prices. Choice free range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25, $6.50 per 50; $12 per 100. Special prices 500 and 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 Seventh St., Petaluma, Calif.

HUSKY CHICKS from our 200 egg S. C. White Leghorn 2-year-old hens, mated to cocks of famous egg strains, $15 per 100. HATCHING EGGS, $7.50 per 100. Customers write they lose only 1 to 3 per cent. Also White Plymouth Rocks, Black Minorcas, Anconas. Laying hens, pullets and cockerels. PURE BRED HATCHERY, Route 1, San Mateo, Cal.

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HANSON'S Pedigree S. C. W. Leghorns. Over 200 egg flock average for 6 years. Over 221 egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalogue. J. A. Hanson, Corvallis, Oregon.

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WHITE, Bronze, Bourbon Red Turkeys—Males, $11-$15; females, $7.50. Eggs, Red, $6 dozen; others, $5 dozen. Choice stock. White guineafowl, $2.25 each. Muscovy duck eggs. White peafowl, also blue. French Houdans. B. HOCKING, 341 E. 23d St., Los Angeles, Calif. Winner of firsts and specials.

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FAMOUS NEVADA HONEY delivered: 2d zone, 10-lb., $9.65, 60-lb. can, $6.75. 3d zone, 10-lb., $1.75; 60-lb. can, $7.45. C. E. Andrews, Box 384, Fallon, Nev.

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YOUNG DOES AND BUCKS for sale. Thoroughbred stock. Prices reasonable. Visitors always welcome. Carson and Ivy Sts. DEBU RABBITRY, Torrance, Calif.

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The Charles Weeks System of Intensive Poultry and Berry Farms

ONE ACRE AND INDEPENDENCE, OR The Fine Art of Earning a Comfortable Living on One Acre in California.

For those who desire to dwell in sunny California without living up hard-earned capital.

Charles Weeks, for 18 years proprietor of the most intensive Egg Farm in the world and founder of the famous CHARLES WEEKS POULTRY COLONY at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles.

Write for literature.

OWENSMOUTH, CALIF.

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Pajaro Valley Orchard Buys!

Rare chances for paying investments. Ideal climate. NO irrigation, NO smudging. Improved ranches, $100 to $1000 per acre.

A 43-acre ranch, good location, Cots and Apples. Av. annual income $10,000. Price $29,000. Terms. For full details and descriptive literature write FARM & FORESS CO., Watsonville, Santa Cruz Co., Calif.

ORCHARD homes on Paradise. Deep, fertile, irrigated fruit, nut, berry land, delightful, healthful climate, fine water, roads, electricity, telephones, on R. R., three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

SMALL YOUNG ORCHARD, walnuts interset apricots, highly improved, plenty water, fine soil, well located, Ventura County. Will bear searching investigation. Priced for quick sale, terms. P. O. Box 734, Oxnard, Calif.

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WANT to hear from owner having farm for sale. Give particulars and lowest price. JOHN J. BLACK, 710th Street, Chippewa Falls, Wisconsin.

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNowa, 367 Wilkinson Bldg., Omaha, Neb.

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KENTUCKY NATURAL LEAF TOBACCO—Chewing: 5 pounds, $1.75; 10 pounds, $3. Smoking: 5 pounds, $1.25; 10 pounds, $2; 20 pounds, $3.50. Send no money. Pay when received. FARMERS' CO-OPERATIVE TOBACCO UNION, Paducah, Ky.

NATURAL LEAF TOBACCO—Chewing, 5 pounds, $1.75, 10 pounds $3.00, 20 pounds, $5.25. Smoking, 5 pounds, $1.25; 10 pounds, $2.00. Pay when received. TOBACCO GROWERS UNION, Paducah, Ky.

HOMESPUN TOBACCO—Chewing: 5 lbs., $1.75, 10 lbs., $3, 20 lbs., $5.25. Smoking, 5 lbs., $1.25; 10 lbs., $2; 20 lbs., $3.50. Send no money, pay when received. CO-OPERATIVE TOBACCO GROWERS, Paducah, Ky.

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CHOICE AND RARE BERRY PLANTS—Red Raspberries, Black Raspberries, Purple Raspberries, Blackberries, Cory Thornless, Macatawa, Mammoth, Himalaya, Phenomenal and Red Lucan Dewberries, Currants, Gooseberries. Ten varieties of Strawberries. Wholesale and retail. Send for free catalogue. STANFORD DERBY PLANT NURSERY, Box 726, Palo Alto, Calif.

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CHOICE strawberry plants, blackberry, blackcap, currant, gooseberry, loganberry, raspberry. Lowest prices. Send for list. WARD K. RICHARDSON, 198 Hickory, Salem, Ore.

50,000 CHOICE, inspected loganberry plants. Unusual low price. Harry Lanum, Rt. 4, Salem, Oregon.

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MISCELLANEOUS—For Sale

AUTOMOBILE OWNERS—Make an A-1 automobile polish for $1.50 per gallon; approximate cost. Something that will give you satisfaction or your money refunded. Recipe for making $1. For further particulars address B. F. BURNS, 8102 Bell Ave., Graham Station, Los Angeles, Calif.

Cleaning Wheat

ENOUGH coarse foreign material, or dockage, to feed ten cows and thirty horses for seven months was removed from the wheat grown on a North Dakota farm in 1921, according to information received by the United States Department of Agriculture.

The material was removed from the wheat at the time of threshing with an experimental grain recleaner tested by R. H. Black, in charge of grain-cleaning investigations for the department. The foreign material was finely ground before feeding so as to kill the germs of the weed seeds.

The owner of the farm previously sold his wheat "in the dirt" at his local elevator and had received nothing for the foreign material in the grain. Moreover he had been compelled to use high-priced oats and other grains to feed his live stock. By cleaning his grain and grinding the dockage in 1921, he obtained fairly good feed at practically no cost.

"Another inducement to clean grain on the farm is that clean grain usually will bring a higher price in the market than grain which contains dockage," Mr. Black says.

Various types of cleaning machines and methods of cleaning grain on the farm are described in Farmers' Bulletin 1287, Foreign Material in Spring Wheat, copies of which may be obtained upon request of the United States Department of Agriculture, Washington, D. C.

New Smut Treatment Success

DUSTING seed grain with copper carbonate to kill smut has given such good results that Morrow County (Oregon) farmers have planted 20,000 acres of wheat with seed treated in this manner. It is about as efficacious as the usual bluestone liquid treatment, but in order to secure good results it is necessary to do a very thorough job of dusting, which is often difficult to accomplish on a large scale. The chief advantage seems to be the greater ease of treatment where proper mixing apparatus is available and the saving of time which is lost in waiting for liquid treated seed to dry.

Oregon "Co-Ops." United

A NUMBER of Statewide marketing associations in Oregon have formed a co-operative council. The purpose of the latter is to co-ordinate the co-operative movement and assist in solving the problem of adequate financing. The Oregon associations have not used over one-half of the credit extended to them according to R. A. Ward, president of the co-operative council.

Fruit, grain, wool, poultry, hay and cheese producers have united in the new council. These seven groups of producers number 8000 members. It is estimated that there are 50,000 farmers in the State.

Girls Run Big Ranch

MISSES KATE AND SUSIE LYNCH, daughters of the late John Lynch, pioneer rancher of Sonoma County, successfully conduct the old home ranch of 850 acres in the foothills, five miles northeast of Petaluma. In addition to general farming and poultry raising, the Misses Lynch raise pure bred milking Shorthorns, having now a good sized herd.—K. R.

Cougars Kill Pigs

NINE fine, fat pigs were recently killed by cougars, or mountain lions, on the Meiner ranch at the mouth of Matilija canyon, Ventura County. The maurauders left most of the carcasses, as is their custom in killing other animals, including deer. A larger bounty on cougars is being advocated by farmers as a result of such depredations.

FARMERS READ THE BIBLE

More farmers read the Bible than do townspeople, according to George C. Buxton, Chicago publisher, who further estimates that 15,800,000 families in the United States own Bibles and 7,200,000 do not.

EATING MORE TOMATOES

Tomato shipments in the United States increased from 18,000 carloads in 1921 to 26,000 the past year, according to statistical reports.

Caruthers Believes in Diversification

THE ranchers around Caruthers believe in diversified farming, judging by the variety of crops they produce. H. K. Anderson, for example, has 28 acres of Thompson raisin grapes which paid him $3400; ten of alfalfa; four acres of sweet spuds, which yielded seven tons of tubers; and apricot trees which produced $100 worth of fruit.

Z. T. Withrow has 80 acres of land and 22 cows. He is at the head of the local cow testing association.

W. W. and J. W. Masten have 100 acres of land and a fine lot of pure-bred Poland China hogs, including 12 old sows, 50 gilts and 35 pigs. They are planting a portion of their ranch to Thompson grape vines. J. W. Masten teaches agriculture in the Reedley public schools.

A. W. Glass has 40 acres of which seven acres are in alfalfa and the rest in grapes and sweet potatoes.

William B. Nichols and sister have 50 acres of alfalfa and 30 acres of Thompson grapes. W. F. Martin manages the fine farm of Jack Frost of the power company. From 60 acres of alfalfa 400 tons of hay was cut and put in four large stacks. There are 20 acres of Malaga and the same area of Thompson grapes.

Earl Davis, former University of California student, has five acres of alfalfa and the balance of his 40 acres in raisin grapes.—O. H. B.

Honey-Making Cover Crops

ALL vetches, peas, beans and other leguminous cover crops are good honey plants, although when grown in cool weather they do not secrete much nectar. Cool nights are desirable, however, if followed by sunny days.

Vatch contains little nectar; filaree (alfilaria), considerable. The tall growing variety with pale pink blossoms is much used as a cover crop in citrus orchards. The lace-mat-like kind with bright pink flowers furnishes great quantities of both nectar and pollen and is classed as one of the best "grass-flowers" for honey making.

Of all cover crops that have come under my observation, not even excepting cultivated buckwheat, the horse-bean yields the greatest amount of nectar. This crop grows rapidly to a height of about three feet, and is fairly hardy. It blooms in forty to sixty days after planting and with favorable weather during the blossoming period supplies bees with wonderful pasturage at brood-rearing time, when pollen or honey is hard to find. Of course the principal value of the horse-bean is for green manuring, as it furnishes an immense tonnage of good fertilizer.

Cultivated buckwheat is a disappointment to the honey producer, because it yields but a small amount of nectar in this climate, and comes in bloom so early that the honey which bees make from it spoils the appearance of our beautiful white orange honey.

Some experiments I have made with Hubam, the new annual sweet clover, indicate that it may be successfully grown in citrus orchards and produce two crops of nectar-bearing bloom annually, but it requires liberal irrigation. A small quantity in my garden grew five feet high, having been sown in June. Early next spring it began growing and soon reached a height of more than eight feet. The Hubam patch was covered with bees both seasons. A heavy crop of seed matured. Part of this fell upon the ground and began growing after the November rains. Seed sown broadcast with barley has also made a good stand.

These results indicate a great future for this new clover. From summer sowing, a crop of hay, silage or pasturage may be obtained, followed by pasturage, hay or an immense seed crop the second season. As a green manure crop it can be utilized at any stage of growth. In heavy production Hubam probably outranks the common biennial sweet clover and requires a year less time to reach the blossoming stage. An Illinois farmer arranged with neighbors to plant 400 acres of Hubam clover for bee pasture and obtained over 400 pounds of honey from many colonies.—J. D. BIXBY SR.

The Latest Wonder! Japanese Jumbo Seed Collection

Be sure to plant these wonderful seeds, and grow Beans 2 to 4 ft. long. Watermelon 50 to 150-lb. Radish 10 to 30-lb. Cabbage 20 to 30-lb. Pumpkin 100 to 800-lb. Pumpkins have been raised from these seeds that takes 2 men to carry one. Other vegetables large as mentioned. Be the first to grow these mammoth varieties, and take prizes at your county fair. Send 25 cents, stamps or silver. Will send complete collection at once. Don't miss this great chance. Order now.

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Airplanes for Ducks; Whisky for Pheasants

WHEN game laws and the farmer's crops come into conflict, many and curious are the devices employed by the farmer to protect his property.

On Vancouver Island, near Victoria, a strawberry grower is troubled by the invasion of pheasants. The game laws will not permit him to shoot them out of season; therefore, he soaks wheat in whisky. Whisky affects these birds as it does humans. The pheasants get drunk and the farmer catches them. The story does not tell where the pheasants find themselves after "sobering up."

I remember, near Grants Pass, Oregon, seeing an irate Italian truck grower stoning the pheasants out of his garden patch. They had maliciously pulled up his onions.

In the rice fields of the Sacramento Valley, California, airplanes and bombs have been used to frighten away ducks. These ducks arrive before the harvest, when the grain is just about ready for binding, and have been known to strip off and scatter on the ground rice that would have filled hundreds of sacks. Two rice farmers in the Sacramento Valley last year employed airplanes to frighten the ducks away. Others are said to have defied the law and shot ducks before the season opened.

In the wooded countries where orchards are set out deer are sometimes troublesome, but not often seriously so.—BOB JONES.

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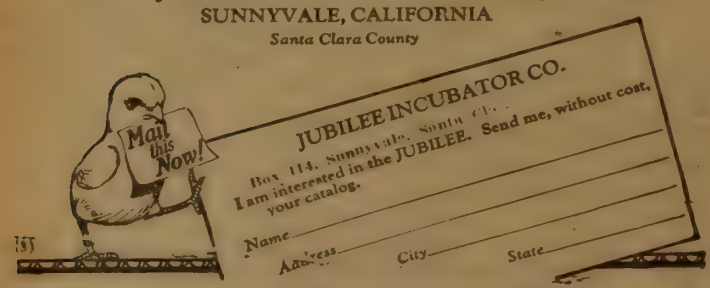

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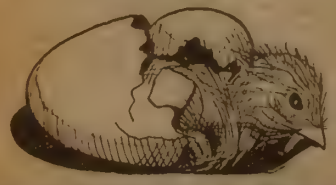

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The New BULLETINS

AMONG new bulletins issued by the United States Department of Agriculture, the following are deserving of special mention. They may be obtained free on application to the Division of Publications, Department of Agriculture, Washington, D. C. Order by number:

	NUMBER
Weevils in Beans and Peas	1275
The Farmer's Short-Box Measuring Flume	1270
Foreign Material in Spring Wheat	1287
The More Important Apple Insects	1270
A Physical and Chemical Study of Milo and Feterita Kernels	1129
Status and Results of County Agent Work	244
Nicotine Dust for Control of Truck-Crop Insects	1282
Chemical Changes in Calcium Arsenate During Storage	1115

CALIFORNIA CIRCULARS

The following new and helpful circulars have been issued by the University of California and will be sent free upon request. Address Director, Agricultural Experiment Station, Berkeley, Cal.:

Almond Pollination	346
Vineyard Plants	253
Fertilizer Experiments with Citrus Trees	345
Pruning Young Olive Trees	348

Valuable information is contained in a booklet, "Foundation Walls and Basements of Concrete," issued by the Portland Cement Association. Copies of this booklet may be obtained by applying to the Los Angeles office located in the Merchants National Bank Building.

San Francisco to Build Big Show Pavilion

SAN FRANCISCO is to have a $600,000 show pavilion, built by the San Francisco Board of Supervisors, to house auto, livestock and similar exhibitions. It is likely that the California dairy show will be held next year in the new building, which may become the permanent home of the show. It is the intention to change the present name and character of the show, making it include livestock as well as dairy products and machinery and to cover the entire Pacific slope.

Poultrymen Feeding Yeast

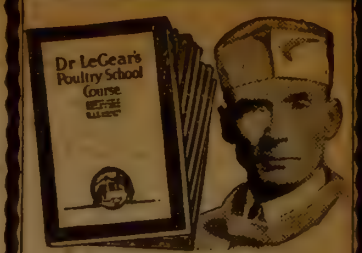
THE excellent results obtained by Fred Clark, Penn Grove poultryman (Sonoma County) in feeding yeast to chickens has resulted in hundreds of other farmers using this new kind of poultry provender. Clark is conducting an experiment with 2850 chicks, part of which will be fed yeast to determine the feeding value of this material.—KATHLEEN RODD.

EGGS GETTING PLENTY

There were said to be a million more cases of eggs in storage in January than were being held a year ago. This would amount to three eggs for every inhabitant of the United States.

SONOMA'S 1922 POULTRY CROP

It is estimated that Sonoma County produced last year 456,000,000 eggs, worth $11,400,000, and $17,400,000 shipped out; chickens, worth $7,200,000. —KATHLEEN RODD.



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SUNSWEET IS THE WORD AT SUN-UP

Up with the sun to harvest his crop of—health! It's all a matter of cultivation. Health itself is nothing but a great, big habit made up of little eat-sleep-work-and-play habits that furrow their way into your day. And it's easier to cultivate good health-habits than it is to "work" most any crop you can think of.

Take a simple sun-up suggestion like Sunsweet Prunes [stewed or baked, with cream or without]. Here is a morning "set-up" that's a natural body-builder and body-regulator. Remember that prunes are a *natural corrective.* Nature intended prunes for a purpose: to keep you fit-and-cheery. Let Nature point the way!

The tasteful part of it is that prunes, *when properly prepared,* can be made the most favored fruit on your table. Why shouldn't they be—these fine, jucy sweetmeats from our own California orchards!

Ask your dealer for these prunes—the pick of California's pack—sold in bulk and also in cartons. And send for our new Recipe Packet—"60 ways to shake hands with health every day." Use the coupon—it's free!

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California Prune & Apricot Growers Association, 35 Market Street, San Jose, California: Please send me, free, the Sunsweet Recipe Packet.

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-in your hands!

It's up to you! Every baby chick you hatch practically puts its life in your hands. It wants to survive, to live and thrive—naturally! But it expects you to help it past the danger-days of chickhood.

It expects you, for one thing, to see that it is fed right—and right from the start. You must remember that a baby chick is a *baby*—and, as such, needs a feed properly granulated and proportioned for tiny, tender stomachs. For instance—Sperry Baby Chick Scratch.

This feed could not be watched more closely for CLEANLINESS if it were made for human babies—let alone baby chicks. Everything that goes into it—prime, re-cleaned seeds and cracked grains, bone meal and charcoal—is searched and sifted, balanced and blended until it is up to Sperry laboratory standards.

The result is a uniform, baby chick ration that nourishes chicks as Nature intended. Remember that, in using Sperry Baby Chick Scratch, you are fulfilling a trust that has been placed in you. You are insuring the future of your baby chicks and their future profits to you.

And don't forget Sperry Baby Chick Mash

After the first week, don't forget to feed the little fellows Sperry Baby Chick Mash together with the Scratch. In this way you make sure of rapid growth—and no danger of overtaxing the gizzard or digestive tract.

Clean mill feeds, ground whole grains, soya bean meal (ground fresh at our own mills), bone meal, Rauh's Meato and dried buttermilk—these make Sperry Baby Chick Mash a sure-and-pure feed that builds bone, muscle, tissue and feathers.

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

MARCH 11, 1923

—Keystone Photo

He Capitalized His College Education

Davis Graduate Wins Laurels

THE California Agricultural College, at Berkeley, and the University Farm, Davis, have turned out many young men who quickly became leaders in their respective communities. Translating theory into practice has resulted in their success. "Johnny" Rowe is one of the boys who is making good in a big way. Here's his story, briefly told. —*The Editor.*

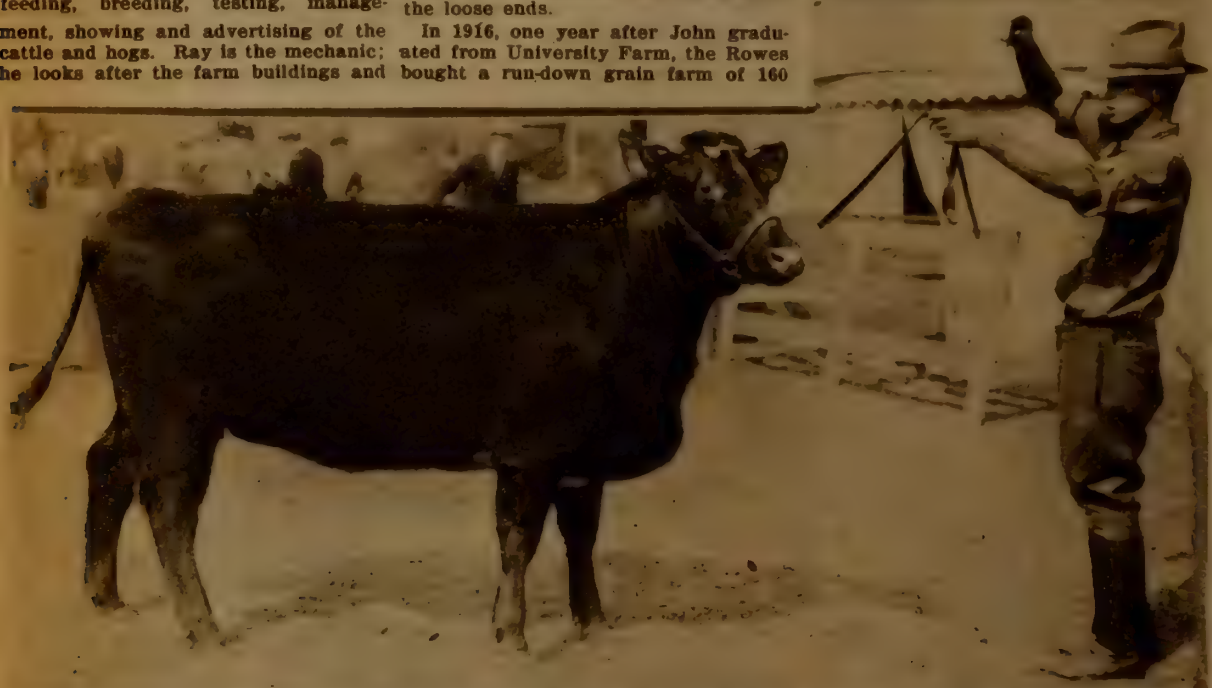
By WM. REYNOLDS BUTLER

AMONG the many graduates of University Farm, who are making good on the land, the Division of Animal Husbandry at Davis points with pride to John O. Rowe.

"Johnny" is the mainspring of the firm of J. D. Rowe & Sons, Davis, Calif., breeders of Milking Shorthorns and Duroc Jerseys. He spent four years at the University Farm and since graduation has attained marked success on the home farm.

As an example of a "many armed family co-operation"—the kind we like to talk about—the firm of J. D. Rowe and Sons is worthy of close study. John and his brother, Ray, co-operate in the milking. John supervises the feeding, breeding, testing, management, showing and advertising of the cattle and hogs. Ray is the mechanic; he looks after the farm buildings and improvements, and is the field boss. "Dad" Rowe attends to the feeding of the stock cattle and fattening hogs, horses and chickens, and catches up the loose ends.

In 1916, one year after John graduated from University Farm, the Rowes bought a run-down grain farm of 160 acres in northern Solano County. While the war was on, Johnny got his gun and enlisted, and hence was unable to put his production knowledge to the test on the farm.



Here is Johnny Rowe with "Innisfail Betty," Milking Shorthorn, grand champion at the California National Livestock Show, San Francisco. 1922.

In 1919 the Innisfail herd of Milking Shorthorns was leased by the Rowes from Alexander and Kellogg. This was a choice herd founded upon ten heifers and an outstanding bull which were purchased from a prominent Eastern breeder.

Gypsy Girl, above, has won important show honors three successive years. Right—"Count Tickford," famous sire owned by Santa Rosa Stock Farms, bred and raised in Innisfail herd. (Shown with Innisfail Betty

The Innisfail herd on pasture. Increased soil fertility is one reward of the stock farmer. And in the case of the double-duty Shorthorn, there are at least two sources of income.

INCOME, FERTILITY ASSURED

Heavily in debt for the place and anxious to put into practice the truths learned at Dabvis, the family partners felt this plan of stocking of the farm with good cattle was a happy way out. They decided it was the best method of producing a steady income and at the same time increasing soil fertility.

At every step in the program, Johnny Rowe has called into practice the teachings of his State Agricultural College. During the last three years, under his management, the Innisfail herd has sprung into prominence not only in the show rings of the West Coast, but also at the last International. Hand in hand with breeding excellence, which has successfully proved his handiwork as a breeder and showman, have gone milk and butter fat records that have placed this herd in an enviable position before the Milking Shorthorn fraternity.

During the period of breeding up and producing a sale surplus of stock, the checks from sale of cream have gone far toward financing farm operations. The greater percentage of calves are raised on skim milk, supplemented with the right balance of grain and roughage.

The first sale of breeding stock, in May, 1922, consisted of 38 head, which largely went to farmers at an average price of $178. This was the first sale of Milking Shorthorns in this country in which every animal possessed either an officially-tested milk and butterfat record or a certified statement of production of ancestry.

FEEDS HOME-GROWN

The herd is tested each year for tuberculosis. The cattle are maintained and finished on home-grown feeds—alfalfa pasture, hay and silage; barley hay, oats and barley are the basic feeds.

In addition to the returns from dairy products and sales of dual purpose breeding stock, additional income is derived from an excellent herd of Duroc Jersey swine. The choice hogs are developed and sold as breeders and the others fed out on the farm.

During the last three years Johnny Rowe has fitted a show herd and shown successfully at all the leading shows on the Pacific Slope. In all these shows except two, he has won the grand champion female award and has stood well up in all classes in which he exhibited. Count Tickford, a product of the Innisfail herd, consistently has won grand champion honors on the West Coast.

L. V. Wilson, judge of dairy cattle at the last California National Livestock Show, said the showing of Milking Shorthorns from the Innisfail and Santa Rosa Stock Farm herds was the best lot of quality and type of the dual purpose kind he had ever seen.

With such marked success on the Coast, these two establishments took small show herds to the last Chicago International, where they competed with animals from leading herds from all over the U. S. A.

A total of 225 head made up the biggest and best Milking Shorthorn show ever held in the world. One prominent herd recently had returned from a triumphant showing against the best in Canada. That the California herds gave a good account of themselves can be seen in the awarding of Senior and Grand Champion bull to Santa Rosa Stock Farm on Count Tickford, and the Junior and Grand Champion female awards to Innisfail Betty, Johnny Rowe's yearling heifer. Both California herds stood well up in the money in every class shown.

JUDGE GIVES PRAISE

It is gratifying to know that the judge, Mr. J. M. Strickland of Yorkshire, England, who also passed on the steer classes as well as the dual purpose Shorthorns, chose for highest honors the type of cattle which Johnny Rowe has been producing in the Innisfail herd. For the truth is, America is looking (*Continued on Page 13*)

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
MARCH 11, 1923

New Methods of Raising Strawberries

Novel Plans Advocated by Azusa Grower—Space-Saving System Results in Heavy Yield of Winter Fruit—Other Advantages Claimed

INTENSIVE gardening is a term that really means something to A. A. Welch of Azusa, Cal. He has a strawberry "bed," which as the illustration shows, can be placed against the side of a building, therefore, it is suited to the smallest back yard.

The picture was taken early in the winter; since then, the plants have so increased in size as almost to hide the box. The decorative effect is pleasing.

Mr. Welch recommends a frame 6 feet high and 24 feet long, which he says will hold about 300 plants. If set in rich soil and properly cared for, this number should supply the average family with all the berries they can use, he asserts. The frame shown in the picture is 10 feet long, 5 feet high and 3 feet wide and holds more than 100 plants. These, asserts the owner, have outgrown similar plants grown in the usual way and set out at the same time.

The same number of plants grown in beds would require possibly 100 square feet of ground space, whereas the box occupies an area of less than 20 square feet.

Mr. Welch states he had berries all winter from the box, but none from his beds. The plants in the box, although unprotected, were not damaged by frost, he says.

It is suggested that the frame might be built double; that is, with a similar set of shelves on the opposite side, which might be devoted to flowers, the space between being available for storage of tools, fertilizer, etc.

NEW KIND OF BED

Mr. Welch describes also an interesting plan for raising strawberries on a larger scale, which he recommends to commercial producers, stating the increased crop and improved quality more than offset the additional expense.

"Early in the spring," says this ingenious gardener, "we plowed and dug out six trenches, each 48 feet long, 2 feet wide and 8 inches deep, smooth and level, and in them spread fine manure until it was about four inches deep when well packed down.

"Rough half-inch boards, 6 inches wide by 16 feet long were bored every 18 inches with one and one-half-inch holes, with centers one and a half inches from one edge of the boards.

"We set the edges with the holes down in the trenches, and connected the boards every 8 feet with boards one inch by four, by two feet, with edges two inches below top of side boards.

"Soil then was filled in so that after being well settled ready for planting, it was about level with the tops of the cross pieces. A week or so later, a double row of well selected plants of a choice variety were set twelve inches apart each way, and a little water given to each to settle the roots, after which the soil was plowed away from the outsides of the frames with a hand plow, and water run in the furrows until full, and kept there until moisture rose near the surface of the beds.

Mr. Welch's Unique Strawberry "Bed"

"It was a dry season; otherwise this would not have been necessary after the other watering. Unless the ground is fairly level, stops should be placed in the furrows every few feet partially or wholly to check the flow of water. Otherwise the lower parts are soaked before the upper.

"For a time the plants grew in the ordinary way; but as they became larger and the roots longer, their rapid growth was truly surprising. The first season's pickings were fully equal to those from the old patch, but the next season's yield nearly trebled them, and averaged finer in quality. It might not have been necessary to take two bites of some of the largest, but there were many immense and unusually large ones, which were mostly firm and without any cavity.

"After the first irrigation, less water was required to keep the beds moist, a condition so necessary for best results. When the water was shut off, the furrows were plowed back until again required.

"By setting the plants in double rows, 50 per cent of the space is saved, and two furrows only are required instead of four, as with single rows. Since the surface is not wetted, there is no crusted soil to loosen up, and only an occasional raking is needed to keep down weeds until the plants cover the ground. Since just enough space is required between the beds for furrows economy of space results.

"Much time and labor are saved in the care of the plants, not to mention ease and convenience of being able to pick off two rows at one time."

(Editor's Note—These methods, in various forms, have been tried with more or less success by others; they are not strictly "new," but Mr. Welch's adaptation of the box idea is especially interesting. Any subscriber intending to conduct similar experments should bear in in mind the necessity for fertilization and renewal of soil in so small a space.)

Pioneer Spirit Carries Woman Farmer to Success

Mother and Son Partners in Developing Profitable Glenn County Diversified Ranch

By MRS. JACK CORBETT

THAT not all empire builders are men and that the pioneer spirit still lives is evidenced by the accomplishments of many California farm women.

Mrs. W. B. Sprague, whose achievement in developing a fine 50-acre ranch near Willows, Cal., has attracted wide attention, deserves special credit because she left the city to engage in farming and tackled many knotty problems without previous experience.

The Sprague family had been living in San Francisco, when four years ago a doctor's verdict sent Mrs. Sprague to the interior valley in search of health. Her husband remained in the city with the expectation of bearing financial loss through her determination to engage in farming, but willing to do so if it meant restoration of her health.

THEY SELECT RANCH

After some investigation Mrs. Sprague and her 16-year-old son acquired the Glenn County acreage and immediately set to work to improve it.

Although not strong in body, Mrs. Sprague possessed a spirit as invincible as a crusader of old, and she and her son made ambitious plans.

A portion of the land was prepared and planted to alfalfa. With part of their money they purchased several Holstein cows, and with part they bought some day-old Leghorn chicks. They repaired the barn, put in cement floors and built a substantial corral and brooder house.

Water was piped to every building and yard. Mrs. Sprague hereself, as she grew stronger, helped dig the pipe line.

Mother and son, always pals, consulted every authority on dairying and poultry. Farm journals, government bulletins, pamphlets from the State Agricultural College were referred to. The aid of the county farm adviser was enlisted. They joined the Farm Bureau. Mrs. Sprague became a leader in the woman's club of her neighborhood. Both took a keen interest in community affairs, and—they worked.

Mrs. Sprague gained steadily in health, and as the years went by they built up a splendid herd of dairy cows, until now Walter has a string of twenty-four—and he watches keenly the cream tests.

From a few hundred chicks Mrs. Sprague's flock has grown to 2400, and there are never less than 600 laying hens at work.

ALFALFA ACREAGE INCREASED

The alfalfa patch has increased to 30 acres, as fine a stand as one can find in the State.

Recently a new chicken house was finished, which is the pride of Mrs. Sprague's heart, for it embodies the best characteristics of all the chicken houses she has ever seen, with a few improvements she herself has added.

In 1921, from the products of 500 hens, Mrs. Sprague made a net profit of $934. Now, she says, she can make each hen average $2 a year net.

Previous to becoming a rancher Mrs. Sprague had been accustomed to city conveniences, and some phases of ranch life were disagreeable to her.

She had been used to electricity, for instance, and to live where kerosene lamps had to be constantly filled and cleaned, and where water was pumped by hand or by the wind (when it blew hard enough) was annoying.

For some time she considered the matter, and consulted her neighbors. The power line was a considerable distance from the neighborhood, but she obtained figures, mulled them over with the other ranches, and visited the power company's office time and again until finally an estimate was given her of the cost of installing a power line that she felt they could all afford.

Then she held another conference with her neighbors, with the result that one morning she drove into the power company's office and placed her order for the installing of the neighborhood line.

Her ranch now is equipped with light and power. Her chicken houses are ablaze at 4 o'clock each morning, and the product of her hens is increasing. Water for the ranch is pumped by electricity, and Walter is now about to install a power-operated milking machine.

HAS MANY INTERESTS

Mrs. Sprague delights in a new electric range in her kitchen, a room which she painted and enameled in the popular ivory shade during a few spare hours in honor of the new range, she says. Besides this she possesses many of the electric conveniences so dear to the heart of women generally.

When she is not caring for young chicks, separating cockerels from pullets, driving to market with young friers, culling out boarders, experimenting with feeds to get the best results, decorating the house or planning new chicken equipment, her time is devoted to music and to the world's best literature. She is a charming conversationalist, and she is always pleasing to the eye, whether attired in hip boots during a period of irrigating or in an afternoon dress, entertaining her club.

She is now deep in the experiment of breeding up her flock. During the past year she made a close study of the subject and found that the birds that were late in molting took a much shorter time for the operation and lost less time from laying than the early molting hens.

She has selected a number of her late-molting hens for breeding purposes and has secured some fine trapnest males from Oregon, the product of late-molting hens. She will use the eggs from this variety for incubating. In this way she will obtain next year a flock that will go through the regular molting season without loss, she believes.

With health fully restored, and with personality radiating enthusiasm and contentment, Mrs. Sprague says that ranching pays. During the past year her husband has been spending more and more time at the ranch, and he expects shortly to give up his city work and join his family permanently.

Their son, Walter, young as he is, is becoming an authority on dairy stock.

Not only has Mrs. Sprague made ranching pay, and recovered her health in the bargain, but she has been a factor in building up a splendid community spirit in her neighborhood and in inspiring those about her to achieve higher standards of farming.

ORCHARD and FARM

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.
GEORGE GRANT, Art Director.

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS

J. D. Bixby Sr. — Robert E. Jones
Luther Burbank — W. S. Killingsworth
William Reynolds Butler — Herbert A. Shearer
Dr. J. Eliot Coit — Prof. F. H. Stoneburn
Walter H. Gardner — Helen Temple
W. S. Guilford — George P. Weldon

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

PROMOTING POULTRY PRODUCTION

Poultry experts have done such splendid work in solving production problems that the supply threatens to overtake the demand. During 1921 the number of chickens in the United States increased 26,000,000, while the price last year was six cents per fowl less than the preceding year. The number of eggs in storage in the principal Eastern markets last September was a million cases more than 12 months before, while the price per dozen in 1922 was four cents less than in 1921.

Although 135 million dozen more eggs were produced last year than the year before, poultrymen received 38 million dollars less for them. These figures, which were obtained from the U. S. Department of Agriculture, indicate the importance of increasing the consumption of eggs, one of our most valuable foods.

EATING MORE LEAF VEGETABLES

The recent enormous increase in the consumption of lettuce and other leaf vegetables has been due largely to the discovery of the superior food value of these articles. In olden times the worth of foods was mainly measured by calories, or heat producing power. The discovery of vitamines, life-giving property of food, and realization that leaf vegetables are not only rich in these substances and mineral salts, but also play an important part in keeping the intestinal tract clean, has led to a much larger use of lettuce, spinach, chard, cabbage, cauliflower and similar garden products. People are realizing that healthfulness and wholesomeness are of paramount importance in choosing foods. In this connection it is interesting to note that the annual production of lettuce in California has risen to nearly 10,000 carloads.

RUINING ROADSIDE SHADE TREES

The pepper trees along the Valley boulevard between Los Angeles and Pomona, black locusts bordering the State highway in the Antelope Valley, and elms growing beside the road which enters Ashland, Ore., are three good examples of the way roadside shade trees are being ruined by injudicious pruning. The pepper trees have recently had all the twigs and small branches removed from their limbs to a height of eight or ten feet. The chief beauty of a naturally grown pepper tree consists in the drooping, decorative lower branches, which resemble those of the weeping willow. When, as in the case mentioned, the main limbs are denuded and only a small amount of foliage left at the top of the tree, this beautiful effect is destroyed. Wind damage has been cited as the reason for this severe pruning, but granting the possibility of breakage, it seems scarcely necessary to resort to such extreme measures.

Half the tops recently were removed from some of the small locusts above mentioned—trees which naturally make dense, low-branched growth in a windy, desert country and need all their tops for protection against adverse conditions, at least until they have attained good size. Shortly after planting, the elm trees were trimmed to straight whips six to eight feet long, with small tufts of foliage at the top. Now, twelve years afterwards, they are no larger than they should have been at five years of age.

"What's New?"—Keeping Abreast of Agricultural Progress

Fertilizing by Spraying

SOME Pajaro Valley orchardists feed their apple trees by spraying with nitrate of soda, according to Carol Rogers, who declares that this method of fertilization beats applying chemicals to the soil. Mr. Rogers has one of the largest and most successful orchards in Santa Cruz County, and his 100-acre place for years has been used by agricultural college specialists for experimental purposes.

Holsteins Make Records

THE champion Holstein aged cow in California is Adirondac Weitske Dairy Maid of the Bridgeford Farm, near Patterson (Stanislaus County). This cow gave in one year 34,402 pounds of milk, which contained enough fat to make 1420 pounds of butter.

Segis Mead Salambo, an aged Holstein cow, owned by J. S. Gibson of Williams (Colusa County), recently completed a yearly record of 24,927 pounds of milk, which was sufficiently rich to make 1008 pounds of butter. These records were made under official test, according to the Holstein-Friesian Association of America.

Orange Land, $75 an Acre

FIRST class orange land under an irrigation system, the construction of which is to be started this spring, can be bought in Butte County for $75 to $100 per acre, according to H. E. Drobish, farm adviser, whose office is at Oroville. The soil is red loam without hardpan, and lies in the foothill thermal belt. The timber on the ground will pay for clearing, including grubbing, states Mr. Drobish, who believes that fruit growing in the Wyandotte district, where the land is located, offers exceptionally attractive inducements. One piece of land priced at $50 an acre adjoins a young olive orchard which at seven years of age produced two tons of fruit per acre last year.

Tenant Farmers Organize

"THE Associated Tenant Farmers of America" is the name of one of the latest agricultural organizations. It was formed last November at Lewiston, Nebraska, by five men, all farm renters. They have begun publishing an official organ, the Tenant Farmers' Bulletin, and hope to accomplish great things for those who cultivate rented land. The spirit of the association is indicated by the following "call to arms" issued by F. O. Slagle, secretary-treasurer:

"Mr. Tenant Farmer, the wolves are at the door! Rally to the defense of your home, your family, your business, and all your best interests! Let us band ourselves together to ward off the onslaught of the organized packs that are preying on the farmer."

Calcium Cyanide Kills Squirrels

IT has been known for many years that calcium cyanide in the presence of moisture will give off hydrocyanic acid gas very quickly. This gas is highly poisonous, diffusing with great rapidity, and is said to kill any breathing animal or insect subjected to the fumes.

Recently this property of calcium cyanide has been used in the control of ground squirrels and other burrowing animals, by depositing a small quantity in the entrance of the burrow and closing the hole by tamping in dirt. The natural moisture of the earth causes the gas to be evolved, and, being about the same density as air, it spreads throughout the burrow system.

Its effect is such as not to be offensive or to give alarm to the animal, a few inhalations soon rendering it unconscious, followed by a quick and painless death. According to those who have tested the chemical, however, it is easily and cheaply applied, with no danger to the operator—being in dry flake form. The only precaution necessary, it is asserted, is to keep covered tightly when not in use.

Get Together on Dairy Breeds

At a meeting called in Washington, February 5, by the Chief of the Dairy Division, United States Department of Agriculture, representatives of five dairy cattle breed associations agreed to make special efforts to suppress destructive rivalry and to work together in every way possible to develop the dairy industry and particularly the purebred dairy cattle business. The breeds represented were the Ayrshire, Brown Swiss, Guernsey, Holstein-Friesian and Jersey. More than twenty representatives wefe here from various parts of the country, including the presidents of four of the breed associations and the secretaries of all five. Resolutions passed at the conference called attention to the need for more widespread testing for production records among breeders of purebred cattle; means of causing a wider distribution of purebred cattle; the recognition in counties and States of superior sires; rules governing sales of purebred cattle; means for lowering the cost of recording animals in herd books; supervision of production records; means of making the showing of cattle at fairs more educational to farmers and other visitors; rules governing public sales; scope of the work of field representatives of breed associations; and other subjects concerning the conduct of breed associations and the furthering of the interests of purebred dairy cattle. The need of more support for tuberculosis eradication by the area method was also emphasized.

Land Banks Earn Millions

FEDERAL farm loan banks last year loaned $224,000,000 and earned $5,700,000. During that period they sold $40,000,000 worth of farm lands to satisfy loans amounting to $15,000,000.

Buy Bull for Family Cows

THIRTY-FIVE owners of family cows in the Arvin community, Kern County, who were confronted with the alternative of using scrub bulls or importing a purebred sire, chose the latter course. They formed an association, assessed the members $7.50 each and purchased a purebred Guernsey bull.

Wool May Replace Apples

A PLAN is on foot to store 2,000,000 pounds of Washington wool in Yakima apple warehouses. H. S. Coffin of the Washington Woolgrowers' Association, considers the project entirely feasible, since wool is shorn and stored in the spring, when deciduous fruit warehouses are empty. The plan contemplates grading each grower's wool separately and keeping the consignments intact. The question has arisen as to whether the odor remaining from the stored wool would affect the fruit.

Women Join Farm Bureau

OVER 300 women have joined the Butte County Farm Bureau. Fred Cornehl, the able president of the organization, explained at a recent Wyandotte meeting that farm bureau women should consider themselves an integral part of the organization, rather than a separate society. The assistant editor of Orchard and Farm had the pleasure of attending this gathering. The attendance, order and interest were all remarkably good. A humorous "skit" and delicious refreshments were features of the evening. Wyandotte is in the center of a rich fruit district, where olives and oranges grow to perfection. An extensive irrigation project, which will add materially to the development of the district, is being started, with prospects of early completion.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

XII—W. S. KILLINGSWORTH

MR. KILLINGSWORTH arrived in California in January, 1890, as the representative of an Eastern fruit concern. After five seasons in the citrus sections of Southern California and further experience in the deciduous sections of Central and Northern California he went to Spain, where he remained a year shipping grapes and oranges to American ports.

W. S. KILLINGSWORTH

On returning to New York in April, 1897, Mr. Killingsworth spent the summer in the melon districts of Georgia. In the fall of this same year he returned to California, where for sixteen years he acted as district manager for one of the largest fruit-shipping concerns in the State.

Until he was called last year to Sacramento as horticulturist and executive assistant in the State Department of Agriculture, Killingsworth was actively engaged in fruit shipping and growing, or in agricultural writing. His many years' experience in California have brought him into closest contact with all phases of horticulture. Probably no man in the State has a wider acquaintance among fruit growers, shippers and officials.

Furthermore, as a writer Mr. Killingsworth, because of his broad technical knowledge and sympathetic understanding of the fruit growers' problems, has attained an enviable following. His articles are a regular feature of ORCHARD and FARM.

NEXT WEEK—PROF. F. H. STONEBURN

YOUR GARDEN OF FLOWERS

By HELEN TEMPLE

EFORE planting your flower garden spend a few minutes in drawing a map of it. Plan your garden on paper. If your grounds are small, never set out great overgrown shrubs and trees. The yard needs balance. If you are planting just flowers, locate them where the colors will be distributed to the best advantage. A perennial that will not flower until next year should be grown near a bright flowing annual.

HELEN TEMPLE

Planting a garden on paper with reful thought as to the arrangeent, not only says time when the tual planting is in process, but also ures an intelligent distribution of various flowers. A haphazard garn, with a bed of purple asters neighring a bed of orange marigolds—perhaps a border of red verbenas will ruin the entire effect of the anting. One must use discretion th the bright colors because they ash so easily.

Kochia bushes are becoming quite pular. The Christmas kochia is most twice as large as the kochia cophylla, which usually grows about o and a half feet in height. The tall chia bushes are very good for backounds, or as corners for our garns. Either variety is used advangeously among flower beds, singly in groups, in carrying out the harnious effect. Kochia lends dignity the garden when it is used as a rder and calls instant attention to otherwise commonplace garden.

GROWING MOCK CYPRESS

Kochia grows easily from seed sown rly in the spring. Sow in seed xes where there is danger of frost. ransplant when frosts are over. ochia grows into sturdy little "mock press" in a short time, so the plants ust not be placed too closely toether. If planted two and a half t apart the plants will touch, formg a solid, bright green wall in sumer and turn crimson in winter. In e frostless belts kochia does not se its green color during the winter onths, but the cold, crisp air of her parts of California, where there plenty of bright winter sunshine, rings the kochia into pyramids of arlet and crimson.

In the interior of California all halfardy plants should be planted in arch and April. The list of flowers this kind is extensive. In fact, one uld scarcely begin naming them one one without losing the reader's inrest. California is said to be a land flowers, so those who live in the erior need only chose their varieis with a little more caution than e "semi-tropical" to prove the sayg. Flowers certainly grow wonderlly in the Sacramento Valley, where sitors always comment upon the prosion of flowers in bloom.

Often a part of the garden has only limited amount of sunshine. We ust fill up those spots with flowers hich thrive in such locations, such violets, pansies, delphinium, tuberus begonia, anemone, antirrhinum, oxglove, aquilegia and scarlet flax.

VIOLETS THRIVE IN SHADE

Violets produce the longest stems hen they are not grown in the full unshine. They do well on the north f the house. Pansies like sunshine uring at least half the day, but—ike the violet—their stems are longst when they are grown in a cool lace. I find the more common strains f pansies produce the largest amount f blossoms. A much more effective ansy bed results when a variety of olors and strains is used together.

There are a dozen or more varieties f delphinium. The best sort for size nd variety of colorings is a new train developed in California. It has variety of blues, pinks and blendings f all other colors. The plants grow o a height of five or six feet. Delphinium is a perennial that blooms the first year, but the blossoms are iner and *(Continued on Page 14)*

How do YOU Interpret Quality?

The most careful purchasers of tractors—those who insist that their investment in power equipment shall produce maximum returns—invariably make the "Caterpillar" Tractor their choice. They standardize on the Holt product because of its superior quality, but not for this reason in itself. It is because they know that better design, better materials and better workmanship mean better field performance.

There is only one "Caterpillar" —Holt builds it

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Take the 2-Ton "Caterpillar" Tractor (Model T35) for example. Experts praise its overhead valve and camshaft motor—users find that this feature means greater power, fuel economy, easier motor accessibility. Metallurgists acknowledge that the materials used in the 2-Ton are of higher grade than in any other tractor on the market—users find the result in lessened wear, greater endurance, low upkeep. Simplicity of design, compactness, complete enclosure from dust and dirt, accurately governed motor speed, use of anti-friction bearings throughout—these and other features contribute to the 2-Ton "Caterpillar" Tractor's ability to provide power at lowest cost per horsepower hour.

It is as the result of such performance that such purchasers as the James Mills Orchard Co., the Italian Vineyard Company of Guasti, Calif., William Helm of Fresno, Calif., and others, have standardized on Holt equipment.

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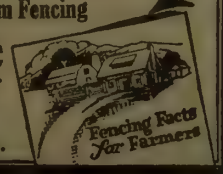

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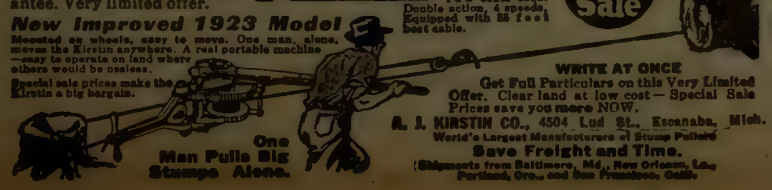

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Agricultural Leaders of the Pacific West

VI—CYRUS LITTLE SMITH

Agricultural Missionary of the Pacific Northwest

ABOUT fifteen years ago, while farming in Montana, the writer had the pleasure and privilege of listening to several farmers' institute speeches made by "Farmer" Smith, as he is familiarly and affectionately called by the people of the Pacific Northwest.

To say the speaker was full of his subject would give but a faint idea of the great abundance of practical information which he possessed. Advice and counsel upon every conceivable farm topic seemed to exude from every pore of this remarkable man.

SPEAKS FROM EXPERIENCE

I have never heard but one other speaker who was so well informed upon farming in all its branches, and that was Henry Wallace, father of the present Secretary of Agriculture. But while Wallace was inclined to lay down the law of agricultural science as one having authority, Smith makes heart-to-heart talks, speaking as a brother soil tiller.

Half a lifetime of the hardest kind of labor in the fields and orchards of Ohio, Michigan and Minnesota have put Smith in a position to speak sympathetically of the trials and difficulties which the agriculturist has to overcome. He knows just what a rancher is up against, because he has been there himself and bucked the producer's game from many angles.

Cyrus L. ("Farmer") Smith

LEARNS TO LOVE FARMING

Few farmers have had a more strenuous experience than C. L. Smith. Starting in life with but eight months of schooling—which he received at the age of 11 years, working for his board and clothes meanwhile—he afterwards burned charcoal for $3 a month and "found," and then nearly died from a rattlesnake bite.

He next worked in a market garden and nursery three years for $50, $60 and $75 a year. These years of toil while at a tender age did not bring in much money, but left the lad with a great love for the soil and all growing, living things, an attachment which has increased for 60 years.

PREACHES GOOD FARMING

With zeal and enthusiasm which three score years of toil and suffering has not quenched, Cyrus Little Smith preaches the gospel of good farming, clear thinking and right living in a way that carries conviction and leads to early action. It makes no difference what phase of farming or farm life he is discussing, he is there with the goods, usually able to answer any and every question right off the bat and in a manner highly satisfactory to his hearers. After his speeches he is always surrounded with a crowd of farm people, who tell him their experiences and ask his advice, confident of not being disappointed.

In 1891 Smith was made assistant dairy and food commissioner of Minnesota and editor of the Western Farmer. Six years later his editorial services were transferred to the Northwestern Farmer. In 1900 he came to Washington State as an agricultural agent for the O. W. R. & N. Railway.

INCREASES FARM CROPS

Six years later he was employed for one year by the State Agricultural College as a farmers' institute lecturer. He is still in the employ of the railroad company, but the people of Washington and the entire Pacific Northwest claim Farmer Smith as their own agricultural guide and counselor, for he serves everybody by promoting general prosperity.

As an example of the results obtained under his leadership, the number of silos in the Yakima Valley increased from seven to 2000 in ten years, while the acreage of corn expanded from 300 to 16,000 and the value of farm products exported from $7,000,000 to $64,000,000.—O. H. BARNHILL.

Do Your Farm Hauling With an International Speed Truck

FOLLOW the example of the farmer shown at the left in this illustration and equip yourself with a speedy reliable International Speed Truck. In the past year or two, while thousands of McCormick-Deering dealers have improved their service with "Red Baby" Speed Trucks, up-to-date farmers in all sections have invested in the same kind of efficient haulage.

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INTERNATIONAL HARVESTER COMPANY OF AMERICA (INCORPORATED)
CHICAGO USA

Coachella Valley Shipping Grapefruit

Favorable Climatic Conditions Make Possible the Production of Unusually Sweet, Early Maturing Fruit

By MARY E. WALTER

FOR the first time the Coachella Valley is making commercial shipments of grapefruit that promises to rival in quality that produced in any other citrus section. The sweetness of this fruit justifies its being called "the grapefruit that can be eaten without sugar."

Produced in a land where there is less rainfall than in any other part of the southwest, except Death Valley, it is marketed with the earliest grapefruit of the country.

The claim of superior sweetness for Coachella Valley grapefruit is based on chemical analyses made by the U. S. Department of Agriculture. These tests show that Imperial and Coachella Valley grapefruit contains 7.14 to 8.02 per cent of sugar, while grapefruit produced in other regions tests 5.49 to 7.09 per cent.

ACID CONTENT SMALL

The superior sweetness of Coachella Valley grapefruit is enhanced by an unusually small acid content, which adds to the palatability of this desert product. It possesses an excellent flavor, delicate pulp and thin skin.

The intense heat and arid atmosphere of the Coachella Valley, together with a growing season which lasts from March till November, accounts for the unusual sweetness and fine quality of fruits grown there, according to A. D. Shamel, government official, who was instrumental in establishing the grapefruit industry in that region.

The same climatic conditions that induce early maturity and high quality of fruit make as well for remarkable tree growth. Mr. Shamel observed trees on the Whitney place near the Salton Sea, which at five years of age had attained the size of eight and ten-year-old trees of the same variety grown elsewhere. Yet such rapid development is said not to impair the quality of the fruit, which continues to improve as the trees mature.

HIGHER GROUND PREFERRED

The higher slopes of the valley are preferred for grapefruit orchards The older groves are mostly in the Oasis district. Others are located near Caleb and Indio Heights. These districts are considered practically frostless, although young trees are given protection during cold spells.

The light, desert soil is found conducive to thinner skin and finer texture of pulp. Fertilization has been found necessary. Melilotus indica is preferred for summer cover-cropping and tepary beans for winter.

The long growing season makes possible very early harvesting, much earlier than in Florida. Last fall the first carload of Coachella grapefruit was picked October 23. Shipments continue until Easter. Eight-year-old trees last year bore as high as twelve lug boxes each.

SUPERIOR TREES PLANTED

Fortunately, many orchards in the valley were planted with the best stock available and now demonstrate the advantage of good bud selection. Nine years ago Mr. Shamel selected buds from the best trees in the Lyman Brown orchard at Highgrove for propagation purposes. The variety was the Marsh seedless, the only kind grown in the valley.

For the past two years the California Fruit Growers' Exchange has sent buds from the grapefruit trees thus grown to growers in other parts of California, which indicates the superiority of the strain.

Coachella Valley has now approximately 125 acres of grapefruit, of which about eighty are in bearing

A steady increase in acreage is expected as soon as nursery stock is available. The crop, as handled by a co-operative association, brings 50 cents to $1 a box more than grapefruit grown in other districts. The association estimates a production for this year of seven to eight carloads.

PICKED DURING COOL WEATHER

One advantage of grapefruit growing is that the crop can be picked during the cooler part of the year. The longer the fruit hangs on the tree the better it becomes. While shipments can be made for Thanksgiving and Christmas trade, yet to obtain fruit of the best quality growers prefer to ship about February 1.

Five-year-old grapefruit tree on R. Gregg Whitney ranch, Coachella Valley.

Enormous yields from young trees are characteristic. The industry has been longer established in the Imperial Valley, where this photograph was taken.

Marsh seedless specimens grown by R. Whitney, and marketed under the "Salton Seedless" brand. Imperial growers have adopted the name "Barbara Worth."

Dr. Forbes in Timbuctoo

DR. R. H. FORBES, long time director of the Arizona Experiment Station and author of many helpful publications on agriculture under arid conditions, has completed his work for the Agricultural Society of Egypt and has accepted an appointment under the French Government to survey and report on the agricultural possibilities of Timbuctoo in French Nigeria—J. E. C.

WANT FARMER REGENTS

The agricultural commission, appointed by the Governor of California last year, recommends that more farmers be appointed on the board of regents governing the State College of Agriculture.

LUMBER NEEDED FOR BOXES

Sixteen per cent of all the lumber produced in the United States is used for crates and boxes, according to the Department of Agriculture.

Storage and Precooling—Important Factors in Fresh Fruit Shipping

Refrigeration Is a Blessing

ONE reason why California fruits are in greatest demand and have the highest market value is because of the advanced methods of refrigeration used in this State. The grower, as well as the shipper, is taking great interest in newer developments, such as those described by Mr. Overholser in this article. —*The Editor.*

By E. L. OVERHOLSER

Division of Pomology, University of California

FRUIT when picked from the tree should not be considered dead or inert. After harvest it is still living, so to speak, and remains alive for an indefinite period, depending upon conditions.

Fruit respires, or, to use a more common expression, "breathes," and takes in oxygen and gives off carbon dioxide and a small amount of water vapor, as do all other living parts of plants. Furthermore, there are other metabolic activities, as a result of which the tissues or flesh of the fruit gradually break down and become dry or soft, and decay sets in.

The Bosc pear is a splendid variety and keeps nicely in storage when harvested at proper stage of maturity. The specimen at right was picked too early, and wilted.

One way to check these metabolic or living processes or changes, and to delay the final breaking down of the fruit, is to place it at low temperatures of about 32° F. Furthermore, cold storage temperatures prevent the growth and spread of rot organisms.

The value of employing cold storage in the marketing of fruit, therefore, would be in prolonging the life of the fruit, and thereby extending the period of marketability.

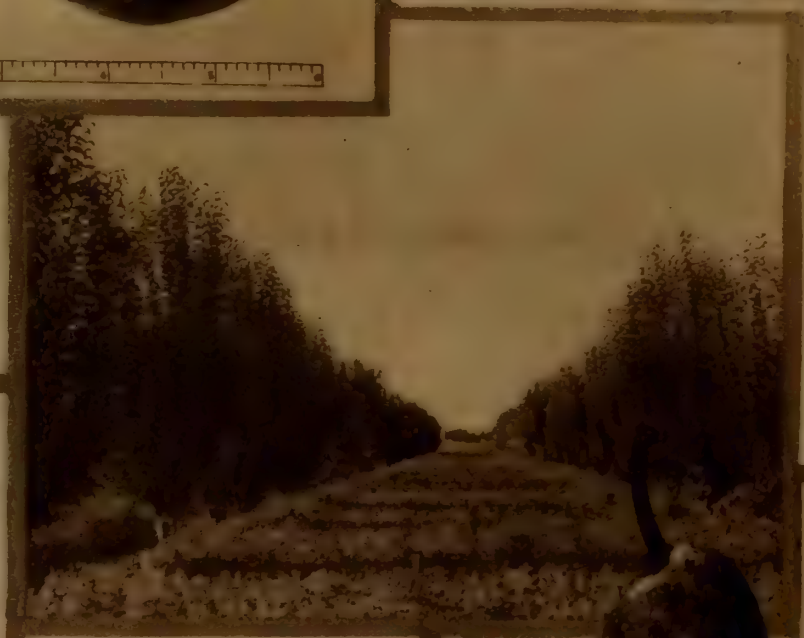
For example, the placing temporarily of part of the crop of pears in cold storage, to remove that portion from the market, so that it does not compete with the remainder, might well become a growing practice. As a matter of fact, it would be practically impossible to market the present apple crop of the United States without great loss to both the growers and consumers, except for the aid of cold storage.

STORAGE EXERTS GREAT INFLUENCE

It is obvious that a practice which prolongs the marketing period of any seasonal commodity has a great influence upon its distribution.

The possibility of storing fruit has had an important influence on leading commercial varieties. Formerly only a very few late apples, for example, were available for distribution during late winter and early spring months. Under present systems of handling through storage, however, it is possible to prolong the life of the more delicate and higher-quality varieties and in this way greatly to stimulate the demand out of season, not only for apples, but for the more quickly perishable fruits, such as pears and plums.

The very quickly perishable fruits, however, such as strawberries, cherries and apricots, generally are not held in storage except over week-ends or for brief periods when markets are overstocked.



A productive California pear orchard interplanted to alfalfa.

Cold-storage plants formerly were situated near the larger markets. In recent years, however, there has been a growing tendency toward the establishment of such plants in regions of production.

Storage at point of origin has several advantages. For one thing, by keeping fruit at the point of production, the shipper or grower is not committed to any particular market, but may hold his fruit or ship to such market as he may see fit.

Again, by holding a portion of the crop in regions of production, it is possible to reduce the strain on transportation at harvest time. Partly for this reason, storage for at least half the crop, particularly in areas of large production, seems to be recognized as a necessary provision in handling apples.

One other advantage in home storage is that the evidences of disease and pest infestation, such as development of scalds and spots and deterioration in storage, may be brought home more forcibly to the grower.

If, however, the grower or shipper has a well-established market, it may be advisable to store his fruit in or near that market, rather than hold it at point of origin. In this way his product is available for quick delivery under favorable market conditions in quantities to meet the demand, and is not exposed to the dangers incident to traffic.

WHAT IS PRECOOLING?

The term "precooling" may be considered as referring to the reduction of the temperature of the fruit very soon after harvesting and before it is placed into cold storage proper, and more especially before it is loaded into refrigerator cars for transportation to distant markets to be consumed in the fresh state.

Under California conditions, where many of the largest markets are relatively great distances away, nearly all deciduous fruits may be shipped more satisfactorily when precooled. Nevertheless, the most urgent necessity for precooling would be in the case of the very quickly perishable fruits, such as the strawberry, raspberry and fig.

The Bartlett, leading commercial variety of California. In some cases, unless precooled and stored at a temperature of 32 degrees F. during the period between harvest and consumption, this pear may scald badly.

Apricots, cherries, peaches, grapes, plums, and summer and early fall pears, in about the order named, likewise would be benefited by precooling before shipment, those listed first being helped the most.

It is of the utmost importance that the heat be taken out of perishable fruit promptly, if it is to be transported any distance to market and arrive in prime condition. The object, therefore, is to remove the excess heat absorbed in the field or accumulating in the mass of fruit by radiation from its own tissue.

The temperature of the product should be reduced quickly to a point where rapid ripening and deterioration of the fruit and the growth of rot organisms are checked. Even though the fruit is shipped in refrigerator cars, precooling is advisable, because many such cars are not equipped with sufficient cooling capacity to extract the heat from the fruit with sufficient degree of rapidity after loading.

For example, when warm fruit is loaded into a refrigerator car it may take from two to five days for it to reach a temperature of 45° F. Even then the fruit in the car is not uniformly cooled, and that in the top of the car may be from 10° F. to 25° F. higher in temperature than the material on the floor or near the ice bunkers. During this period the high temperatures of the fruit and the moisture and gases in the car result in conditions which promote decay and rapid deterioration.

ADDITIONAL ADVANTAGES

Stubenrauch, in the 1910 Yearbook of Agriculture, summarized the following advantages of precooling: (a) The marketing era of the product is extended; (b) precooled fruit may be loaded more closely and heavily, thereby increasing the carrying capacity of the cars; (c) less ice will be consumed en route; (d) it renders unnecessary the premature picking of fruit, such as peaches, plums and apricots, in a hard, green condition, in order to offset the ripening which takes place in cars under ordinary icing methods; (e) it reduces the differences frequently occurring between the top and bottom tiers, by equalizing temperature conditions within the car; (f) as an adjunct to careful handling in preparing fruits for market, precooling materially minimizes losses from decay and deterioration in transit.

There are two general types of precooling plants, using distinctive systems—car precooling and warehouse precooling. In the case of the former, a blast of cold air (about 10° F.) is blown or drawn through a loaded refrigerator car for several hours previous to shipment, or until the interior of the car and its contents have a temperature of from 32° F. to 36° F.

With the warehouse type, the fruit is packed and then placed in a cold storage room of about 25° F. to 27° F., cooled to a temperature of from 32° F. to 34° F. and then loaded direct into the iced cars in the cold condition.

The precooling should be done as soon after harvest as possible and the car started on its way with minimum delay. The temperature of the fruit and the interior of the car at the beginning of the journey should be as nearly 32° F. to 34° F. as can be economically obtained.

Trees Without Trunks—Southern California Fig Grower Practices—Remarkable Pruning System

By JAMES C. KNOLLIN

"WHAT kind of bushes are those?" inquired a visitor to Hugh M. Smith's little ranch, near Bell, Los Angeles County.

"Bushes!" ejaculated the highly amused orchardist. "Those aren't bushes; they're four-year-old fig trees.

"And," he added, "They're different from ordinary fig trees in several ways; for one thing, they're more profitable."

An annual income of from $1 to $2 per tree is obtained by this enterprising three-acre fruit grower, and he actually maintains as many as 800 trees on an acre. Most of his figs are set six feet apart in rows eight feet apart, and when in full leaf resemble a veritable jungle.

"Why plant figs far apart?" queries Smith, "when they will produce heavy crops under my plan? If one figures the profit per tree and multiplies it by 800, instead of 100 or 200, it is easy to see where I am doing better than the man who believes fig trees should have twenty to forty feet between them. Furthermore, if it appears later that the figs are too crowded, it is a simple matter to take out trees. Meanwhile, however, I am getting the maximum production while the orchard is young and I have seen no reason as yet for removing any of my older trees. By irrigating frequently and copiously I keep them growthy and productive. My only difficulty has arisen from attacks of nematodes, and the experience of other growers indicates this has nothing to do with spacing of trees."

UNUSUAL PRUNING METHOD

Close planting is but one of the revolutionary practices indulged by Mr. Smith. His method of pruning is unusual to say the least. His trees literally are without trunks, as the illustrations show. They are headed so close to the ground as to appear bush-like in growth. The development of a number of low main branches is encouraged and every winter all growth except these main branches is removed. The result, of course, is tremendous development of new wood. The yield is proportionately large.

An acre of "Brown Turkey" trees which are four years old this spring, yielded last year more than $400 worth of fruit and trees of the same variety seven and eight years old have averaged for three years about $1.50 per tree, according to the owner. Kadotas have proved equally profitable. On the basis of 800 trees per acre it is easy to figure astounding returns.

Experienced horticulturists, however, recognize Mr. Smith as an extremist, and while admitting the success of his undertaking, realize that similar methods might prove disastrous under certain conditions. For example, it is deemed probable that his pruning methods would be impracticable in colder sections where the heavy growth of tender new wood each season might be endangered by freezing. Furthermore, were he engaged in producing the dried fig, grown so generally in the central valleys, harvesting would be complicated and the density of growth would be a handicap.

Yet the Smith method for his purposes has a number of advantages. He is producing on a small scale fresh figs for the Los Angeles market. The limiting factor in this business is cost of harvesting, which in some cases nearly has equaled the sale value. Because his trees are so low and so compactly placed Smith's harvesting expense is reduced to the minimum. Women and even children can be employed to do the picking and the troublesome ladder is eliminated. Again, the dense foliage protects the fruit from birds and also lengthens the harvest season. Last year figs were marketed from July until December, at prices ranging from 6 to 12 cents per pound.

The small apple orchard has been interplanted to figs, the apple trees being gradually reduced by removal of large branches, as figs mature.

Having completed the pruning of this four-year-old tree, Mr. Smith shows how he has established bush-like development. Note heavy cutting back.

That root growth is stimulated by his method is another contention advanced by the Bell rancher. "I think," he says, "that by cutting back all new growth each year I reduce the strain of maintaining old wood to the minimum, at the same time encouraging early and heavy growth of foliage, which in turn feeds the root system and further increases its development. My trees don't look like much above ground, perhaps; in fact, the remark has been made that I am growing my figs upside down. But I feel that it pays to give some thought to the part of the tree that doesn't show."

Mr. Smith even goes so far as to recommend heavy cutting back for "runty" or stunted fig trees, as the means of stimulating development for the reasons outlined above.

The figs are acknowledged as the most profitable crop on the Smith "little farm." In fact, eight-year-old Arkansas Beauty apple trees, which have been profitable for several years, are being interplanted to figs and gradually displaced.

Blackberries and loganberries, a small patch of which has yielded as much as $400 worth of fruit in one year, also are being removed in favor of the figs.

Mr. Smith was for twenty years a commercial vegetable grower in Texas. He came to Southern California ten years ago and purchased his suburban place, then raw land, for $750 per acre. It is now valued at $3500 per acre, according to local realtors.

And as for city life—"Not in it!" he exclaims. "I love the out-of-doors, and anyway, if I want to go to a show here's the big city right at my elbow!"

Right, pruned trees; left, unpruned trees in Smith orchard. Photographed in February. During the summer it is possible to move only along the rows, so closely are the trees planted.

An 8-year-old Brown Turkey fig tree, pruned by Mr. Smith according to his unique plan. This tree has averaged for three years a net profit of more than $2, according to the owner.

Three Boys and Out—in the Country

Former Builder Raises Boys, Grapes and Chickens in Sonoma County

THIS is the story of a city man who went to the country because he considered the latter a better place in which to bring up his three boys. And not only did the boys enjoy the change, but the father and mother have found farm life pleasant and profitable as well. To be sure, many new problems had to be solved, but the Farm Bureau offered timely information and practical assistance. Now, the former city dweller is one of its directors.

By O. H. BARNHILL

SHOULD a man give up a good business in the city to engage in farming? George E. Burlingame, successful San Francisco contractor and builder, carefully considered the question and finally decided in favor of the affirmative.

Three bright young boys turned the scales so that the indicator pointed straight toward agriculture.

"The city possesses many undoubted advantages over the country," confessed the erstwhile urbanite, "but everybody admits the country is the best place in which to bring up boys. Land which fails to produce anything else profitably, often raises a good crop of children."

A 20-acre fruit ranch in Sonoma County looked good to the Burlingames; three years ago they sold their city property and transferred their belongings to Burbank Land. The location they chose was between Sebastopol and Petaluma, near the electric line which connects the two cities.

Most of the land was covered with grapevines, with a few apple and fruit trees. The buildings were old and dilapidated and the place was littered with a large accumulation of unsightly rubbish, but a number of beautiful shade trees made a decided hit with the new arrivals, who had grown weary of brick and stone structures.

BOYS LIKE COUNTRY LIFE

The boys were like colts turned into green pastures, having always considered the country a place for holding picnics and play parties. They soon climbed to the tops of all the trees and began to lay plans for swings, trapeze and other paraphernalia which boys consider necessary to a normal existence.

The father first turned his attention to making the place look spick and span and then attacked the problem of making the ground feed the family. Apples and grapes make fine dessert, but do not stick to the ribs of healthy, growing boys.

As builder of the First Baptist Church in San Francisco, the Washington school in Oakland and other structures, Mr. Burlingame was accustomed to getting good pay for his work, and after growing fruit for a year he began to wonder if there was any money in the country besides that brought there from the city. It was pleasant, he found, to sit under one's own vine and fig tree, but unless the vine bore enough grapes to pay living expenses, the owner would be compelled to move to a more profitable, though less agreeable, location.

Consulting H. A. Weinland, County Farm Adviser, the newcomer was told that the grapes needed more manure and lots of it! Millions of Sonoma County chickens produce immense quantities of the best kind of fertilizer, but the demand from fruit growers for this necessary article is so great that prices have been pushed to a point which Burlingame considers prohibitive, so far as his vineyard is concerned.

POULTRY PROVES PROFITABLE

Why should not a fruit farm produce its own fertilizer? A bright thought! Burlingame bought 700 baby chicks and proceeded to brood them successfully, with the help of the Farm Bureau's advisers. The resultant pullets and others which were subsequently purchased proved such profitable egg producers that this feathered tail end of the farm was enlarged until it now promises to wag the fruit dog.

"There's good money in fruit," explains the former San Franciscan, "if all conditions are favorable. When they are not, as in my case, the production of eggs can be carried on very profitably in connection with the growing of grapes or other fruits."

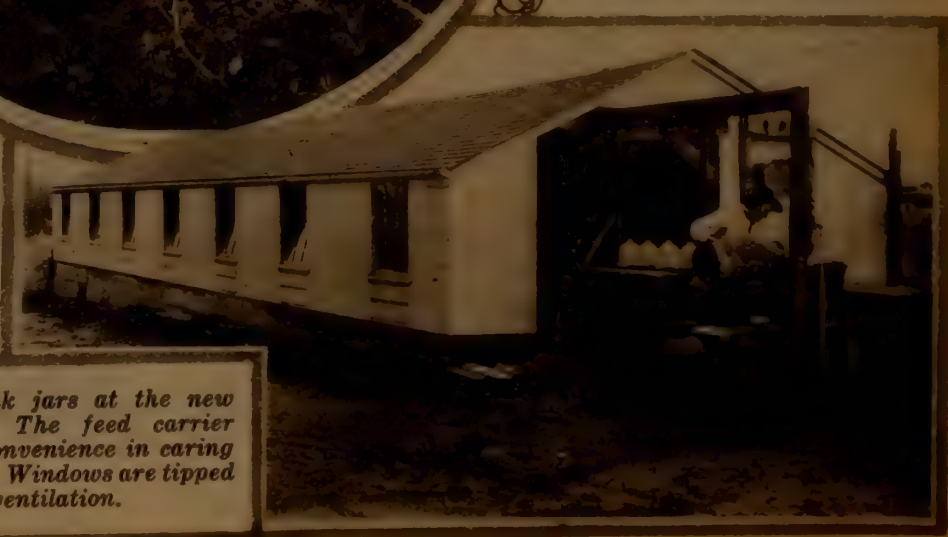
Some of the methods used by Burlingame in attaining egg success may prove of interest to others who contemplate entering the chicken game. Chicks are brooded in rooms 16 feet square, divided in the center with a wide board set on edge. When the little chirpers are large enough to get over this partition they find a floor covered with deep litter.

Scratching in this litter, the chicks are surprised and delighted to find all kinds of feed of various sizes. The whole wheat and cracked corn they reserve for future use, consuming the finer meal and seeds first. If they were able to measure the amount of scratch feed *(Continued on Page 14)*

This is a standard Lyding laying house. Note the front wall is solid, save for a few windows, instead of having the upper part open, as many experts advocate. Home-made litter-carrier shown at rear.

The Burlingame boys enjoy their outdoor gymnasium, which keeps them physically fit and affords wholesome fun.

These three husky youngsters make short work of grape pruning. Teddie piles the brush, while George and Burt handle saw and shears.



Filling buttermilk jars at the new brooder house. The feed carrier proves a great convenience in caring for young chicks. Windows are tipped in for ventilation.

Clarkadota Fig Plantations

Planting Time Is At Hand

We are offering some choice pieces of land planted to Clarkadota figs along the Highway adjoining the city of Stockton.

Should you wish to invest your money in a fruit farm, Clarkadota Fig Plantations present the greatest opportunity for profit in California. Land planted to figs has been a good investment for thousands of years. Any investment that has stood the test of time is worth the time it would take you to investigate it.

We have just published a new booklet that is an education on figs, and you cannot afford to be without it. Every afternoon at 2:30, beginning February 19th, we will give a free lecture illustrated with lantern slides and moving pictures, on this wonderful seedless canning fig. The pictures also show the land and how it is prepared for planting.

It is not necessary for you to move on the plantations, as we care for the land and trees for a period of six years.

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Power Pointers

By WALTER H. GARDNER

NEW NAMES FOR NEW SCIENCE

The new science of stirring up the soil without turning it up now has as many names as a baby with seven aunts! "Vertical Farming" is one—"Three Dimensions Farming" is another. "Deep Tillage" is perhaps the common term, but it is too often confused with deep plowing. "Subbing the Soil" is alliterative and threatens to achieve popularity.

W. H. GARDNER

AUTOMOBILE MANUFACTURERS LEARN FROM TRACTOR ENGINEERS.

A number of the new cars are fitted with efficient dust extractors. Much of the so-called carbon in the crankcase cleanings proves to be silica from road-dust. The motor car makers are profiting by the ranchers' experience in keeping out soil particles.

FARMERS ARE ENTHUSIASTIC.

"The dehydrator is the biggest thing of the day," declared one of the farmers. "The sooner the growers take to it the better off they will be." But even yet order has not been created out of chaos. Only a comparative few of the dehydrators on the market have passed the experimental stage. But these few have reached a point where it will be profitable to advertise them. And we are promised individual plants of six and seven-ton capacity.

TAKE CARE OF THE ROADS!

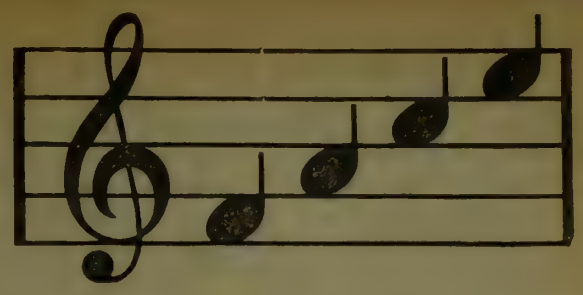
What does the most harm to the concrete highways of our State? Heavy trucks? Speeding pleasure cars? Big "jitney" busses? This question has been answered by recent tests on an elaborate scale. It has been proved that on early mornings after a cold night the roadway tends to contract laterally and "pull up" its edges from the foundation. This curling is very slight; but when heavy trucks are driven over the roads before the sun has warmed them the edges are liable to break down. The farmer who starts out with a load in the early hours will do well to keep in the center of the road.

A LOT OF INTEREST IN A DRY SUBJECT!

Dehydrator talk fills the air! Professor Christie of the Agricultural Department of the University of California and Mr. E. Torpen, Napa County's Farm Adviser, recently arranged a pilgrimage of farmers to all the dehydrators of the Napa Valley. Seven different types were visited. Sixty odd ranchers spent the day in this personally conducted search for knowledge. The visitors were especially interested in the type where the air enters at the center of the tunnel—the proper amount of heat and also of humidity thus being supplied to both the green and the nearly-processed fruit. It is reported that one man can run a plant to a capacity of twenty-five tons a day.

BUYING A TRACTOR TO FIT.

Orchardists, particularly the citrus growers, and vineyardists are carefully selecting the tractor and the implements that will "fit" their rows. For instance, in "10-foot vines" usually it is possible to cultivate within a foot and a half of the vines—indicating a 7-foot cultivator or double disc. So the tractor with the power to pull that particular implement is just the one to buy. And that is true even if the vineyard isn't a large one. It is twice as efficient in that particular place as the one that will pull a 6-foot disc—for the latter would have to take two cuts to a row. And in oranges, with a 21-foot row, the big tractor that has just the power to clean out a row in two trips with a 9-foot double disc—or the smaller one that makes an even three trips with a six footer—those exactly fit the farm.



See How Easy It Is To Learn Music This New Way

YOU know how easy it is to put letters together and form words, once you have learned the alphabet. Playing a musical instrument is not very much different. Once you learn the notes, playing melodies on the mandolin, piano or violin is simply a matter of putting the notes together correctly.

The first note shown above is F. Whether you are singing from notes, playing the piano or banjo or any other musical instrument, that note in the first space is always F. The four notes indicated are F, A, C, E, easy to remember because they spell the word "face." Certain strings on the mandolin, certain keys on the piano, represent these same notes—and once you learn them, playing melodies on the instrument is largely a matter of following the notes.

Anyone can now learn to play a musical instrument at home, without a teacher. A new simplified method of teaching reduces all music to its simplest possible form. You can now master singing, piano-playing, or any musical instrument you wish right at home, quickly, easily, without endless study and practice.

Practice is essential, of course—but it's fun the new way. You'll begin to play melodies almost from the start. The "print and picture" method of self-teaching is fascinating; it's simply a matter of following one interesting step after another. You learn that the note in the first space is F, and that a certain key on the piano is F. Thereafter you will always be able to read F and play it whenever you see it. Just as you are able to recognize the letters that make a word, you will be able to recognize and play the notes that make a melody. It's easy, interesting.

You don't have to know anything whatever about music to learn to play a musical instrument this new way. You don't have to pin yourself down to regular hours, to regular classes. You practice whenever you can, learn as quickly as you please. All the intricate "mysteries" of music have been reduced to a method of amazing simplicity—each step is made as clear as ABC. Thousands have already learned to play their favorite musical instruments this splendid new quick way.

LEARN TO PLAY ANY INSTRUMENT

Mandolin	Piano
Drums and Traps	Organ
Harmony and Composition	Violin
Sight Singing	Banjo
Ukulele	Clarinet
Piccolo	Flute
Trombone	Harp
Saxophone	Cornet
Hawaiian Steel Guitar	'Cello
Voice and Speech Culture	Guitar
Automatic Finger Control	

You Can Play Your Favorite Instrument Three Months From Today

If you are dissatisfied with your present work, let music act as a stepping stone into a new career. If you long for a hobby, a means of self expression, let music be the new interest in your life. If you wish to be a social favorite, if you wish to gain popularity—choose your favorite instrument and, through the wonderful home-study method of the U. S. School of Music, play it three months from today.

You can do it. Youngsters of 10 to 12 years have done it, and men as old as 80 have found new interest and enjoyment in learning how to play a musical instrument. You don't have to listen while others entertain any longer. YOU can be the center of attraction, the talented person who holds the audience fascinated.

Is it the piano you wish to play, the mandolin, the violin, the saxophone? Do you want to learn how to sing from notes? Are you eager to be able to play "jazz" on the clarinet, the banjo?

Free Book Explains New Method

It costs you nothing and obligates you in no way whatever, to send for our free book called "Music Lessons in Your Own Home." Every one who is interested in music should send at once for this valuable book. It not only explains the wonderful new simplified method of learning music, but tells about a special short time offer now being made to music-lovers.

Mail this coupon at once for your copy. Remember, it obligates you in no way whatever. It's free. But act now before the supply is exhausted. U. S. SCHOOL OF MUSIC, 3533 Brunswick Building, New York. **Please write name and address plainly so that there will be no difficulty in booklet reaching you.**

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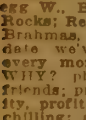

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The kind that live and thrive, lay and pay. We hatch from purebred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 12½c; Reds, 16½c; Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELEC-CHICK HATCHERIES, Dept "L," Burbank, Calif. References: State Bank of Burbank.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

WHITE LEGHORN BABY CHICKS from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: February, $16; March, $14; April, $12.50; May and June, $12. Safe arrival of full count live, strong chix guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 418 Sixth St., Petaluma, Calif.

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BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, California.

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MR. AND MRS. POULTRY FARMER—The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than those we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been Hoganized. Prices for March are as follows:

	50	100
White Leghorns	$7.00	$13.25
Rhode Island Reds	9.00	18.00
Barred Plymouth Rocks	9.50	18.50
Anconas	9.00	18.00
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May we not have your order again this year? Conkey's Buttermilk Starting Food will raise healthy chicks.

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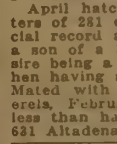

If you want any, don't just buy anywhere, but get them direct from the incubators of a hatchery where "Quality" is the watchword. Our "Quality" chicks are electrically hatched, strong and sturdy, and from good stock. All leading varieties. We specialize in very choice S. C. White Leghorns from hens of very heavy egg-yielding reputation. Hatching eggs and electric brooders. Write for prices.

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CERTIFIED White Leghorn Quality Chicks at Utility Prices. Choice free range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.50 per 50; $12 per 100. Special prices 500 and 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 Seventh St., Petaluma, Calif.

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MARSHALL STRAWBERRY PLANTS, 80c per 100, $6 per 1000. Himalayas, Mammoth Crandall; Dewberries $1 per doz; $7 per 100. Asparagus roots 30c per doz; $2.40 per 100. J. F. RALSTON, Anderson, Cal.

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Preparation of Peat Composts	952
Lime Sulphur Concentrate	1286
Farmers' Telephone Companies	1245
The Common White Wheats	1301
California Crop Report, 1922	83
The European Corn Borer and Its Control	1294
Sales Methods and Policies of a Growers' National Marketing Agency	1109
An Economic Study of Acacias	9
Tuberculin Testing of Livestock	249

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Any of the following helpful circulars will be sent free upon request. Address Director Agricultural Experiment Station, Berkeley.

The Use of Artificial Light to Increase Winter Egg Production	264
Measurement of Irrigation Water on the Farm	245
Bovine Infectious Abortion	188

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The killing of two tom turkeys by coyotes at 10 o'clock in the morning in front of an Antelope Valley farmhouse indicates the boldness of the latter.

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If No. ..... Dia. ..... Dia. .....

Capitalizing College Education

(Continued From Page 2)

to British breeders for the type toward which to breed.

Mr. Stickland long has been known to breeders of beef-type Shorthorns. He produced the famous Brandsby's Coming Star. However, the heaviest milkers in all competition in England shows for the past several years have been Mr. Strickland's entries. Surely the opinion of such a recognized authority is worth the long trip to Chicago and back. At least Johnny Rowe thought so or he would not have made the trip.

Johnny went to Chicago with only six entries. A brief summary of these winnings at the great International shows how this college trained breeder proved up in this greatest of all tests of the finished breeder's skill. The Innisfail herd ranked third as exhibit and prize money won among 28 of America's best breeders of Milking Shorthorns, capturing two firsts, two championships, three fourths and one fifth place.

Notable among these winnings was the ring milking record of Rowe's aged cow, Bellevue Daisy. This cow, with a requirement of 18 pounds gave 32 pounds of milk in the ring, just three-tenths of a pound less than the senior champion cow of the show.

Another check on this Farm School boy's success came during the Association Sale after the show. Johnny sold three head of females at an average of $392. The average sale of all she stuff was $288. The grand champion bull, Count Tickford, sold for the tidy sum of $2300, to head a foundation herd in Michigan. Rowe's heifer, Beggar Maid's Beauty 2d, a half-sister to the grand champion bull, and also half-sister to the Grand Champion female, will keep "the Count" company on this Michigan farm, selling for near the top price for females, $440.

I asked Johnny Rowe if he had any hesitancy or doubts about taking his herd on the long, tiresome and expensive round trip to Chicago. He said, "No. I knew I had good cattle and they were in show condition. They were produced from proven ancestry, fed and developed on California feeds, in California's mild climate according to the way the State Agricultural College taught me to handle them."

Surely this is a wonderful tribute to the college and to the State. Could there be anything more worth-while by which to measure the success of agricultural college training. Faith in scientific teachings backed by hard work and enthusiasm and love for one's life work are standards by which Johnny Rowe is climbing the ladder to success.

Three Boys and Out

(Continued From Page 7)

provided for them, the chicks would find there was a pound for each one, which is all the feed of this kind they are given until six weeks old.

On the other side of the partition is an electric brooder, designed to hover 800 chicks. The heat comes from a small coiled wire wound around asbestos sticks underneath a covered frame, which is raised and lowered by means of pulleys, ropes and weights. The latter are outside the building, out of the way. This is the first of many little mechanical conveniences which the visitor notices on the Burlingame ranch. These contrivances save many steps and help make the work pleasant.

Buttermilk, which costs a nickel a gallon, is one of the chief items in the chick diet. The stoneware jars, which automatically supply the plates beneath, are placed on a home-made feed carrier hung from an overhead track and conveyed through the feed room to a platform outside, where the jars are filled from creamery cans and redistributed to the chick rooms.

The outstanding features of the Lyding poultry house are the nest boxes on the opposite side of the room from the roost and the solid front wall, which contains no openings save a few windows. A second home-made litter and feed carrier is used to convey provender and remove manure, the former being taken from a feed room at one end and the latter emptied at the opposite end.

A feed room and double garage 18 by 48 feet is being constructed at one end of the poultry house. The ground floor will house the cars, while the upper story will shelter the feed.

How about the boys, for whose sake the countryward move was made? Do they hanker for the bright lights of the city and find farm work drudgery? Both the latter questions can be answered with a decided negative. The boys say farm life is full of fun and that it affords the freedom which they thoroughly enjoy. A happier, healthier trio of youngsters would be difficult to find.

Burt, being of a mechanical turn of mind—like his father—has a radio outfit which he can reproduce for $25 and with which he can hear a good many things which are "going on" from Canada to Mexico.

Last year he took care of a patch of grapes which netted over $200, proving that there really is money in fruit if one will only dig in and extract the profits.

All the boys are hard and willing workers. Teddie, the youngest, and George, the second, are waiting impatiently until they are big enough to show that they can beat Burt at his own grape game. The boys have a horizontal bar, swinging rings and other equipment and are making a tennis court.

Mr. Burlingame is one of the directors of the Farm Bureau and a willing worker in every movement for the benefit of the community. The numbering of the numerous roads south and east of Sebastopol was due largely to his efforts and is a great convenience to travelers. He keeps careful records of his farm work, doing nothing by guess.

"How do I like farm work?" Mr. Burlingame smilingly considered the question a moment. "It really seems more like play than work. When I was in the contracting business I used to work for weeks on plans which had, for one reason or another, to be thrown away. Here on the ranch every move can be made to count. Whenever I do a piece of work I know I am just that much ahead. I can truthfully say, with my wife and children, that we thoroughly enjoy country work and country life."

WHY DREAD CALVING?

Take no chances with your valuable cows at this serious period. There's no need of it. If the cow's health is fully up to par, nature will do the rest. Two weeks before calving and about three weeks after, feed the cow a tablespoonful of Kow-Kare morning and evening. Her health will be assured and a strong calf result.

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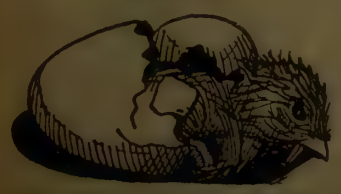

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Special Offer on Wonder Telescope Telescopes of this size have sold for $5.00 to $10.00— because of a fortunate purchase of a large European manufacturer we can give you a big bargain. Supply limited—order today. Send only 25c with order, and we will ship telescope complete by parcel post, on arrival deposit $1.75 with the postman. Satisfaction guaranteed or your money returned in full. If you prefer send $1.85 with order in full payment.

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Why they stick

On the ground floor of the telephone building a man worked at the test board. It was night; flood had come upon the city; death and disaster threatened the inhabitants. Outside the telephone building people had long since sought refuge; the water mounted higher and higher; fire broke out in nearby buildings. But still the man at the test board stuck to his post; keeping up the lines of communication; forgetful of self; thinking only of the needs of the emergency.

On a higher floor of the same building a corps of telephone operators worked all through the night, knowing that buildings around them were being washed from their foundations, that fire drew near, that there might be no escape.

It was the spirit of service that kept them at their work—a spirit beyond thought of advancement or reward—the spirit that animates men and women everywhere who know that others depend upon them. By the nature of telephone service this is the every-day spirit of the Bell System.

The world hears of it only in times of emergency and disaster, but it is present all the time behind the scenes. It has its most picturesque expression in those who serve at the switchboard, but it animates every man and woman in the service.

Some work in quiet laboratories or at desks; others out on the "highways of speech." Some grapple with problems of management or science; some with maintenance of lines and equipment; others with office details. But all know, better than any one else, how the safe and orderly life of the people depends on the System—and all know that the System depends on them.

"BELL SYSTEM"
AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES
One Policy, One System, Universal Service, and all directed toward Better Service

Your Garden of Flowers

(Continued from Page 5)

larger the second season, when new variations appear, as delphiniums "mix up their colors" when grown in the same bed. Reseeding itself year after year the delphinium or perennial larkspur should be in every one of our flower gardens. This is an excellent plant for locations of partial shade.

Tuberous begonias are among our prettiest tender plants, blooming from June until late in September. They must be planted where the wind will not disturb them, also in a partially shaded situation, as they do not thrive in the hot sunshine. Being tuberous, they demand good, porous soil with an abundance of humus. They should be placed late in February or March.

FOXGLOVE EASILY GROWN

Foxglove or digitalis is one of our most easily grown perennials, blooming the first year when planted early and re-seeding itself year after year. It makes an unusually fine background for a partially shaded flower bed, sending up stems five or six feet tall. These stems are covered with pretty bell-shaped flowers of various colors, with darker spots and stripes inside.

Aquilegia or Columbine is another old-fashioned flower for the shaded spot, being also a hardy perennial. Though an old-timer, the aquilegia has come forward with several fine, new varieties. The hybrids offer a wide variety of colors in blue, pink, yellow, white, scarlet and orange. Any of the aquilegias are recommended for the garden. They are unusually graceful, yet odd-shaped, and grow about three feet in height.

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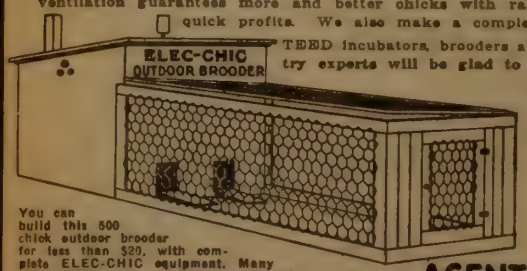

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Facts About the Mango

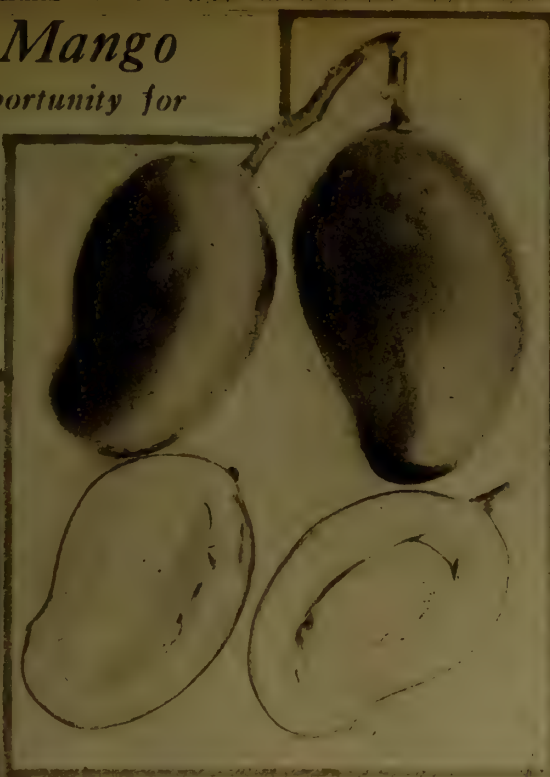
Many Sections Afford Real Opportunity for Success With This Fruit

By J. ELIOT COIT

THE mango, sometimes known as "The Apple of the Tropics," is one of the most delicious and beautiful fruits of the world.

It is being grown in a commercial way in Southern Florida and occasionally fine specimens from the Florida groves are offered on the Los Angeles fruit stands for as much as a dollar each. The few attempts which have been made to grow this fruit commercially in California have so far met with failure on account of cold weather.

Inside view of tree shown at left. This refutes the claim sometimes made that the mango will not bear in California!



Fruit of the mango, the "Apple of the Tropics."

This mango tree in Los Angeles was damaged by the 1922 freeze, but might have been saved with a tent and a lantern.

This, however, need not deter planting in comparatively frost-free areas.

Although the interior valleys are too frosty and the country near the coast too cool during summer nights for best development of the fruit, there are many intermediate localities such as the foothills north of Whittier, La Habra Heights, Sierra Madre, Duarte and Monrovia, where climatic conditions are sufficiently favorable to make mango culture on a small scale well worth the attempt.

Persons interested in developing home garden collections of rare and interesting fruits by all means should try the mango, especially as there is a good stock of grafted trees of five varieties now available in Southern California nurseries. Like other fruit trees, the mango, when grown from seed, rarely produces good fruit.

Most of the trees heretofore grown in California are seedlings, but they serve very well to show the possibilities.

A grafted mango tree in the garden is of such high potential value that it would be well worth while to protect it on cold nights by means of tent cloth with lighted lanterns set underneath.

Safeguarding Seed Boxes

MOST flower lovers have been troubled by "damping-off," particularly as it affects our highly-cherished asters. To avoid this, buy 10 cents worth of formaldehyde (formalin) at the drug store, dissolve it in enough water thoroughly to wet a couple of bushels of prepared soil for seed boxes. I mix mine generally one-third leaf mold, one-third sand and one-third garden loam. If you have no leaf mold, make it half sand and half loam. Let the saturated soil dry and use it for seed boxes.—E. B. B.

Early Tomatoes and Beans

PLANT tomato and bean seeds in little pasteboard boxes of prepared soil, and when the plants are large enough to put out in the garden, the roots will not be disturbed, and the pasteboard will rot.

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Leading stage lines take no chances. That is why Samson *Super-size* Cords are the choice of responsible stage lines who want—*Safety First.*

Piling up mileage records daily—gripping the road with the strength of a real Samson, they protect and carry safely their loads of humanity.

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SAMSON TIRES

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SAMSON SUPER SIZE—CORDS

Bridge Grafting vs. Inarching

By J. ELIOT COIT

THERE are two ways to save a citrus tree which has been girdled and ruined by gophers or germ disease.

One method, which has attracted considerable attention in Southern California during the last year, is that of inarching.

Two or three sour stock seedlings are planted close up under the injured tree and their tops are grafted into the trunk above the injury.

This works well when the tree is so situated that it can receive constant attention. But some one must always remember to "cut in" the irrigating water to the roots of the seedlings, and remove the many sprouts which take the sap from the graft union. Then, again, the cost of the three seedlings usually is not less than $1.50, and they are often difficult or inconvenient to secure.

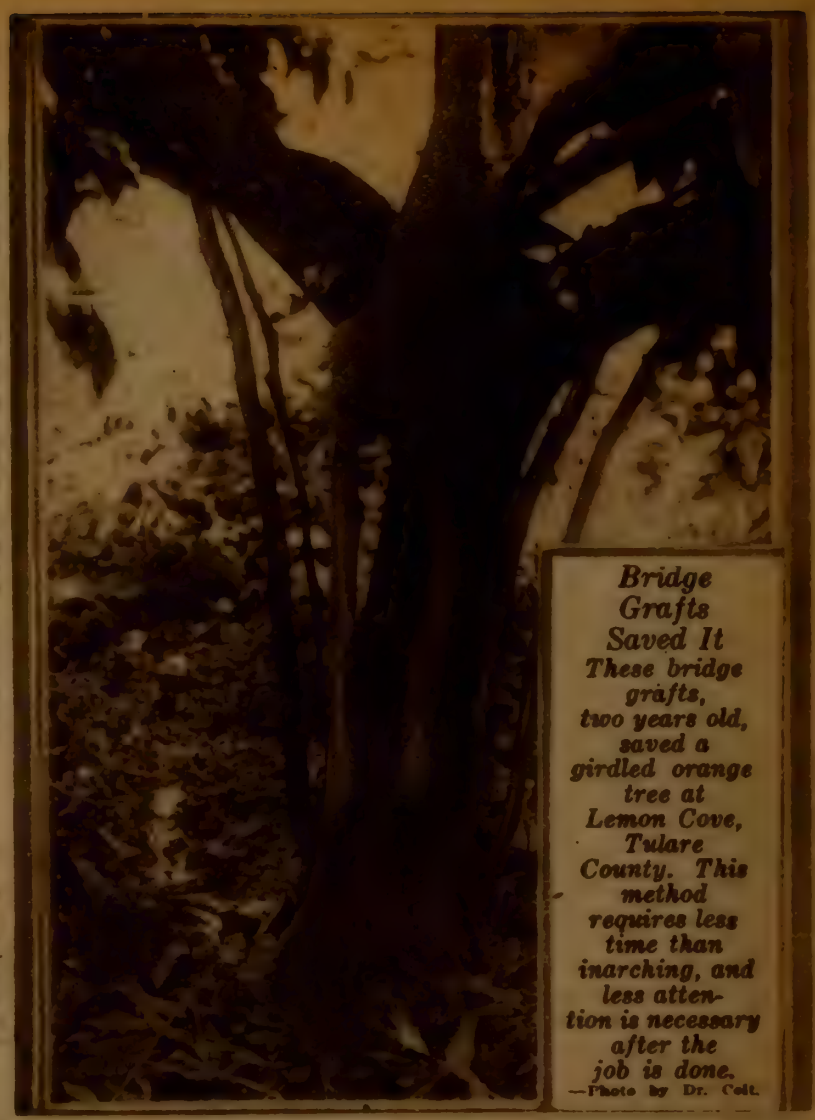
The other method, which to my mind is superior in some respects, is the bridge graft, shown in the accompanying illustration.

Suckers are cut from some near-by tree. They cost nothing and are always "handy." They are bark-grafted into the healthy part of the trunk both above and below the girdle. They are held in place by very slender tacks and the wounds are covered with grafting wax.

LESS TIME REQUIRED

It requires less time to make a bridge-graft than to inarch, and the job, if well done in the first place, usually will succeed if given no further attention. I consider bridge-grafting the better plan for trees situated at a distance from the house or in the middle of a large orchard, where it would be difficult to give the constant care required for inarching.

If one or more of the bridges fail to take at either end, additional ones may be placed at any time. Some object to bridge-grafting on the ground that the trunk may rot out before the bridge is strong enough to support the tree. This has been true in the case of deciduous trees injured at the crown by field mice, but citrus wood is more durable and I have not noticed a failure due to this cause in citrus orchards.



Bridge Grafts Saved It
These bridge grafts, two years old, saved a girdled orange tree at Lemon Cove, Tulare County. This method requires less time than inarching, and less attention is necessary after the job is done.
—Photo by Dr. Coit.

Frost Protection for Grapes

THE picking season for grapes may be lengthened to a certain extent by protecting late varieties in late districts from frost.

Wileman Bros. of Cutler this year covered quite a number of their Emperor vines with hay. These vines were pruned on the vertical cordon system, which gives the only kind of vine that would hold hay or straw. This covering made a perfect protection against frost, when nearby vines were badly dried by the cold.

It takes about a ton of hay for 50 vines, an amount which will prevent a very wide use of this kind of frost protection. Straw usually is too short to "stay put." First cutting alfalfa is excellent material, often cheap if foxtail is bad, and the fertilizing value alone may be greater than its cost.

Wileman Bros. prefer smudging to covers for frost prevention. They purchased waste cans from the Dinuba fig cannery at one cent each. Oil for smudging cost $2 for a 42-gallon barrel. Each can holds a gallon of oil, which will burn five hours, although from 2 to 3 hours per night usually is all that is needed in early fall. Up to the middle of November, 1922, the oil was burned only two nights, 55 gallons of oil per acre per night being consumed. For the amount of smudging needed, oil, therefore, proves cheaper than straw cover for the vines. The latter, however, sheds moisture well. A neighbor has protected grapes from frost with straw for several years with great success.

In the Exeter district, one of the prominent grape men sometimes starts his pump and runs water down his Empetror rows on frosty nights, getting excellent results in that way. With this system it is well to run water only in alternate rows so that there will be dry ground on which to haul the fruit.—Tulare Farmer.

Little Gardening Hints

NOW the garden season is really "under way" in all parts of California. In some sections, of course, there is yet danger of frost, but who will not "take a chance" when succulent new vegetables are at stake? If earlier plantings have been made, the succession may be continued.

The wise gardener sows the seed, when possible, in rows running north and south; this, if the rows are spaced far enough apart, admits sunlight to both sides of the plants. Truck gardeners who are producing very early vegetables frequently set their plants on the south side of the east and west ridges; this simple precaution may prevent frost injury and even make a difference of several days in time of maturity.

Many California home gardeners are adopting the "ditch and ridge" plan used by commercial growers; that is, the seed is sown or plants are set in double rows on ridges 10 to 18 inches wide, and irrigation water is applied in the ditches. The tops of the ridges forming the seedbed are smoothed off to a fine mulch. This plan simplifies all operations and is especially desirable in the large garden.

ORANGES NEED MORE WATER

Extension Service experts estimate that Los Angeles County citrus groves need 30 inches of water each season, although they have been getting only 8 to 15 inches.

New life for your engines—
and a lower operating cost

Movement in a gas engine means friction—friction means wear—wear means changes in adjustment. Therefore, power losses of some kind are inevitable. This friction can never be entirely eliminated, and that's why we have the wear problem. Wear of piston against cylinder wall—cylinder wall against piston—wear on piston rings, no matter how finely adjusted—wear on piston grooves which hold the rings in place. This wear destroys the original adjustments, pressures and balances — and away rushes power.

All that many motors need to restore their maximum power and economy is McQuay-Norris Piston Rings. Made of Electric Iron for every price and purpose, but your best investment is the combination of Wear-Proof Rings *for power* and Supercut Rings *to prevent oil trouble.* In some engines you'll find the cylinder walls so badly "out of round" that they need regrinding or reboring. There are shops which specialize in this work. Then you'll want McQuay-Norris Pistons and Pins as well as McQuay-Norris Piston Rings. In any case there's no use in putting up with powerless, wasteful engines. You can make them practically as good as new with McQuay-Norris equipment.

Your dealer has McQuay-Norris Piston Rings, Pistons and Pins in stock to correctly fit your needs or can get them promptly from his supply house.

Learn how free!

Write our Dept AK today for free booklet, "To Have and to Hold Power." It explains why gasoline engines wear out and how to have them rebuilt so as to restore their old-time power and economy. Write for free copy at once.

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McQuay-Norris *Wainwright* Pistons and Pins —gray iron pistons as light in weight as safety permits —specially designed for replacements — available in standard sizes and oversizes—also in semi-finished form 75-thousandths oversize. Pins of exceptional accuracy. Made of special heat treated steel.

Wear-Proof —its exclusive two-piece design means equal cylinder-wall pressure at all points. Its greater flexibility means better performance in worn cylinders. Best for all grooves except top, which should have Supercut. Made of Electric Iron. Price per ring— $1.25

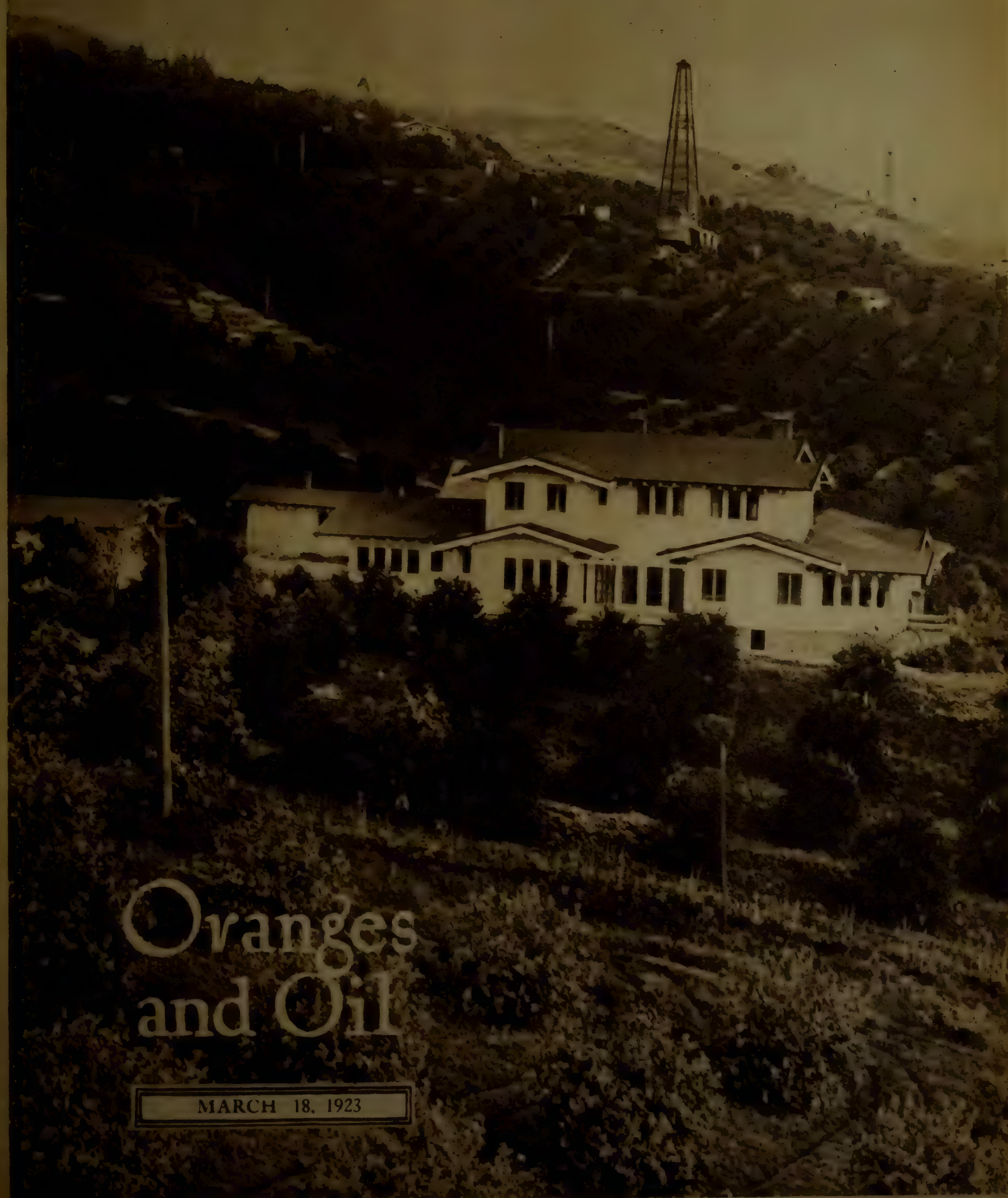
Supercut —stops oil trouble. Keeps lubricating oil out of combustion chamber. Collects excess oil on each down stroke of piston and empties on each up stroke, which ordinary grooved rings cannot do. Made of Electric Iron. Price per ring— $1.00

JIFFY-GRIP—the quick-seating ring with the non-butting joint. "Seats in a jiffy." Can be fitted closer than the ordinary step-cut rings. Ends cannot butt when fitted tightly as quick-seating rings should be. Made of Electric Iron. Price per ring— 50c

Snap Rings — of the highest grade. Raised above the average by McQuay-Norris manufacturing methods. Made of Electric Iron. Their use insures all the satisfaction possible for you to get from a plain snap ring. Price per ring— 25c

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER



Oranges and Oil

MARCH 18, 1923

Producing Carload-Per-Acre Apple Crops

Watsonville Orchardist Demonstrates the Value of "Sticktoitiveness"

WHAT it pays to stick to the same piece of land, generation after generation, is indicated by the Santa Cruz County experience of the Rogers family, which in fifty years has produced one of the heaviest yielding orchards in the United States.

Three years ago 1152 Newtown trees on twenty acres yielded 15,000 packed boxes of apples, enough to fill twenty railroad cars. This does not include many tons of culls, most of which were dried and sold at profitable prices.

The home orchard comprise 100 acres of fine apple trees, mostly Newtowns, which have proved the most profitable variety in the Pajaro Valley. All the groves do not bear car-per-acre crops every year, but failures are unknown, although occasional light crops are harvested. For many years the place has been capably managed by Carol Rogers, whose grandfather came to the Pajaro Valley in 1867 and shortly afterwards planted the first apple trees on his homestead, which is located just outside of Watsonville, the "apple city."

The record crops which the Rogers orchards produce have been made possible by the family's half century of experience on one spot, working continuously with the same soil and climatic conditions. Horticulture is far from being an exact science, especially in a new country, and there are many problems which only experience can solve. The work of other fruit growers is of more or less value, but on account of varying conditions the only absolutely accurate guide is the behavior of the trees grown on the orchardist's own farm.

"MY grandfather planted the first apple trees on this farm a half century ago," relates Carol Rogers, manager and part owner of a highly productive 100-acre orchard in Santa Cruz County. "His experience served as a guide for my father's horticultural operations, which in turn was the basis on which we built up the Rogers orchards to their present heavy producing capacity."

By O. H. BARNHILL

Spray materials are mixed on a large scale at the plant in the foreground. Packing house in the rear; orchard office at the right.

Long experience has developed a system of pruning suited to the individual requirements of the Rogers apple trees. An adaptation of both the long and short methods has been adopted.

FEEDS TREES BY SPRAYING

A good illustration of this principle is found in the way fertilizers effect Pajaro Valley apple trees. None of the chemicals commonly used for this purpose appears to benefit the orchards in this section, according to Mr. Rogers, who adds that nitrate of soda has been used with beneficial effects when applied to the trees in the form of a spray. Buds and bark seem to absorb the nutriment contained in this chemical, judged by the increased vigor of the tree which results from its use.

The variety test is another experiment which can be carried out with entire satisfaction only on the ground where the orchard is located, because of the wide variation in soil and other local conditions. Finding the best apple for the Pajaro Valley in general and the Rogers ranch in particular has been a matter of elimination, the poorer sorts being gradually pulled out or top-worked until only one kind, the Newtown, is grown in any considerable quantity.

CULL APPLES ARE DRIED

The evolution of the Rogers farm has been the conversion of wild land into a mammoth fruit factory producing each year a trainload of fine apples and large quantities of by-products. The latter consist chiefly of dried apples, for which a large drier has been built and is operated each season to consume the cull fruit of the Rogers orchard and neighboring groves. From 20 to 25 per cent of the crop is prepared for market in this manner.

A veritable village of buildings has been constructed for residential and manufacturing purposes. The dwelling house is one of the largest and finest in the Pajaro Valley and is located just outside the city of Watsonville. In contrast to many California ranches, the implements, tools and machinery are all housed in a large shed built especially for that purpose. One of the busiest machines on the place is a mechanical calculator, which is used to compute the numerous operations connected with growing fruit and preparing it for market.

It costs about 50 cents a box to produce apples, not counting interest on the investment, estimates Mr. Rogers. This is based on a yield of 375 boxes—one-half-car—per acre, which is considered a good average crop. Boxes and packing cost 44 cents more, bringing the total up to 94 cents a box, which was (Continued on Page 15)

This splendid farm home, the Rogers residence, built 26 years ago, is evidence of the profits in Pajaro apple growing.

"Orchard equipment costs too much to be ruined for lack of shelter," is Mr. Rogers' explanation of this commodious tool shed.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
MARCH 18, 1923

Top Grafting Fruit Trees to Better Varieties

Timely Instructions by an Experienced Orchardist in the Art of Putting Profitable Tops Onto Poorly Paying Trees

By W. S. KILLINGSWORTH

Horticulturist, California State Board of Agriculture.

TOP grafting is the term applied to the process of changing the variety of a tree by inserting in the limbs cions from another tree. There are several reasons why this work is, in many cases, necessary and profitable.

In the first place, seeds do not produce trees which bear the same variety of fruit; therefore grafting must be resorted to in order to obtain the desired sort. Nurserymen sometimes make mistakes in budding seedlings; such mistakes often are not discovered until the tree bears fruit, at which time the error may be corrected by top grafting.

The commonest need for this operation arises when it is discovered that, for one reason or another, another variety is more profitable than the one grown. It has been found that some sorts produce roots, trunk and framework which are more resistant to injury and disease than those which bear profitable crops of fruit; hence a foundation stock of the former is grown and by grafting, given a top of the latter.

WORK IS NOT DIFFICULT

Any ranch "hand" with an ordinary amount of "horse sense" may, within a few hours, become an adept top-grafter. The workman should at all times, however, bear in mind the importance of properly inserting the cion, as the growing portions of both stock and cion must come in perfect contact to effect a proper union.

Cions may be cut at any time during the dormant season. They should be stored in bundles of not to exceed 100 in a cool, dry place with the butts standing in six inches of sand. If left any length of time the sand should be kept moist.

In order to save time during the rush season in the spring, it is a good plan to saw off all limbs which are to be grafted about 12 inches above where the cion is to be inserted, in the fall of the year, and get the brush out of the way. In top working small trees it is not necessary to remove the tops in the fall, but where large trees are grafted the workmen are apt to be bothered by the brush if the latter is cut just prior to grafting and left under the trees. In such cases the overturning of the wax pot is an accident that sometimes results, while cions which have been "set" are sometimes knocked out in hauling brush.

LIP GRAFTING PREFERRED

Cleft grafting is the usual method of top working a large tree, but the writer usually practiced what is called the "lip" process. Instead of splitting the limb, clefts were made in the edge of the stump for the reception of the cions. In a stump three inches in diameter, three cuts were made, at equal distances from each other.

The advantage of lip grafting over the cleft method is that in the former process the smaller opening permits of quicker healing of the wound. There is also less danger of cracks being left open to admit air and water, which may carry spores of decay. In many years' experience in lip grafting our losses did not amount to 1 per cent. Care in waxing and rewaxing was probably largely responsible for this unusual success.

For small limbs, cleft grafting is all right, but for large ones the lip method is advised. In the former process the bark on either side of the branch is first split with a sharp knife before a cleft is opened in the stump. The cut should be made through the cambium, which is the soft, white layer through which the sap flows, between the outer bark and mature wood. If the limb is a large one it will be necessary to insert a wedge to keep the cleft open.

PERFECT CONTACT ESSENTIAL

The cion is cut wedge-shaped, a little thicker on the outer side, being so shaped that there will be perfect contact between the cambium layers of stock and cion, for here growth begins. By all means have a bud on the pointed portion of the graft. If but one cion is set in the stump, put it on the windward side, which will lessen the danger of its being loosened by the wind after growth begins.

The end of the stump and all cracks made in grafting should be covered carefully with wax sufficiently hot to flow into every crevice, in order to exclude air and moisture. It is also important to rewax the graft—generally twice—to guard against cracks made by the growing cion. To neglect this after work is rank carelessness, which often results in the loss of the cion.

In order to prevent the growing cion, or graft, from being blown out by the wind, tack a piece of lath to the limb below, allowing the former to extend at least two feet beyond the point of union. Carefully tie to this support the new growth, which should be pinched back at 18 inches in order to make the new limb stocky and properly branched.

GRAFT MANY SMALL LIMBS

Instead of grafting the large limbs near the head of the tree, as was the general custom in early days, the cions are now inserted, usually, farther out, where the branches are comparatively small. This takes a great many more grafts—we have used as high as 160 in top-working an old apricot tree to plum—but the tree suffers less shock, the grafts make a better union and a complete new top is reproduced in much less time than by the old method.

It is sometimes a good idea to bud part of the "suckers" which are thrown out by a newly grafted tree, in order to insure a new top of the desired variety. When the suckers are about a foot long, thin them out to 18 inches or two feet apart, pinch out the top and bud them in June or September. These will take the place of any grafts which may fail to grow or are broken off.

As soon as the spring rains are over, grafted trees should be whitewashed, in order to lessen the danger of sunburn, which is as harmful as any insect pest or bacterial disease. The whitewash should be applied not only to the trunk but to the large limbs, which have been exposed by the removal of the top in grafting and need protection.

(Photo by O. H. Barnhill)

An excellent example of top grafting in the orchard of Del Davis, Sebastopol (Sonoma County). A Rhode Island greening has been changed to a Gravenstein so successfully that the places where stock and cion united—to which the men are pointing—can hardly be distinguished. The good-natured individual on the right is H. A. Weinland, farmer adviser, while the handsome youth on the left is his assistant, H. P. Everett.

Shall the Breeder of Pure Bred Hogs Quit Now?

Well-Known Breeder Discusses Question From the Farmers' Standpoint

By W. S. GUILFORD

Contributing Editor of ORCHARD and FARM

"I HAVE a notion to quit the purebred hog business. What do you think of it?" asked Neighbor Smith during a recent visit.

"Why?" was my parrying reply.

"Well, you know business has been mighty dull for the last couple of years—practically no demand at all."

"But you got rid of what you raised, some way, didn't you—for pork or for feeders?"

"Oh, yes, there have been plenty of buyers for weanling pigs at $4 or $5, sometimes $6 apiece. The neighbors are glad to get them at that and those we have made into pork have brought good prices."

"Pigs at $5 apiece at weaning time don't lose you much money, do they?"

"No, but it seems a shame to sell a pig that we used to register and sell at from $20 to $40 for $5."

Now I happened to know that Smith bought his original breeding stock at very reasonable prices—bought young pigs and "grew them out." He has as good breeding as there is, but never bought highly fitted show stock at high prices. His present breeding herd cost him just about what it cost for feed and care to raise it, plus the registration fees—which amounts to practically nothing on a few sows and a boar—so I asked:

"You really can sell your weanlings a little easier than you could sell pigs from scrub sows, can't you?"

"Yes, that's true," he agreed.

"And when you have fat hogs to sell, the local butcher will always take them in preference to those some of the neighbors raise, won't he?"

"Yes."

"Then you can afford to keep the registered breeding stock, even if you never sell a registered pig at a fancy price?"

"Well, yes, I guess you're right."

SOLD AT PREMIUM PRICES

"And when times were good, as they are sure to be again, you sold some pigs at a nice margin over pork prices."

Smith didn't deny this pleasant fact. He has a good kind of a farm on which to keep a few hogs, keeps a few cows and sells cream, which means he always has some skim milk. He has a good alfalfa pasture and a small orchard from which there is some waste fruit in the fall; grows some grain, which provides stubble pasture, and raises a small field of corn each year.

After enumerating these pig-producing advantages, I remarked to Smith that I didn't exactly see what was the matter with him.

"Apparently you have nothing to lose by keeping these good registered hogs, and there is a possibility of some gain. If you sell them now you will get only pork prices and you will have to pay as much for some scrubs or grades to replace them. Furthermore, it always takes hogs, or any other animals, some time to get used to a new place. It's none of my business, of course, and I would not pretend to give anyone advice, but I can't for the life of me see why you should be even thinking of selling these good hogs now."

I know of a good many farmers who have quit the purebred stock business during the recent period of low prices.

PRESENT POOR TIME TO STOP

These times eliminate a good many who are not fitted temperamentally for the business, or who have places not well adapted to the handling of stock, for one reason or another. But now that better times are plainly in sight, it seems like a poor time to stop.

Generally speaking, those who breed registered hogs from generation to generation, as a few have in America and many have in Great Britain, are the ones who make the greatest success.

Those who make the purebred stock business their life work, who seek to retain the excellencies of the animals they breed and correct the defects; who have ideals toward which they are constantly working—those breeders not only get the most money for their stock, but derive the greatest satisfaction from their work.

The "in-and-outers" in the breeding business help the trade some during the time they are getting in, but a real breeder considers his business a life work, and for the right persons it is a most delightful life.

ORCHARD and FARM

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS

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Luther Burbank — W. S. Killingsworth
William Reynolds Butler — Herbert A. Shearer
Dr. J. Eliot Coit — Prof. F. H. Stoneburn
Walter H. Gardner — Helen Temple
W. S. Guilford — George P. Weldon

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension Service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

HELPING LAND BUYERS "MAKE GOOD."

Subdividers of farm lands have learned that they must do more than get a buyer's name on the dotted line and a substantial first payment in cash. They must play the part, willingly or unwillingly, of a helpful big brother and see that the settler succeeds.

If all the land in a large tract could be sold for cash in one year, no more work would be necessary to insure the promoter's profits. Selling any considerable body of land in small parcels, however, and getting all the money for it is a work of many years.

If the first settlers fail to make good they cannot complete their payments and their experience will discourage other buyers. The only way, then, is for the agent or owner to get behind the purchasers and help them along the road to success.

IT PAYS TO INSPECT CARS

Inspection of 700 arriving cars of livestock at seven of the large markets by supervisors of the Packers' and Stockyards Administration, United States Department of Agriculture, has shown that shippers would do well to make careful examination of cars before loading them. The railroads maintain satisfactory car-inspection service at the large markets, but not all cars sent to country shipping points have moved directly from the terminals. As a consequence, many cars have defects that may cripple animals or even cause death. Of the cars inspected in this investigation, 7 had holes in the floor, 91 had projecting nails in the walls, and 88 had cleats that might, and probably did, cause bad bruises. Eighty-two of the cars were without bedding, a large factor in the safety and comfort of animals in transit. No matter who is responsible for the condition of cars, it is to the interest of the shipper always to make an inspection of his own, and most certainly it is up to him to see that the right kind of bedding is provided.

MURDERING FARMERS' AGENTS

The cost of agricultural progress is illustrated by the recent assassination of a farmers' agent in Echols County, Georgia. The unfortunate official was Max Lockridge, engaged in cattle tick eradication under the direction of the U. S. Department of Agriculture.

Because of threats of violence, it was the custom of men employed in this work to travel in squads of three, two riding ahead and one behind; but at the time the shooting occurred Lockridge and his assistant were riding together in an auto. The assistant, Roy S. Ritchie, was wounded.

Similar assassinations have occurred on the Pacific Coast. A few years ago a horticultural commissioner was murdered in Modoc County for enforcing the spraying law, and a game warden was shot and killed from ambush in Jackson County, Oregon, in the discharge of his official duties. Sometimes such deeds of violence have been traceable to lack of tact or discretion on the part of the officers, but more frequently the trouble has arisen from the ignorance and selfishness of the attackers. Fortunately these traits are seldom evidenced among present-day producers. The tendency in California is to work with and not against agricultural officials.

"What's New?"—Keeping Abreast of Agricultural Progress

Chicken Finds Diamond

A THREE-EIGHTHS carat diamond recently was found in the windpipe of a Marin County chicken by Dr. C. E. Salfield of San Rafael, who thinks there are more precious stones in the hills where the diamond was found.—KATHLEEN RODD.

Harriger Beats Butchers

WHY should a butcher receive more for cutting up a hog than a farmer is paid for raising and feeding it? inquired J. H. Harriger, Butte County Poland China breeder. Failing to receive a satisfactory answer, Harriger last winter butchered a half dozen heavy hogs and sold the meat at retail, receiving therefor $70 each, which was about $40 more than the price offered by butchers. Harriger was willing to sell at six cents a pound, but dealers would pay only four cents.

Advises Long Pruning Olives

OLIVE trees should be long pruned, says Professor F. T. Bioletti, of the College of Agriculture, who recently conducted a series of meetings in Butte County. He tells of the results of a five-year pruning experiment: Trees not pruned other than removing suckers made ten times the growth as those cut back and thinned out each year. On those trees not pruned the trunk grew larger and the trees had a greater height and spread of branches and bore fruit earlier, he said. —M. T. RICE.

Lilith Leads Four-Year-Olds

WITH a ten months' record of 22,245.1 pounds milk containing 786.38 pounds butterfat, equivalent to 982.9 pounds butter, Hollywood Lilith Palmyra Abbekerk is the new California Holstein champion producing cow in the senior four-year-old class. She is owned by the Los Angeles County Farm at Hondo. By this record she displaces the former State record of 784.6 pounds butter held by Johanna Hengerveld Capunna of the Beeman farm at Woodland. The new State champion ranks second among the American leaders in her class.

New Grazing Permit Ruling

BEGINNING with the grazing season of 1924, permits will be issued to fully qualified owners for not less than a five-year period by the Forest Service, United States Department of Agriculture. The permits will authorize the grazing of not less than a stated number of livestock, which will be approximated to the number now permitted under established preferences, and will be nonreducible during the period except for violation of the terms of the permit or in emergencies for the protection of the range. The primary purpose of such an arrangement is to stabilize the use of national forests by all classes of grazing permittees.

British Queens Moved

SONOMA COUNTY British Queen potatoes moved rapidly at the "Dollar Day" sale conducted recently in Santa Rosa, Sonoma County. Hundreds of sacks were sold at $1 and orders taken for more. The marketing of the potatoes was supervised by Farm Adviser H. A. Weinland, who said that the stunt was put on for two reasons: First, the potato is not selling readily anywhere in the country, and Sonoma County growers have been hit hard along with the rest; second, this particular variety, the British Queen, has fallen into disfavor with housewives because of the false idea that the tubers fall to pieces when boiled. If the potato is started to cook in cold water with a little salt, and brought to the boiling point while in the water, it will not crumble, he asserts. The British Queen is one of the highest testers in starch content, and that is what is demanded in a good potato, concludes Weinland.—KATHLEEN RODD.

Milk as a Spray Spreader

A NEW and profitable market for skim milk has recently been developed by using casein to improve the adhesive qualities of spray materials. A. L. Lovett, entomologist of the Oregon Experiment Station, classifies casein as a universal spreader, one which can be used with almost all sprays under nearly every condition, something which cannot be said of soap, oil and glue.

"Casein increases the efficiency of nicotine sulphate when the latter is used as a summer aphis spray," says Prof. Lovett. "When used with lime-sulphur and lead arsenate to control apple scab and codling moth, casein retards the formation of black sludge. This effect alone would warrant its use with these materials."

One point upon which practically all fruit growers are agreed is that the use of casein with arsenical sprays lessens the objectionable blotchy effect on the fruit, permitting the latter to color more evenly and smoothly. The Petaluma Co-operative Creamery is manufacturing large quantities of casein, which Manager Hopkins considers one of their most profitable by-products.

Farmers Study at Night

A HALF hundred Sonoma County farmers recently attended a night school at Sabastopol. The school was directed by H. I. Schnabel. Agricultural subjects were taught.—KATHLEEN RODD.

Walnut Dehydration

EXPERIMENTS by growers in Southern walnut districts indicate that through proper methods of dehydration in all probability it will be possible greatly to speed up walnut harvesting methods with the result that a much larger part of the crop can be put on the market for the holiday trade than has been possible in the past. This every walnut grower recognizes as a decided advantage. Preliminary reports also indicate that a much better average quality product is produced with artificial dehydration than with ordinary sun-drying, the method in use at the present time. Among the growers successfully testing dehydration during the past season are Robert H. Neely and J. C. Pearson of the West Covina section. According to a recent statement by Mr. Neely, the cost of dehydration this season was actually less than the cost of field curing, taking into consideration the fact that the heavy investment in trays and in labor ordinarily met by the walnut grower is not necessary where nuts are artificially dried.

Feeding Hogs Cat-Tails

EXCELLENT results in feeding cat-tails to hogs were obtained last year by L. E. Freudenthal, manager of a large Duroc Jersey farm near Las Cruces, N. M. Forty-three hogs were turned into a three-acre patch of cat-tails April 10 and received no other feed for the next three months. The pigs made satisfactory gains and were in good flesh at the end of the period, while the swamp was left a mass of mud.

Although the pigs ate the stalks, they derived their chief nourishment from the rhizomes, or roots which run beneath the ground and send up stalks. These rhizomes, according to Prof. Classen of Cornell University, contain a core of starch, which serves as a reserve food supply for the plant. It is estimated that an acre will produce five tons of this starchy food, dried.

Lyman Carrier, agronomist of the U. S. Department of Agriculture, has known hogs to feed on plants similar to cat-tails and sees no reason why the latter should not be extensively utilized for pig feed. There are 79,000,000 acres of swamp lands in the United States, it is estimated.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

XIII—Frederic H. Stoneburn

THIS will introduce to our readers one of the world's greatest poultry authorities, Prof. Frederic H. Stoneburn, who is writing upon this subject a series of articles, which Orchard and Farm expects to begin publishing in the near future.

PROF. STONEBURN

Throughout the Eastern States Prof. Stoneburn is known as one of the "saviors" of the poultry industry, having performed important work in placing the business upon a profitable basis. He is said to be the first agricultural instructor to receive a professorship of poultry husbandry.

Prof. Stoneburn has lectured on poultry in the following educatioanal institutions: Universities of Maine, Cornell, Columbia, Vermont and Missouri; State agricultural colleges of Massachusetts, Connecticut, Pennsylvania, Rhode Island and Maryland and Rutgers College.

For the past thirteen years Prof. Stoneburn has traveled extensively throughout the Eastern States, visiting leading poultry farms, judging poultry shows, lecturing and writing upon the various phases of the poultry industry.

In addition to his didactic work, Prof. Stoneburn has had large and successful experience in breeding, feeding and weeding poultry. His articles will be awaited with a great deal of interest by our readers.

NEXT WEEK, ROBERT W. HODGSON

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES

PECAN GROWING IN CALIFORNIA—Pecan growing promises to be a real commercial industry in California. Most of the pecans we get now come from Southern States. I have seen fruitful trees in many parts of California, and while at El Centro recently saw two carloads of trees, switched onto a siding. They are being planted mostly along the Colorado River.

KIRK OF ORLAND MAKES GOOD E. A. Kirk of Orland, who has been secretary of the Glenn County Fair Association, secretary of the Chamber of Commerce, and moving spirit for progress generally, came out from Iowa about seven years ago with a stake of $1200. By hard work and intelligent effort Kirk has made a go of it as a farmer, and has found time, also, to give considerable attention to community work. On his farm Kirk planted alfalfa the first year and bought Jersey cows as fast as he could afford them. While making a monthly return from his dairy, he conditioned his soil for his orchard, which has proved a success. Before he started farming Kirk was mostly in clerical work. He worked in an Iowa postoffice and then in a bank.

BIXBY COMES HOME Fred Bixby, president of the National Livestock Association, and a Los Angeles man, recently returned from New York, where he saw the Madison Square Garden Horse Show. Bixby is anxious to see California have horse shows equally attractive in Los Angeles and San Francisco as a feature of livestock shows in the two cities. The San Francisco livestock show, known as the California National, is now an assured fact with the city awakened to its desirability, but so much money has been lost in the Los Angeles shows that Bixby thinks he is the sole surviving optimist. However, the time is coming, he is positive, when Los Angeles men will recover from their pessimism. All factors, in both cities, agree that a livestock show cannot be financed successfully with the load of temporary buildings to carry each year. There is too much loss. San Francisco is solving the problem by building a permanent building, to represent an investment of $1,000,000. This structure is being financed by a corporation of enthusiasts, but ultimately will be taken over by the city.

BUSINESS MAN FOR BUSINESS JOB—C. E. Paris, who is manager of the Imperial Valley Milk Producers' Association, has made a great record with that organization in increasing the business and in cutting down expenses. This is notable because of the fact that Paris, while not originally a creamery man, is known throughout Imperial Valley as a highly efficient business man. In the early days of development there he represented the Holt interests and built and operated most of the utilities. He was one of the pioneer developers of Imperial. He is a keen business man and an organizer, and many of the young men who now occupy advanced positions in the business of Imperial Valley owe their schooling to Paris. When the Milk Producers' Association wanted a good manager they called on Paris, and he has mastered the butter business with the same efficiency that characterized his earlier operations. This is just another instance of a producers' organization which has recognized that it must have a keen business man to handle the business end of its affairs. Because of this, the association is a big success.

MUSHROOMS FOR HIS FRIENDS William Richards of Riverside, who has a 20-acre place which he eventually expects to develop into a little dairy and fruit farm, spread a lot of mushroom spawn about his place and, in season has a large crop of this delicacy. Richards invites his friends out to his ranch to hunt mushrooms, and there are a lot of them to be found. With him, it is his pleasure to entertain his friends. Perhaps, however, there is an idea for some profit in such a plan if somebody who reads this has some idle land near town.

IMPERIAL STRAWBERRIES Imperial Valley, that empire of speculative crops, with dairy cows as a steadying influence, is going in for strawberries. Tom Elliott, a representative of the American Express Company, is encouraging the planting of more strawberries in the valley, for they have better carrying quality than the berries of other parts of the State which reach the early market. There is plenty of room for a strawberry development in Imperial, and Elliott, who has investigated the matter thoroughly, says that the profits per acre are great. The dairy cow is the big stand-by in Imperial, and the farmers, business men and bankers are learning it. Every now and then big money can be made on an annual crop, but it takes the dairy cow to keep a fair margin of safety in the bank account.

A MATTER OF ARGUMENT The University of California Extension Service has carried its "better sires" campaign into Imperial County, and Noel Negley, specialist of the Extension Division, spent the last week in January in Imperial. The Extension Division had the co-operation of California Dairy Council, and L. H. Moulton, Southern representative for the council, went out with W. R. Farmer of Holtville to interview prospects. They were able to get several farmers to buy bulls. Moulton tells of a humorous experience in talking to one farmer. He had mostly Holstein cows and wanted to buy a Holstein bull. A friend visiting with him was a Jersey enthusiast and tried to persuade him to buy a Jersey. The two friends got in an argument and Moulton and Farmer stood around and waited for two hours. Finally, the farmer signed an order for a bull, but left the breed space blank, saying: "I'll phone you tonight and tell you what breed I want after we finish this argument."

SOMETHING NEW IN TENANCY The Commonwealth Club of California is an organization to investigate and discuss problems affecting the welfare of the commonwealth and to aid in their solution. It has just issued the report of its committee on land tenancy in California. Imperial is the leading California agricultural county in tenancy, the report shows. Of all Imperial farmers, 49.3 are tenants! (If San Mateo be called an agricultural county, then it leads, for 63.3 per cent of the farmers there are tenants.) Marin is next to Imperial, Santa Barbara is third, San Francisco fourth and Sacramento fifth. Of course, San Francisco farming is largely truck gardening conducted in the outskirts of the city. The committee's report was presented by R. L. Adams of the University of California, R. N. Wilson of the Farmers' Legislative Committee and Sam H. Greene of California Dairy Council.

Suggested changes in leasing methods are of immediate importance. They were presented by Greene and are enumerated herewith: (1) Substitution of the share rental method for the cash basis; (2) creation of longer leases in place of annual leases; (3) insistence by owners upon better farming methods; (4) establishment of farm units of a size which will insure the practice of the best possible farming, including greater diversification.

Other recommendations offered from time to time during the collection of data were: (5) Guaranty of possession, so that tenant can make improvements; (6) adoption of more binding and enforceable contract; (7) development of more interest on part of owners in maintaining, if possible, increasing productivity; (e. g., soil quality); (8) insistence that landlord educate himself as to real condition of his tenant; (9) tenant to supply stock, feed, equipment; (10) insistence that dairy tenant join cow-testing association and keep purebred bulls.

Fertile Soil *and* Bounteous Crops Await You

HERE, in the healthful Salt River Valley, prosperous and fertile lands await you.

Thousands of acres situated in the southwestern part of Arizona are capable of producing a large variety of bounteous crops, while all kinds of vegetables and the choicest of fruits, including grapefruit, oranges, grapes, dates, olives and melons are profitably grown.

These choice farming lands, made possible by the great Roosevelt Dam, comprise thousands of acres rich in soil fertility. Controlled irrigation furnishes each farmer water at regular intervals in any amount desired. Absolute assurance is thus given to the proper growing of crops—no droughts, no floods—crops all the year through.

And by the application of this water to the already fertile soil, crops grow like magic—a veritable luxuriance of all growing things. It is "Roosevelt's dream come true."

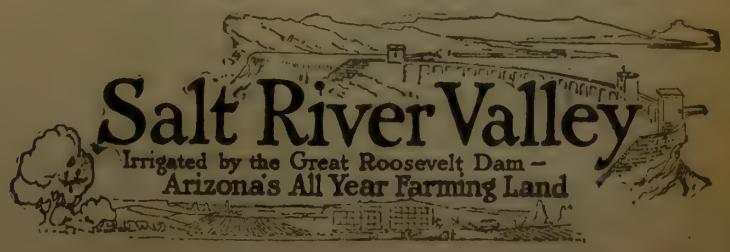
Prosperous Towns and Cities

Situated in the heart of this valley lies the Capital of the State, Phoenix, a thriving city of 40,000 up-to-date people and easily reached by the Southern Pacific or the Santa Fe Railroads. Other prosperous cities are contained in the valley and connected by the finest of paved and improved roads.

Favored by the best of schools, churches and civic organizations, the newcomer will find congenial surroundings in this friendly community, where the warm, dry climate makes strong bodies and clear minds. And unsurpassed mountain scenery along the famous Apache Trail highway permits an endless variety of pleasant diversions during leisure hours.

Opportunities for Newcomers

Plenty of acreage rich in fertility awaits you. There is no greater opportunity for you to engage in profitable farming than is offered in this valley of evergreen farming land. Good land and cozy country homes are available at moderate prices. You owe it to yourself and family to consider carefully and investigate thoroughly the exceptional possibilities of this fertile valley. *Just fill in the coupon or address a letter to our organization for full details about better opportunities in this prosperous valley.*



Principal Crops Grown in the Valley

Alfalfa	Oats
Cotton	Corn
Wheat	Grain
Barley	Sorghum

Salt River Valley Arizona Club,
Department A-318, Chamber of Commerce Bldg.,
Phoenix, Arizona.

Gentlemen: Please send me detailed information about the fertile farming lands in the Salt River Valley, and the opportunities which are open to newcomers. It is understood this incurs no obligation on my part whatever.

Name .....

Street or R. F. D. .....

City ..... State .....

FACTS IN A NUTSHELL

CONCERNING

GEO. C. ENGLAND'S SOUTHERN CALIFORNIA SINGLE COMB WHITE LEGHORNS

You have heard but very little about me, for the reason that I have been for ten years building a strain of S. C. White Leghorns by careful, conscientious breeding methods and the constant use of trapnests, every day in the year, since 1912. I am now ready to sell you the product of my labors, and I will venture to say that you will know more about the ENGLAND STRAIN of White Leghorns in the next ten years.

OUR BIRDS MUST ACT AS THEIR OWN SALESMEN

Referring to the December report of the Western Washington Contest, I find my pen of five pullets laid 124 eggs, 114 standards and only 14 pullet eggs. Think of it, folks—only 14 pullet-size eggs, and an average of almost 25 eggs per bird!

Of the eight 300-egg hens produced at the above contest for year ending October 31st, representing six entries, the ENGLAND STRAIN had TWO 300-eggers in one entry in competition with the best in the world.

YOU SHOULD KNOW THAT

I do not buy my contest birds; I breed them. I do not farm out any of my stock.
I do not use electric lights on my breeders. I do not buy outside stock or eggs to fill my orders.

BUT

I do breed and raise every bird I sell on my own ranch under my own personal supervision.

AND NOW

If you believe in me, if you believe in my stock and my methods of doing business, I will be pleased to serve you to the best of my ability.
Place your orders now for hatching eggs and I can take care of your requirements for breeding cocks and cockerels, positively every one a son of a 300 or better egg hen. You will like them, too.

My new catalogue will be ready by the time this reaches you. Let me send you one.

GEO. C. ENGLAND, P. O. Box E-337, Inglewood, Calif., U. S. A.

The Charles Weeks System

of Intensive Poultry and Berry Farms

One Acre and Independence, or
The Fine Art of Earning a Comfortable Living on
ONE ACRE IN CALIFORNIA

For those who desire to dwell in sunny California without living up hard-earned capital.

For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California.

The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 25 miles from Los Angeles.

Write for Literature

CHARLES WEEKS

Owensmouth California

Clarkadota Fig Plantations

Planting Time Is At Hand

We are offering some choice pieces of land planted to Clarkadota figs along the Highway adjoining the city of Stockton.

Should you wish to invest your money in a fruit farm, Clarkadota Fig Plantations present the greatest opportunity for profit in California. Land planted to figs has been a good investment for thousands of years. Any investment that has stood the test of time is worth the time it would take you to investigate it.

We have just published a new booklet that is an education on figs, and you cannot afford to be without it. Every afternoon at 2:30, beginning February 19th, we will give a free lecture illustrated with lantern slides and moving pictures, on this wonderful seedless canning fig. The pictures also show the land and how it is prepared for planting.

It is not necessary for you to move on the plantations, as we care for the land and trees for a period of six years.

These plantations should pay back your entire investment during this six-year period.

Orchard & Farm

W. G. LOOMIS.
Flatiron Bldg., Market and Sansome sts., San Francisco.

Kindly send me your new booklet about CLARKADOTA FIG PLANTATIONS, without obligation on my part.

Name .....

Street .....

City .....

Germain's Panama Rhubarb

out-yields all other varieties!

PLANT IT!
It outyields other rhubarbs 3 to 1!
Don't fail to read our FREE folder.

Germain Seed & Plant Co.
N. E. Corner Sixth & Main Sts.
Opp. P.E. Depot
Los Angeles, Cal.

In Answering Advertisements, Please Say: "I Saw It in ORCHARD and FARM"

Advocates Confining the Hens

Poultry Expert Cites Disease Menace of Open Yar —Advances Unique Theory

MODERN poultry raising illustrates the working of the law of evolution. Man has learned to apply to the hen the same methods which have increased his own creative ability.

Genius in man usually indicates the use of waste or surplus muscular energy for producing creative thoughts which, when concentrated upon a definite objective, accomplish great results.

In the case of the hen, man has forced into productive channels the bodily energy which formerly was wasted. Trapnesting, selective breeding and modern methods of management have turned this energy into greater egg production.

In our experiments we have learned that the one thing which increased egg production more than any other factor was the elimination of outside yards. We believe they cause the spread of diseases and are useless.

We find that hens kept under a roof, in a dry, clean, open-front pen, will lay more eggs and at the same time maintain better health than those allowed their freedom. It is the same principle applied by many dairymen, who believe that comparatively close confinement of the cows increases milk production.

The hen which is not allowed to use her energy in running about and foraging for food converts her food into eggs with the least possible waste, and since she is compelled to eat only the cleanest and choicest foods, produces eggs of high quality.

By our method we keep 100 hens in two pens, each 12 by 12 feet, with a small door between. This gives them morning sunlight in the east pen and afternoon sunlight in the west pen. The floor is of sand. Regular spraying and the constant admission of sunlight and fresh air result in unusual freedom from germs and other enemies of health and production.

In the modern egg-machine man has applied nature's wonderful law of evolution. It is a far cry from the wild jungle fowl to the modern hen that lays over 300 eggs per year. It has not been very long since the world marveled at the 200-egg hen. Today the 300-egg hen is common and we are well on the way to the 400-egg per-year hen. Is there no limit?—CHARLES WEEKS.

Cleaning Eggs Quickly

THE speed and efficiency of the egg-cleaning machine being used by the Poultry Producers' Association at Petaluma is simply marvelous. The assistant editor of Orchard and Farm recently had the privilege of inspecting this machine and was amazed at the quickness and thoroughness of its operation.

Thirty-two dozen eggs per minute—60 cases an hour—is the capacity of this extraordinary device. (Through error the capacity has been published as 32 eggs per minute instead of 32 dozen.—Ed.) Fifteen persons are required to operate the machine, into which soiled eggs are fed and rapidly cleaned by the use of sand and rubber rollers, coming out "lily white." Very dirty eggs are put through another machine, in which hot water and brushes are used to remove foreign matter.

Charles E. House, the efficient manager of the association, states that eggs which do not have to be cleaned keep better than those subjected to washing are sanding, but the latter processes are made necessary by the condition in which a portion of the eggs are received.

Mr. House is confident of being able to obtain profitable prices for all the eggs that central California will produce. "Let 'em go to it!" smilingly advised the Petaluma manager, referring to the threatened competition of Eastern producers.—O. H. B.

Producing Half-Pound Eggs

A RECENT issue of Popular Mechanics contains a picture of what is claimed to be the largest hen's egg in the world, weighing four and one-eighth ounces. Mrs. O. D. Brandon of Bell (Los Angeles suburb) brought to the office of Orchard and Farm samples of eight-ounce eggs laid by a Rhode Island Red hen. One of the eggs weighed a trifle over a half pound, being two inches thick and three and one-half inches long. Each jumbo egg contains two yolks.

Mrs. Brandon states that her half-pound-egg hen lays two such eggs nearly every week and some kind of an egg every day, except when broody or moulting. The hen was first fed on toast and milk and began laying when five months old. She now receives only ordinary hen feed.

If eggs were sold by the pound, Mrs. Brandon thinks her hen would hold the world's production record.

Curing Rose Bush Ailments

(Editor's Note—Mr. Calloway is a Los Angeles County horticulturist whose long experience in doing custom work renders his advice very practical and of unusual value. ORCHARD and FARM will publish a number of short articles by this authority on the care of home grounds and gardens.)

FLOWERS, like human beings, love a lover; they like to be petted and worked with. Roses have their peculiarities and we must respect and cater to them.

The rose bush is a heavy feeder, having many fibrous roots close to the surface of the ground; hence it must be fed well and often. Too much commercial fertilizer is injurious, but an annual feeding of well-rooted dairy manure, trenched in shallow with commercial fertilizer and well watered, will bring growth and blossoms. Occasional light applications of commercial fertilizer are welcome.

Roses do not need constant cultivation, but should be dug around—not too deeply—twice a year at their rest period. They should then be mulched with straw—bean, if possible—or horse manure and left alone. If you haven't mulch material, rake the soil often to maintain a dust mulch, so you will not have to water the bushes often.

Sandy soil is not good for roses, but if well mulched and filled with humus, fair results may be obtained. If you want a good, permanent rose bed in such soil, dig large holes and refill with heavy soil, then plant the bushes there. A rose bush in light soil is apt to be short lived and unsatisfactory.

Many rose bushes are never planted properly. Their roots are tied in knots and never separated or spread out. The bushes are planted in small holes on top of hardpan or plow-sole, where they never get a fair start in life.

Not long ago I was asked to replace some roses that had been planted two years and had never made any growth. They had been stuck—not planted—in a heavy, cemented soil. The latter should have been deeply dug out and well-aerated top soil put in the bottom, with perhaps some old barnyard fertilizer beneath to coax the roots to grow.—E. S. Callaway.

Diversified Farm Foremen

ONE of the drawbacks of a large diversified farm is the difficulty of finding a foreman who is competent to carry on all kinds of ranching, according to Miss Lydia Weld, who superintends a 400-acre ranch in the Antelope Valley.

"A good stockman seldom cares to bother with an orchard, while an expert horticulturist does not, as a rule, like to handle animals," explains this lady. "An economical irrigator and a fine dry farmer are rarely found in the one and the same person, while an experienced mechanic seldom is successful in managing other workmen."

"PLANT FIGS"—CONDIT

Ira Condit, of the Peach and Fig Growers' Association, advises the planting of black mission and Kadota figs on the rolling, red clay lands between Oroville and Gridley. Ed Stedman and Lawrence Gardella set 160 acres five miles south of Oroville to the first named variety this year.

Potato Planting Pointers—*Seasonable Information From a Successful Grower*

By BERT C. BOUGHER

Superintendent Pasadena City Farms, One of the Largest Producers of Certified Seed Potatoes in California

SPRING potato planting time is here and the grower is confronted with the usual problems the solution of which will mean success or failure. First among these is the necessity for using good seed.

This year the grower will be influenced more than ever to plant cheap seed, and he hardly can be blamed for doing so in view of the small returns secured from his last two years' efforts. Nevertheless, it is just as important now as any time in the past to secure the best seed available.

Good seed, as the term is generally accepted among potato growers, means that which has been selected for a number of years in a systematic manner in order to eliminate the numerous diseases carried by the tuber and also to build up a strain that will give uniformly high yields.

The only way a grower can be certain he is securing seed of this type is to buy "certified" seed of whatever variety he intends to plant. Spuds planted from ordinary field run seed which from all physical appearances gives evidence of being first class, may contain blight, curly dwarf, mosaic and "off types," inherent in the seed piece.

Under the rules of certification, the seed to begin with has to come from certified stock and then the fields are "roughed" three times in order to eliminate all those plants which show evidence of disease or which are not true to type. When the remaining vines are dug, the spuds are run over a grader where those under one and seven-eighths inches in diameter are thrown out. Also potatoes infected with scab, rhizoctonia, rot or cuts, and any tubers not conforming to the desired type and shape recommended by the adopted standards are removed.

FIELD INSPECTIONS NECESSARY

The only way to determine whether curly dwarf, leaf roll and mosaic are present is to make a number of field inspections. For instance, plants affected with mosaic have leaves irregularly mottled with dark green and yellow and more or less crinkled. The disease also is carried in the tubers, although it cannot be detected after the crop is harvested.

Due to lack of sufficient funds, however, State inspection work on commercial seed potatoes has been discontinued, with the result that all potatoes except certified seed can be sold and shipped into any territory. Thus the pest most dangerous to practically all types of California agriculture has been given free rein to spread its deadly infection through the means of ordinary seed potatoes.

Certified stock is free from the nematode and other diseases mentioned, besides being graded to size and uniformity of type. Its use invariably means a heavier yield of tubes and a larger percentage of marketable sizes.

The reason seed sells for more money is because the extra expense necessary to perform all these operations is much greater than that of harvesting and growing ordinary spuds. A field of certified seed that will run 100 sacks for a fall crop probably will yield 50 to 60 sacks when graded.

The man who purchases certified stock is assured of getting the best possible seed, true to the variety chosen. However, a certification tag on the sack does not mean that particular sack is best adapted to his locality; it does mean the potatoes are free from disease carefully graded and highly productive in the locality in which they were grown.

USES HOME GROWN SEED

During this month we are planting on the Pasadena Farms about forty-five acres of certified White Rose potatoes from which we expect to secure enough seed for planting about 250 acres of fall crop. We shall apply for certification of all this acreage, according to the rules of the State Department of Agriculture.

In planting spring potatoes it is absolutely necessary to dip the seed in order to kill any scab or rhizoctonia which may have gone unnoticed in the grading and sorting. We use mercuric chloride at the rate of one pound to 120 gallons of water, the seed being dipped before cutting and kept in the solution for one and one-half hours.

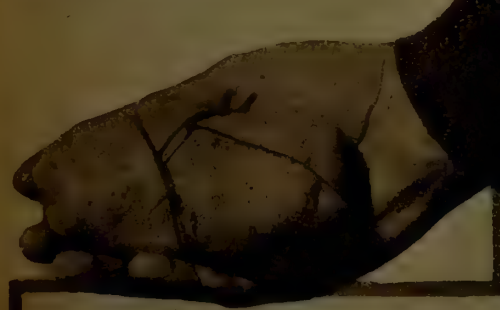
In making up the solution for dipping, it was found that by heating a ten gallon crock full of water to the boiling point in a water bath and then stirring in the five pounds of mercuric chloride (which is sufficient for 600 gallons), the poison is mixed more thoroughly with the solution and less time is lost..

The practice of cutting the seed as soon as it has dried seems to be most satisfactory. At this time of year it does not matter much if a quantity of seed is cut ahead of the planters, as the weather is cool and there is not much danger of the cut surface becoming too hard and dry.

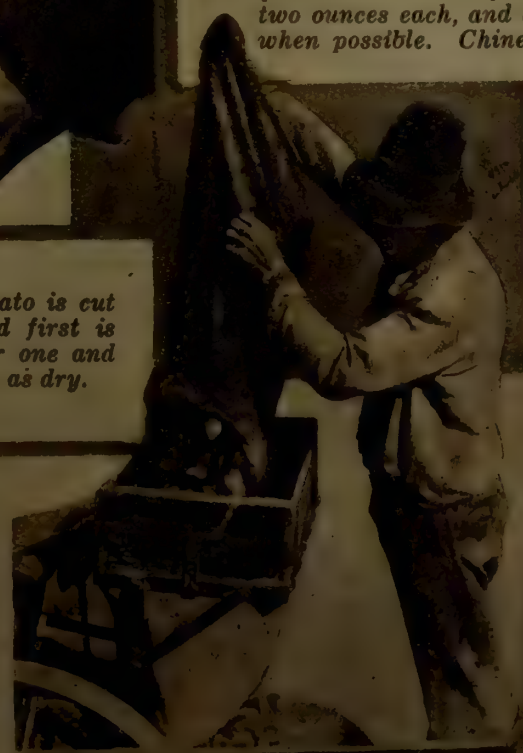
In cutting the seed we try to get a piece with two good eyes weighing about two ounces. One eye is sufficient, but two is better, insuring a more even stand of vines. Furthermore, this gives more material from which eye and sprouts can develop; this, in *(Continued on Page 14)*

In ten gallons of boiling water is dissolved 5 lbs. of mercuric chloride, enough for 600 gallons of solution.

In this concrete vat 55 sacks of seed potatoes may be treated. It measures 8 by 9 feet by 4 feet deep.



Showing how an average potato is cut for seed purposes. The seed first is dipped and after soaking for one and one-half hours is cut as soon as dry.



Seed potatoes are cut in pieces averaging about two ounces each, and containing two eyes when possible. Chinese laborers on this farm cut 25 to 30 sacks a day, the cost averaging about 25 cents a sack. Only selected, graded tubers are used for seed.

"Loading" the planter. Photograped February 23rd, Pasadena City Farms. Potatoes are inspected, certified and marketed under special brand.

Seed pieces are planted to a depth of 3 to 4 inches. Article explains a good method of adjusting planter to strike proper average.

A Real Solution of the Labor Problem

Housing Fruit Farm Workers

IN this article Dr. Coit describes the methods by which a great citrus corporation has overcome one of the greatest handicaps to modern fruit growing. But the plan by no means is limited to the large operator. New conditions demand a new system. The clodhopper with unkempt beard and tattered hat has given way to a self-respecting individual who has earned for himself the right to be classed as "skilled labor." And rightly he is not content with the "California hotel" of the well known "Stiff." —*The Editor.*

By J. ELLIOT COIT

THE average farm laborer in the United States produces much more than his European brother. This is made possible, of course, by modern methods and machinery. The shortage of farm labor during the war brought about a tremendous increase in the use of machinery on American farms.

One phase of this changed condition is the greater appeal of farm life to men with families. In the old days of itinerant, unmarried farm labor, a cheap bunkhouse and "chow-table" were sufficient until the white lights, short hours, and higher pay of the cities left the farms deserted. Now many of those who have tasted the dregs as well as the foam of city life are drifting back "broke." Under the circumstances, they cannot be expected to settle down and remain as loyal and contented farm workers unless they be given an opportunity to own or rent at reasonable prices comfortable homes near where they work.

Compare this neat bungalow court with the accommodations for help on some ranches! No hardship or isolation here.

CORPORATION VERSUS FAMILY FARMING

Corporation farming has had its day. The lack of provision for family life and the comforts and amusements which go to make life worth while were its chief drawbacks.

Many of the larger corporation farms now are being subdivided in favor of family farming—which is a splendid thing when we consider the welfare of the nation as a whole.

Other corporations, noting the trend, are setting out to provide means by which their large holdings may be operated on a family basis. Progress along this line has been rapid in California, particularly on citrus fruit ranches, because most of the labor is employed the year round; a greater amount of experience and skill is demanded, and climatic and soil conditions lend themselves to the development of flower-decked bungalow homes at comparatively small cost.

THE LIMONEIRA RANCH

Perhaps the most interesting development of this kind has occurred at the Limoneira Ranch in Ventura County, which has the reputation of being the most efficiently organized and best-managed orchard property in America.

This ranch comprises 500 acres of full-bearing lemons, 400 acres of eight-year-old lemons, 240 acres of full bearing English walnuts, 300 acres of lima beans and 300 acres of dry hill lands which are cropped to hay.

The packing houses, warehouses, barns and shops are located near the center of the tract. Two hundred laborers are required the year round and more than 400 are required during the spring. Three kinds of labor are employed. Japanese do about half the packing house work and one-third the pruning. Mexicans do the picking and hauling and some pruning and cultivating. Americans are employed as tractor operators, foremen and other positions of greater responsibility.

The Limoneira Ranch is five miles from Santa Paula, the nearest town. There is no alternative but to house the labor on the ranch. What kind of houses to build was the big problem. In settling this question, C. C. Teague, the president, and J. D. Culbertson, the manager, took a great step forward in deciding to provide comfortable and sanitary family houses which would attract and hold the best class of workers.

The Mexican population is housed in 176 two and three-room cottages, built here and there over the properties in groups of from ten to thirty-six. These groups are located in healthful and picturesque spots among the live oak and eucalyptus trees. A plat of ground 40 by 100 feet is provided with each cottage and water is piped to each house and lot. The Mexicans greatly appreciate the opportunity to develop their own vegetable and flower gardens and keep chickens, rabbits and other domestic animals.

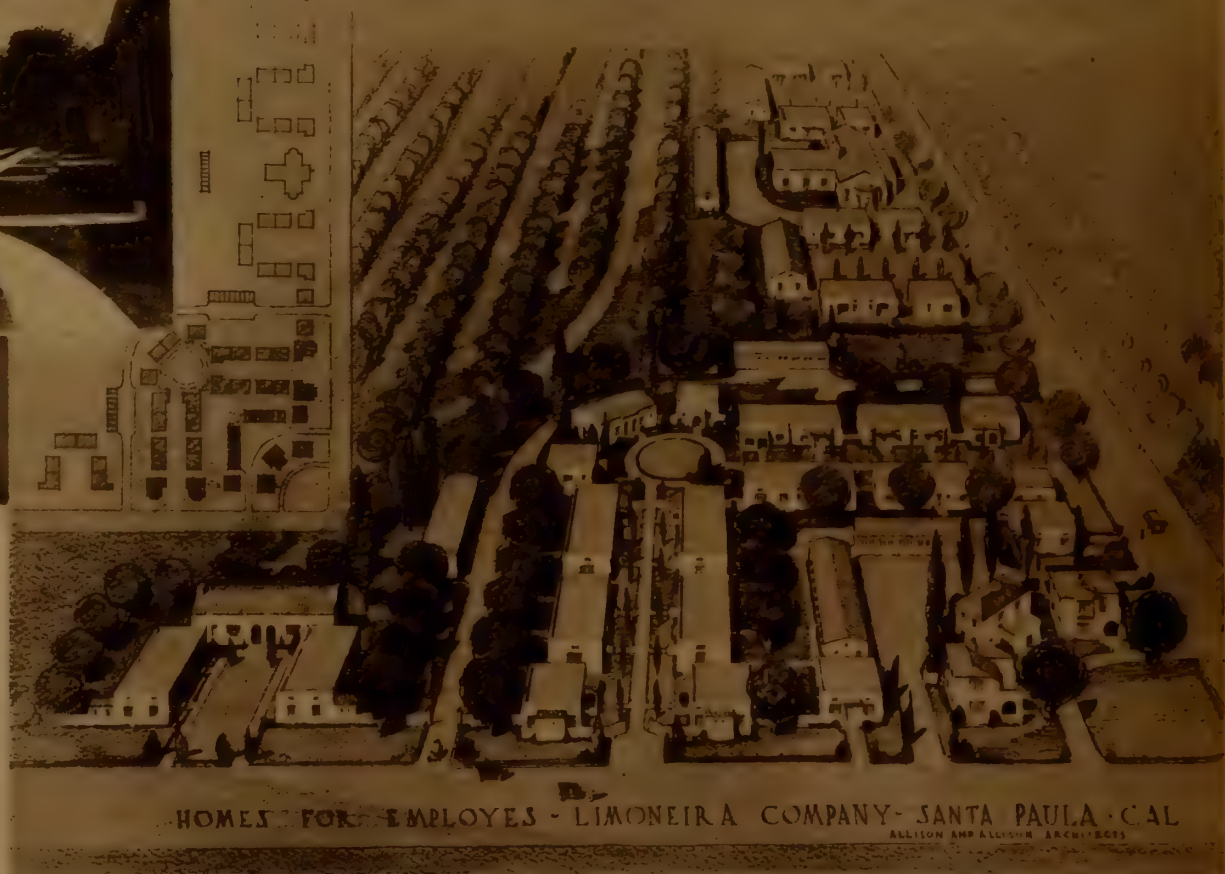
The interior arrangement consists of a combined kitchen, living and dining room and two smaller bedrooms. It is a custom of Mexicans to do much of the cooking out of doors. There are two windows and a clothes closet in each bedroom. There are three windows, a door, chimney, stove, dish closet and water faucet in the large room. These cottages are built of redwood lumber surfaced on the inside and the roofs are shingled. A fly proof outdoor closet with earth pit approved by the State Housing Commission is provided with each cottage. These houses cost from $250 to $275 each. No rent is charged the Mexican laborers and their families. A good school and chapel for religious services has been provided close at hand.

Mexican women naturally are clean and home loving. From such homes they send their men out to work each Monday morning with clean washed clothes—jumpers and overalls, as well as shirts. Such men can be depended upon to do a full day's work and as a rule try to avoid any cause for discharge which would separate them from their pleasant home and neighbors.

JAPANESE LABORERS

The number of Japanese farm laborers is decreasing all the time.

The Lemoneira company, however, retains some Japanese who have been on the ranch a great many years. For the housing of Japanese there are three large two-story dormitories, one of which has eighteen apartments for families. The special cooking and bathing equipment is of the style demanded by the Japanese and they conduct their (*Continued on Page 14*)



Architects' drawing of employes' quarters on Limoneira Ranch, Santa Paula. Contented familes mean efficient labor.

This "cottage" is typical of buildings provided for American foremen and superintendents. Stucco construction, modern throughout.

Even the homes of the Mexican laborers are comfortable, attractive and embellished with flowers. Great improvement in the morale has resulted.

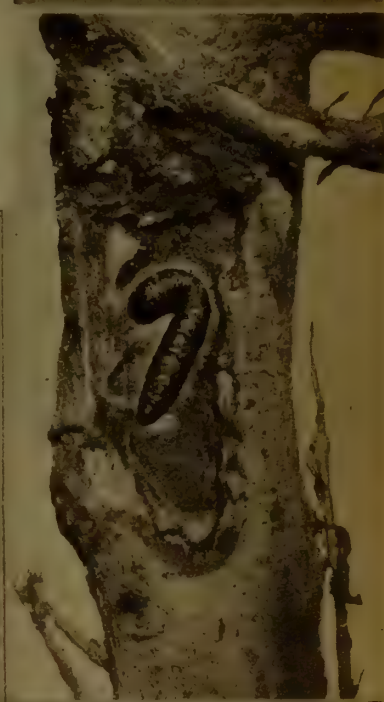
Battling Bugs in Vacuum—New Developments in Fumigation

By GEORGE P. WELDON

Contributing Editor of Orchard and Farm—Pomologist Chaffey Junior College of Agriculture

Dotted line indicates position of borer under bark, where ordinary treatment would not destroy it.

Placing nursery stock in vacuum cylinder preparatory to applying fumigating treatment. Courtesy G. R. Gorton, of L. A. County Horticultural Commission. Installation made by Union Tank and Pipe Co.



Same branch shown at left, with bark removed, showing dead larva after brief treatment by vacuum method.

RECENT experiments have brought to light astounding developments in the process of vacuum fumigation, of which the State Department of Agriculture at Sacramento has been making a special study for years.

In direct charge of this work is a man who became interested in the subject while conducting investigations for the Department of Agriculture of the Philippine Islands. One of his chief problems was in connection with the control of the cigarette beetle, a little insect which feeds upon cured tobacco products.

The idea of treating affected cigars and cigarettes with gas confined in a vacuum chamber suggested itself to the investigator and very soon the necessary apparatus and methods had been worked out. The scheme proved feasible and control of the insect was accomplished.

The man who did this work and who is now so well known among those interested in vacuum fumigation is D. B. Mackie, who for the past five years has been connected with the State Department of Agriculture. During these five years Mackie has spent much of his time in the study of vacuum fumigation problems, and the fruits of his labors rapidly are assuming great importance.

MANY PROBLEMS SOLVED

While the idea of vacuum fumigation is simple and not altogether new, much painstaking work has been necessary in order to perfect satisfactory apparatus in the first place, as there are many problems of an engineering nature to be met and solved, particularly with pumps and generators; and secondly to determine dosages of the gases and liquids that will give results in controlling pests, and yet will not injure the trees or materials treated.

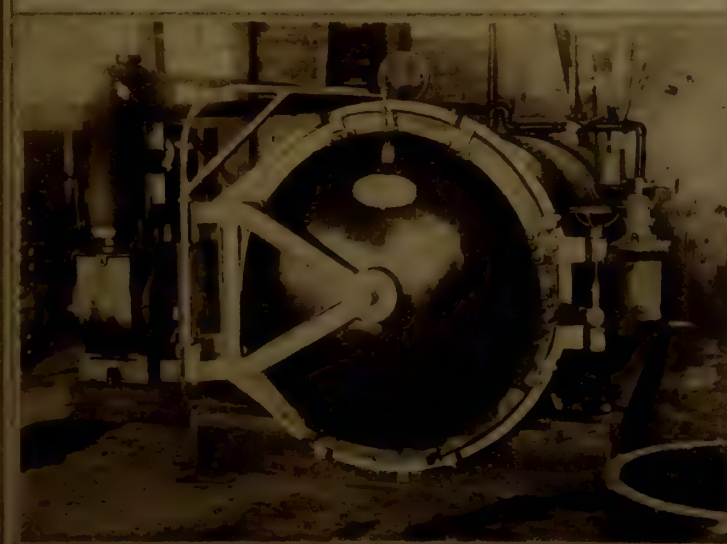
Any receptacle from which the air is to be removed must be very strong to withstand the atmospheric pressure from without. In the early days of experiments in this work in California a large boiler-like apparatus, made of light iron, constructed at Oakland for use in the fumigation of cotton bales, crumpled like paper when the air was removed from within.

Later this apparatus was perfected by using material of sufficient strength, and is now used constantly to fumigate bales of cotton in order that there may be no danger of the dreaded cotton boll weevil being spread from them. The vacuum method since has been employed in treating entire railway cars of cotton and other products.

IMPORTANCE IN CALIFORNIA

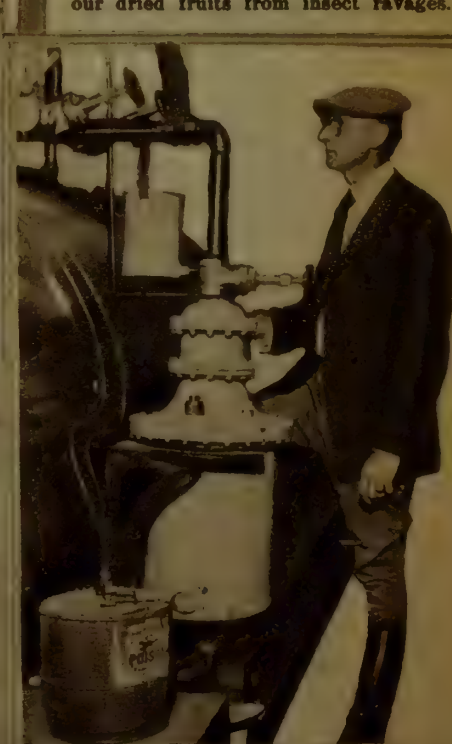
While the number of ways that the vacuum process can be utilized is probably much greater than anyone yet has dreamed, a few uses immediately suggested themselves. Commercial development has been in connection with the solution of a few vital insect control problems which were baffling scientists, and also in the disinfection of certain material, such as cotton bales, to prevent the possible spread of dangerous pests.

Next the heavy door is closed and screwed into place, effectually sealing the cylinder, which must possess great strength to withstand the atmospheric pressure when air is removed.



The time allowed for fumigation depends upon condition of material being treated, nature of gas or liquid used and other considerations. Liquid treatment frequently is accomplished in five minutes.

For many years growers and packers of dried fruits have been concerned because of heavy losses occasioned by the attack of certain insects which prefer the dried to the fresh fruit products. These insects have not been controlled in times past, although entomologists have endeavored to find a way that would protect our dried fruits from insect ravages.



Mr. Gorton, at controls of vacuum fumigator. The poison to be applied is let into the cylinder from container at left.

Fumigation, as ordinarily practiced, through exposure of material to gas in a tight box or room was found to be unsatisfactory, and not until Mackie perfected equipment and processes of vacuum fumigation did there seem to be any hope for successful control. Now we can purchase sealed packages of dried fruit products which have been treated in vacuo, with the assurance that they are free from insect infestation.

Among the dried fruit producers, none was more concerned because of insect losses than the date grower. Now these losses practically have been eliminated *(Continued on Page 13)*

Best Methods for Planting a Vineyard

Seasonable Suggestions on Setting Out Grape Vines by a Famous Authority

MANY thousands of acres will be planted to grapes this spring. The yield and profitableness of these new vineyards will depend largely upon the observance of a few simple but important rules, which Professor Bioletti explains in the accompanying article. Since he is regarded as one of the world's foremost viticultural authorities, his conclusions will be read with interest by the experienced grower, as well as the novice.—Editor.

By FREDERIC T. BIOLETTI

Written Especially for ORCHARD and FARM

A VINEYARD should be planted —not replanted. A replant is only half a plant even if it grows. A stand of 85 per cent the first year is a partial failure; a stand of 60 per cent is a complete one.

Every vine that isn't struck by lightning should grow well the first year. This is an ideal that the planter should keep before him, without it he will not obtain the 95 to 98 per cent stand which a good grape grower ought to get.

A perfect stand depends on many factors—proper preliminary preparation of the land, clearing, grading, deep plowing, subsoiling and winter irrigation. It depends on proper treatment after planting, wind and sand control, protection from leaf-eating rabbits and insects, maturing of the growth before frost; in fact, on all the work of the first year. It is particularly important that the actual planting shall be done efficiently and economically, and, of course, necessary that only plants capable of making a good growth shall be used.

To use inferior rootings or cuttings is to throw away most of the advantages of situation, soil, climate and good work, and to plant them carelessly or unskillfully is as bad.

CHOOSING STOCK FOR PLANTING

A vineyard can be started with rootings—one or two year old, callused cuttings or plain cuttings. When properly employed under suitable conditions, all these methods are successful.

First class cuttings, planted early in well-prepared, moist soil, will give a perfect stand. Callused cuttings are more sure, because callusing is a proof of their good quality. They start earlier and usually grow a little larger the first year than plain cuttings. Rootings are the safest and usually give the most growth the first year.

Two-year-old rootings, if not too large, are almost as good as one-year-old, but are more expensive to dig, handle and plant. If of good quality, rootings will give a perfect stand where it is hard to make cuttings grow. Their only defect is their higher price, which is from three to five times that of cuttings. Second class rootings are inferior to good cuttings.

Cuttings are best made soon after the fall of the leaves, and rootings are best dug before the heavy winter rains. Cuttings should be buried in slightly moist sand in the shade; rootings require somewhat more moisture but should not be too wet.

There are three ways of laying out a vineyard, each suited to different conditions of location, climate and scale of operations.

In the warmer regions, in fertile, well-prepared soil, where a very large growth is to be obtained the first year, it is sometimes best to stake or erect the trellis before planting. The vines then are simply planted close to each stake or picket. If care is taken to plant each vine on the same side of the stake, this gives the most perfect regularity. In favorable cases it makes it possible to obtain a paying crop 18 months after planting and also a properly shaped vine.

A method, suited especially for small scale operations, is to mark the place of each vine with a whitewashed wooden peg about 15 inches long and 1x1 inch thick. The vines then are planted by these pegs in the same way as with stakes. This method often results in some irregularity in the vineyard, owing to the liability of the pegs to be displaced before or during planting. It is quite unsuited to large scale operations where many planters are working together.

The third method, especially adapted to large scale operations, is called "planting to the line." The edges of the blocks first are marked with wooden pegs, similar to those used in the second method, but about 18 inches long, driven well into the ground. A planting line supplied with buttons at the required distance then is stretched between these markers and a vine planted to each button. The regularity obtainable by this method is equal to that obtainable by staking before planting. Usually it is advisable to put in a light, whitewashed marker, after planting, at each vine, or at enough of the vines to indicate the position of the rows to the cultivator.

CARE BEFORE PLANTING

Rootings should be pruned just before planting. If kept for more than 24 hours after pruning, they should be replaced in the moist sand. All roots should be shortened to from 1 inch to 4 inches, the thickest being left longest. All large roots within 6 inches of the top should be removed entirely. No attention need be given the small, fibrous roots except to see that they point downward when planted. All canes are removed except one, and this is shortened to two well-formed buds.

Ordinary cuttings should be taken from the relatively dry sand in which they have been stored during the winter and soaked in water for about 48 hours before planting. Callused cuttings are taken from the callusing bed as needed and planted immediately without soaking.

All planting material, when prepared in this way, should be kept constantly moist until planted. A convenient way to do this is to use planting buckets made of five-gallon oil cans. These are prepared by removing the tops and stiffening them by means of a wooden strip 1x¾ inch, nailed along the outside of the top, on two opposite sides.

These buckets can be used for soaking the cuttings and for carrying any planting material to the field. Each planter should be supplied with at least one of these buckets and a rooting or cutting should be taken out at the moment it is needed to put in the ground. Distributing the plants in the holes ahead of the planters is a bad practice.

METHODS OF PLANTING

What is the best method of doing the actual planting will depend on the kind of planting material used and on the character and condition of the soil. It should be done in such a way that the bottom of the plant is surrounded by good, moist, well-pulverized top soil and the soil is in close contact with the plant—at least at the bottom.

If the soil is a light sandy loam and recently has been turned over with a plow to the depth of at least twelve inches, there is no better method of planting than to push it into the soil to the required depth by hand. This can be done in most soils if a subsoiler has been run accurately along the line where the vines are to be placed. For this purpose the subsoiler should not (Continued on Page 13)

One hundred No. 1 grape "rootings." These will often make a perfect "stand" where it is difficult to make cuttings grow.

Grape cuttings of three different lengths. The short ones are for nursery use, the medium ones for nursery or field, while the long cuttings are adapted to planting in sandy soil. Cuttings which have callused are the best. Good cuttings are to be preferred to poor rootings.

No. 1 rooted vine from nursery. Before planting, the roots and branches should be cut off at the points indicated by dotted lines.

Result of crowbar planting. This vine died when it was three years old, because the sap was shut off by the twisted encircling roots.

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Mineralized Water Gets Rid of Dusting or Spring — Birds Delouse Themselves Fine for Baby Chicks and All Poultry

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You Haven't Read the Paper Until You've Read the Ads

Flowers Pay College Expenses

How a Young Girl Built Up a Business Which Made Her Dreams Come True

WHEN Gretchen Fischer graduated from high school at the age of 16 she had several hundred dollars which she had earned making flower gardens for the neighbors. She is using the money to help pay her way through the State University, where she is taking a course in landscape gardening. Her mother, Mrs. Helen Field-Fischer, is a great lover of flowers, which for years have been her chief pleasure and diversion.

"From the time she could toddle," writes Mrs. Fischer, "Gretchen had followed me in the flower garden and we had kept up the usual mother-and-child prattle about what was going on. In this way she learned what plants loved the shade and which the sun, how to handle different root systems and the need of cultivation. She was interested in knowing which flowers were 'cousins' and learned their botanical names as naturally as her friends learned the names of movie stars. She had her own little corner where she experimented with the surplus plants I threw away.

THE BIG IDEA

"When Gretchen was 14 years old she had her 'Great Idea'—why not sell the surplus plants?

"She cut out flower pictures from old seed catalogs and made a catalog of her own, pasting in the illustrations and writing underneath the prices. Then she called upon the neighbors and offered to set out for them the plants they selected from her catalog.

"Her success from the start was phenomenal. Whether the people really wanted the flowers or were entertained by Gretchen's flower talk I do not know. Anyhow, I was kept busy all through April and far into May digging plants which my little flower girl delivered and planted after school hours and Saturdays. One of her best sellers was a standard flower garden of hardy varieties which she had selected. They filled a bed 5x10 feet and furnished a constant succession of blossoms all summer long.

"The years that followed were even more successful than the first, as Gretchen added to her stock rose bushes and shrubbery, which she sold on commission for a local nurseryman.

"During her first year in college my flower girl is studying such unpoetic subjects as mathematics, chemistry and mechanical drawing, but her window-sill blooms with flowers and her heart is full of dreams of the wonderful garden she will sometimes make.

Treating Fruit Tree Troubles

MOST tree troubles are akin to those suffered by human beings, which are usually the result of a weakened, "run-down" condition. To a close observer it is very evident that something is wrong, and yet—like our own bodies—trees are often neglected until serious injury results.

Backyard fruit trees seem to suffer many ills not commonly noted in orchards. Why? Yard trees are generally crowded and—like children in the tenement districts—they are poorly nourished, having bad air and light. They are usually cared for by amateurs, or by gardeners who are not specially interested in the backyard; watered unsystematically and fed inconsistently, or not at all.

WEAKNESS INVITES DISEASE

Like the human body, a weakened tree invites disease. Such trees become an easy prey to pests and disease which—if neglected—cause partial or total death, after a few years of little or no fruitage.

What would the "tree doctor" recommend? The thinning out of overcrowded inner branches, thickened tops and terminal shoots; cutting out dead wood and stubs; removing surplus heavy limbs by smooth cuts and painting the latter well; giving the trees a good winter spray, without question, for this is a preventive which should never be omitted.

Fertilize with barnyard manure in a circle or trench near the "drip" of the tree each fall—not spring—and water well each month in the same trench until you know the soil is wet three to four feet deep, as the moisture must carry the fertilizer down to the tree's root system—E. S. Callaway.

The Advantages of a Short Hitch

TOWING a disabled automobile is not always the simple proposition it appears to be. Among the hills where roads are winding, with a sharp turn or a steep grade here and there, difficulties may crop out at any moment.

During the rainy season, especially, it is a good plan to carry a cable or rope about twenty feet long, using a short hitch for towing and a much longer one to get the pulling car out on solid ground when the disabled car is stalled in a mud hole.

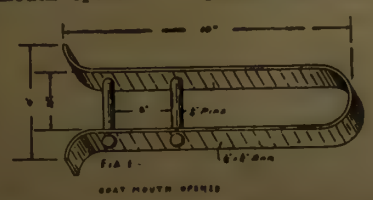
A comparatively short hitch is much better than a long rope when pulling a car along the highway. This is especially true, and it is very much more noticeable, when the road is hilly or crooked.

Farm boys learn early in life to hitch the horses close to the log they are skidding, or the harrow they are using in the field. The advantage in logging is partly due to the lifting strain, as the traces are attached to the hames about four feet higher than the chain, which pulls from the under side of the load, the resulting lift easing ground friction. At the same time the angle of the traces tends to "increase the weight" of the horses and gives them a better "hold" on the ground; they not only have firmer footing but also feel more confidence.

The advantage of a short rope over a long one when towing one car behind another is principally in the greater convenience in handling the two machines. However, in hill towing, the same lifting strain above mentioned, helps to a limited degree. —H. A. SHEARER.

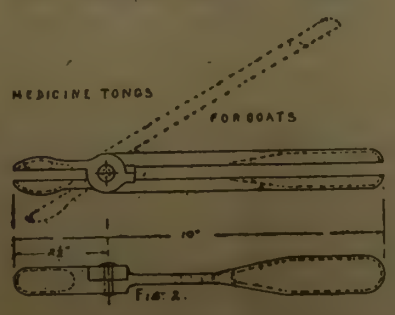
Goat Medicine Feeder

GOATS sometimes get "out of sorts" and need medical attention. The mouth opener is a great convenience



when doctoring goats; they don't like to take medicine. The easiest way to handle them at such times is to put their heads in a stanchion and open their mouths with the instrument shown in figure 1. It is pushed into the mouth endwise and the jaws are pried open with the two small pipe rollers.

The medicine dropper (figure 2) then is used to place the medicine between the roller bars and to drop it



on the goat's tongue so far back that she is obliged to swallow it.—H. A. SHEARER.

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	50	100
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OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

WANTED—Cotton farmer. Will sell or trade my 120-acre developed ranch, Wasco, Kern Co., so buyer can pay for same from crop. Acala cotton cleared $150 per acre. R. F. GAGE, 811 Wright-Callender Bldg., Los Angeles.

640 ACRES in grain, fine land, good buildings, near town and R. R.; $60 per acre, half cash, balance on easy terms. Write for bargain list of farms, orchards and vineyards. HARRY MINER, Madera, Calif.

STEVINSON 5 A. irrigated, $350 cash. Bargain. BAGLEY, Stirling City, Calif.

ORCHARDS AND FRUIT LAND

Pajaro Valley Orchard Buys!

Rare chances for paying investments. Ideal climate NO irrigation, NO smudging. Improved ranches, $100 to $1000 per acre.

A 43-acre ranch, good location, Cots and Apples. Av. annual income $10,000. Price $24,000. Terms. For full details and descriptive literature write FARM & FOREST CO., Watsonville, Santa Cruz Co., Calif.

ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

SMALL YOUNG ORCHARD, walnuts interset apricots, highly improved, plenty water, fine soil; well located, Ventura County. Will bear searching investigation. Priced for quick sale, terms. P. O. Box 724, Oxnard, Calif.

FARMS WANTED

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNown, 887 Wilkinson Bldg., Omaha, Neb.

Strawberry and Blackberry Plants

EVERBEARING Strawberry Plants—Our select, heavy-bearing, mountain-grown Progressives produced 43,000 boxes per acre first year; plants set in March, 1922. Everbearing raspberry and other varieties. Write for prices and descriptive folder. CARL HEWITT, Summit, Calif.

FOR SALE—Oregon Improved Strawberry plants, 300 per 100, $4 per 1000. Special rates on larger consignments. W. KALTHOFF, Occidental, California.

PLANTS AND BULBS

CHOICE AND RARE BERRY PLANTS—Red Raspberries, Black Raspberries, Purple Raspberries, Blackberries, Cory Thornless, Macatawa, Mammoth, Himalaya, Phenomenal and Red Logan Dewberries, Currants, Gooseberries. Ten varieties of Strawberries. Wholesale and retail. Send for free catalogue. STANFORD BERRY PLANT NURSERY, Box 724, Palo Alto, Calif.

CHOICE GLADIOLAS at reduced prices—12 bulbs, all standard named varieties, regular retail price $1.50 to $1.75, sent postpaid for $1, 30 bulbs for $2. ROSEDALE FLOWER GARDENS, Pacific Grove, Calif.

BEES AND HONEY

FAMOUS NEVADA HONEY, delivered: 2d zone, 10-lb., $1.65; 60-lb. can, $6.75. 3d zone, 10-lb., $1.75; 60-lb. can, $7.45. C. E. Andrews, Box 824, Fallon, Nev.

BEEKEEPING instruction booklet explains fully. Mailed for dime. SPENCER APIARIES, Sawtelle, Calif.

IMPLEMENTS AND TRACTORS

USED FARM IMPLEMENTS, Harrows, Cultivators, Plows, Tractors, Tractor Tools. Save half price. ARNOTT & CO., Inc., 112-118 S. Los Angeles St., Los Angeles. Between First and Second Sts.

MISCELLANEOUS—For Sale

FOR SALE—Farm lighting plant; 32 volt large battery, nearly new; bargain. 806 West Vernon, Los Angeles. Phone 293968.

More Horses and Mules Needed

THE United States Department of Agriculture calls attention to the fact that there is a market for high-class, wellbred horses and mules. The small undeveloped animal of poor quality is always a drug on the market, but the offspring of good brood mares bred to pure-bred sires of the right type, if properly developed and broken to harness, nearly always find a ready market.

Figures based on the 1920 census show that about 200,000 fewer colts were produced in the United States in 1919 than were needed to supply replacements of horses and mules on farms alone. About 225,000 high-class animals are needed for annual replacements in cities, making a shortage of more than 400,000 horses and mules produced in the United States in 1919, below the number needed for replacing losses.

The department recommends that farmers produce replacements enough, in connection with general farming, to be able to sell off the older work animals each year. The market demands well-broken and trained horses that will last a long period of years.

Therefore, if the colts are broken at about three years of age and used on the farm a few years, these young horses, together with the breeding stock, will furnish the power for the average farm and the young stock will be increasing in sale value. Horses reach their maximum sale value at about six years of age, and the surplus animals should be sold at this time. Well-bred horses and mules that have been properly fed and well broken usually are salable at a profitable figure and should increase the income of the general farmer.

Pershing Praises Mules

"THERE will never be anything that can take the place of the horse and the army mule in war," declares General John J. Pershing. "If we had more horses in the world war we might have done a great deal better than we did. There were occasions when the cavalry had opportunities that we knew how to take advantage of, but could not because we did not have horses.

"I believe the horse is coming back into his own. The time has not come when the horse is seen only in museums and I don't think it is ever going to come. I believe there is a definite place for the horse and for his economical use in many practical ways on the farms and in the cities.

"It's the old mule that is the most reliable thing in the army. You can pack him, drive him, ride him, starve him, beat him and neglect him—do all sorts of things to him that you can't do to an automobile—and he is always there as long as he has four legs to stand on."

Cows Like Electricity

SOME dairymen believe that lighting up the barn with electricity before daylight increases the milk flow, just as egg production is promoted in a similar manner. "Electric light is infinitely superior to that given out by the average farm lantern," declares E. L. Vincent. "Cows appreciate a good light and it increases their enjoyment and digestive activity. Electric lights in the dairy barn pay for themselves by the improved working conditions they afford, especially in making it possible to keep the cows cleaner."

GRADE LAMBS AT HOME

The importance of grading lambs before shipping to Eastern markets, and sending only the best, was emphasized at a recent meeting of the California Wool Growers' Association. Only prime, fat lambs stand the long journey and bring profitable prices, it was held. Golden State sheepmen annually send nearly a quarter of a million lambs to Eastern markets.

SPERRY
"Save the Babies"
BABY CHICK FEEDS
Every Dealer Everywhere

Methods of Vineyard Planting

(Continued from Page 10)

be run more than 18 inches deep, or the soil will settle and take the cuttings too deep.

If the soil is somewhat more compact, the cutting may be pushed in by means of a "sheep's foot dibble." This dibble is made of a piece of ¾-inch round iron about 30 inches long, bent over at the top to form a handle, and hammered to a chisel edge at the bottom.

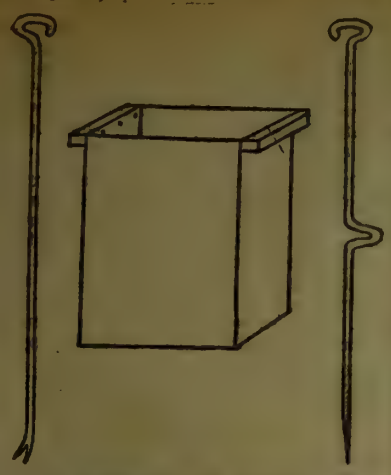
This chisel edge is slightly bent to one side and given a V-shaped split to hold the bottom bud of the cutting. This is the most rapid, economical and perhaps the best way to plant cuttings, wherever the nature and preparation of the soil permit.

The crowbar form of dibble is not to be recommended, as it leaves the cutting suspended and loose, and packs the soil around the edge of the hole. Some cuttings planted in this way mold and decay; others form roots which wander two or three times around the hole before they can enter the soil.

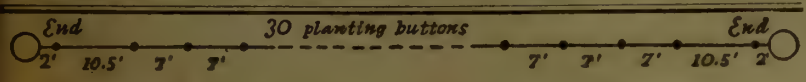
For rootings and callused cuttings and for heavy or stony soil, a spade or shovel is needed. If the soil has been turned over 10 to 12 inches deep it is necessary only to open a hole sufficiently wide to get the plant to the required depth at the proper place.

If the soil has been less well prepared, a hole two or three inches deeper than the bottom of the plant and at least 15 inches wide should be dug. In this case 6 inches of well pulverized, moist soil should be thrown on the bottom of the plant and "firmed" with the foot. The hole then is filled and the soil slightly mounded up around the top of the plant.

In all cases with cuttings, only one joint should project above the surface of the soil, i. e., the second bud from the top should be at the ground level. With rootings, a similar length of the original cutting should appear above the surface.



Left—Sheep's foot dibble. Center—Planting bucket. Right—Line holder



Planting line long enough for 30 vines 7 feet apart

As all vines require staking, it is necessary, if the staking is not done before planting, to plant the vines in such a way that they will be safe from danger when the stakes are driven.

As the stake should be driven close to the vine, it is necessary that the vines below ground shall be vertical, or better, slanting away from the side on which the stake is to be placed. For example, if the prevailing wind is from the west, the stake should be on the east side of the vine. The hole dug for planting, therefore, should be dug on the west or windward side of the marker or of the planting line.

A well organized plan of operation not only will insure good work, but also will decrease the cost greatly. The plan will differ, of course, according to the conditions, but a description of a suitable plan for one set of conditions will be of assistance in devising plans for others.

Conditions—Vineyard of several hundred acres. Blocks 203 feet wide. Vines 7 feet apart. Rows 14 feet apart; avenues 21 feet. Rooted vines to be planted with digging shovels. Vines to be staked the second year. Prevailing wind from the north.

Equipment—Thirteen men, two linemen, ten planters, one supply man, one vineyard truck or low wagon, thirty planting buckets to hold fifty vines each, one planting line 226 feet long with a 4-inch ring at each end, and one button one foot from each ring, and between these end buttons, thirty buttons 7 feet apart, the first and last 10½ feet from the end button; two iron rods three feet long of ¾-inch round iron for holding the planting line in place.

Operations—(A) The vineyard first is laid out by driving a row of whitewashed pegs, 1x1x18 inches, firmly into the ground exactly along the middle of each avenue and 14 feet apart. (B) The two linemen stretch the planting line between the first two pegs on the north end of a block, adjusting the end buttons to the pegs.

The ten planters, each supplied with a planting bucket containing fifty rootings, in the meantime, have arranged themselves on the north side of this line. The first man stations himself opposite the first planting button (say, at the west end), the second man opposite the fourth and so on, the last man being opposite the twenty-eighth button.

They commence planting at the same time and, after planting one vine, move to the left, plant a second and then a third. The planters then are stationed three vines to the east of their first position and, while they are finishing the filling of the hole of the last vine, the linemen move to the next pair of marking pegs and set the line for another row.

Each planter walks straight forward until he reaches the vine or the new line corresponding to the last one he planted. Each is now three places east of his first position on the first line, and works west in a similar way.

This arrangement avoids unnecessary walking and makes it almost impossible to miss a vine by mistake.

Behind the planters the supply man with his low truck follows with a load of planting buckets, each containing fifty vines and a few inches of water. In hot dry weather the buckets should be covered with a canvas.

At about the twelfth or thirteen row, when the planters have nearly emptied their buckets, the supply man drives along the row behind them, exchanging each man's bucket for a full one. If he is alert, this can be done without the slightest interruption of the planting. He exchanges buckets from east to west in one trip and from west to east on the next and so on alternately without loss of time or needless trips.

By this arrangement of the work, eight men and one horse planted a 60-acre vineyard in a little over four days, or at the rate of 1000 vines a day for each man, counting the supply and lineman, with a resulting stand of over 96 per cent.

In this case the soil was a sandy loam, plowed 15 inches deep, and cuttings were used and planted with a sheep's-foot dibble.

Where rootings are used, or where it is necessary to dig a hole for any other reason, the rate of planting will be considerably slower, but in any case this or some similar well-planned scheme of planting will much simplify the work and lessen its cost.

Producing Apples

(Continued from Page 2)

the market price in February—after the crop had been held in storage for several months. Many who sold at picking time received a considerable lower price, which meant taking a loss.

NEED SELLING ORGANIZATION

"The greatest need of the Pajaro Valley is a co-operative marketing association," declared Mr. Rogers. "The present conditions under which the grower sells his crop are deplorable. The bulk of the apples are bought on the trees by individuals and companies which make a business of packing and selling apples. The price is necessarily low, because the buyer takes all the risk, is put to considerable expense and *(Continued on Page 14)*

What Am I Going to Do Now?

Is a Question THOUSANDS Are Asking Themselves Every Day.

Are You Out of a Job, Out of Youth, Out of Health, or Just Out of Luck?

Perhaps We Can Solve YOUR Problems.

HERE IS THE IDEA!!

We have a large poultry ranch which has been established for many years. We have made a success! NOW COMES OUR BIG KICK! We are going to pass this success on to you.

We have established a PRACTICAL POULTRY SCHOOL, where you actually do things yourself, and we teach you how to do them right; and when you have learned to do things right you are on the road to SUCCESS in the poultry business.

We charge you a modest tuition, which includes room and board. If you decide to become a member of our colony the tuition is applied on the purchase price of your home. If you decide that you are not fitted for the work, you will have avoided making an unsuitable investment.

If you want references, write to any bank or business house in Palo Alto or to the Palo Alto Chamber of Commerce.

We Know Our Idea Is Good. Let Us Prove It.

Think it over—take your time—and if really interested write to DEPARTMENT H

WEEKS POULTRY RANCH, Palo Alto, California.

LA CROSSE ORCHARD DISC PLOW

Power Lift Light Draft

No lever to injure or interfere with low hanging branches.

Will plow to or from a tree or vine. Overhead Beams. Great clearance. Will handle cover crop perfectly. 26-in. disc blades. Will plow close to trees. Just the plow for Fordson or any small tractor. Furnished in 2—3—4 and 5 disc. Either 8-inch or 10-inch cut.

DIXON, GRISWOLD & CO.

140 North Los Angeles St. Los Angeles.

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ENGLISH WHITE LEGHORNS

We are direct importers and breeders of these world famous egg-producers. At the great 1922 Oakland show our English Leghorns were the center of attraction. To meet the increasing demand for this stock we have for the months of February and March increased our hatching capacity. You may place your order with a 10 per cent deposit for delivery of chicks on any Thursday the balance of the season.

OUR PRICES—Hatching Eggs: 15, $2; 100, $12; 500, $55; 1000, $100. Baby Chicks: 100, $25; 500, $120; 1000, $230.

CALIFORNIA WHITE LEGHORN BREEDING FARMS

Lankershim, Los Angeles County, Calif. Route 1, Box 277-M

LAGUNA ELECTRIC HATCHERY

We have thousands of R. I. Reds hatched each week. $15 per hundred; $145 per thousand. Orders filled promptly.

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WATER! Anywhere.. Anytime!

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"STANDARD" WELL-BORING OUTFIT

Bores wells by hand, 8 to 16 in. diam. up to 100 feet deep. (See picture.) Satisfied users in 48 States. U. S. and British Gov'ts used thousands.

MAKE BIG MONEY —boring wells, post holes, etc., for others. Fully guaranteed! Quick delivery! Write at once.

THE SPECIALTY DEVICE CO. Dep 2 106 W. 3rd St. CINCINNATI, O.

Bee Hives and Supplies

Headquarters for Everything Needed in the Care of Bees

Send for late price list and free booklet.

The A. I. ROOT COMPANY, Dept. B, 1824 E. 15th St., Los Angeles, Cal.

PACKERS OF AIRLINE HONEY

Write for Plans and Pictures —Fenner's method gives you better materials, better construction, saves money. Over 250 beautiful and practical plans. Portfolios free.

Fenner FENNER MFG. CO. Box R4318 Portland, Oregon

FACTORY-CUT HOMES

Alfalfa Good Cover Crop in Apple Orchards

ALFALFA has proved an ideal cover crop for light, sandy soils which lack humus and nitrogen, according to C. H. Godshall, manager of the Ihmsen Ranch, near Victorville, San Bernardino County. This successful desert fruit farm includes 40 acres of different varieties of apples. Mr. Godshall describes his experience with alfalfa as follows:

Above—This shows a row of apple trees nourished with growing alfalfa. Below—The other end of the same row of trees, growing without alfalfa.

"A ten-acre tract of our orchard was in very light, sandy soil which even a big windbreak couldn't hold down during the heavy windstorms. Various cover crops were tried with poor success during the first four years in the life of the trees.

The leaves of young trees were cut off by blowing sand and because of lack of humus and nitrogen, poor growth resulted.

"In 1919, alfalfa was put into this part of the orchard. Since that time the trees have jumped ahead by leaps and bounds, and now, three years later, they are far ahead of the balance of the orchard. The accompanying pictures shows the comparison. Lower cut shows row of trees nearest the windbreak (usually poorest trees) handled in ordinary manner, with no alfalfa. Upper cut shows same row, looking in opposite direction, where alfalfa has been planted with the trees. In actual height the difference is five feet.

"The additional water required usually supports the argument against planting alfalfa in an orchard. And, in fact, where there is insufficient water to take care of both the trees and alfalfa, the latter robs the trees and is undesirable. But where there is sufficient water for both, the profit made on the alfalfa more than pays for the extra water.

"During the past two years, accurate account of water and other costs have been kept on this plot with the following results: Ten acres irrigated twice monthly from May until October at a cost for water of $20 per irrigation, or 12 irrigations at a total water cost of $240. Six cuttings of alfalfa, producing 50 tons of alfalfa hay, sold for $20 per ton—total, $1000. The total labor cost for producing the hay was but $240, making a profit of practically $500.

"In addition to the $500 profit on the hay, based on water and labor cost as against actual returns, an additional saving was made of the cost of furrowing out and cultivating this 10 acres.

"The wood on the trees in this alfalfa section is of a dark green color—not in the least sunburned, as is the case in other parts of the orchard. The leaves are larger and of a deeper green color. The fruit on these trees is colored at least 25 per cent more than on trees in the open orchard, and the actual production in quantity is double that of trees in the same area in any other part of the ranch.

"And last, but not least, in this section of the ranch all the eggs are not in one basket. If the frost gets the crop (this has happened only once in four years), there is still the return from alfalfa, which will more than pay for the upkeep of the portion of the ranch planted to alfalfa.

"Additional acres of the 40 planted to apples and 40 planted to Bartlett pears, will be put into alfalfa this spring. We expect to put as much ground into alfalfa in our orchard as we have water to car for."

KILL THEM ALL

Every Rat and Mouse Easily Destroyed by New Discovery. Not a Poison.

Absolute freedom from rats, mice, gophers and all rodents is now assured everyone through Hick's Rat-Kill. No more trapping or poisoning only a few; kill every one.

Hick's Rat-Kill kills rodents only. Harmless to children, pets, poultry and stock. Spread anywhere. Rats eat it and die quickly outside, hunting water. No smell. Endorsed by Farm Bureau Experts. Proven by hundreds of thousands of satisfied users.

Mr. Burch says: "Rats were greatest pests. House, barns and all outbuildings were full of them. Haven't seen one since using your Rat-Kill."

Send No Money—just your name and address to Chas. M. Hick & Company, Dept. 213, 1018 So. Wabash Av., Chicago, Ill. Mr. Hick is so confident that Hick's Rat-Kill will kill every rat that he will send you two large $1.00 packages (double strength) for price of one. When they arrive, pay postman only $1.00 and postage. If not absolutely satisfied after 30 days' trial, your money will be refunded. No one need hesitate to accept this offer as it is fully guaranteed. Two big Chicago banks say Mr. Hick will do exactly as he agrees without argument. Write today before this trial offer is withdrawn.

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Buy direct from sawmill.
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PATENTS Write today for free instruction book and "Evidence of Conception" blank. Send sketch or model for personal opinion. CLARENCE O'BRIEN, Registered Patent Lawyer, 1011 Southern Building, Washington, D. C.

QUICK & EFFECTIVE
FUMISPRAY
SAFE TO HANDLE
KILL aphis, red spider, thrip and scale without damage to bud, blossom, fruit or foliage, with a non-poisonous insecticide. Trial order of one gallon making twenty-five gallons of spray, $1.75.
STRAUSS-LASHER LABORATORIES,
1963 Santee St. Los Angeles, Cal.

FREE BROODER PLANS-SAVE 75%
Build your own from our simple, easy plans, and the wonderful ELEC-CHIC equipment, and save 75% on first cost and 50% on operating cost. Send for big FREE Poultry Book, showing many different styles of brooders and poultry houses. POULTRY EQUIPMENT CO., Box M, Burbank, Cal. Factory at Roscoe.

Pointers on Potato Planting

(Continued from Page 7)

turn, gives a stronger new shoot. We have found, as have many other growers, that Chinamen are the most proficient and trustworthy workmen at cutting potatoes. The cost this year for cutting was 25 cents per sack. An ordinary ranch hand will take all day to cut eight or nine sacks and then make a poor job of it, whereas the Chinaman will cut twenty-five to thirty sacks a day and do first class work.

The seed pieces are dropped eleven inches apart in the row and the rows are 34 inches apart. This is done in order to secure a medium-sized tuber, which is more desirable when selecting for seed purposes.

The seed piece is planted to a depth of from 3 to 4 inches. In order to determine the proper depth, a few rows were planted and the depth measured in twenty different places until it averaged 3 to 4 inches. The planter then was set for this depth. We are planting this year between 1000 and 1100 pounds of seed per acre.

In planting a crop of spring potatoes, the lighter types of soil are selected in order to avoid any danger from rotting due to late rains and slower drainage of the heavier soils.

COVER CROP IS IMPORTANT

Cover cropping is very essential in securing large yields of clean high grade potatoes. Even on the rich loam soils of the Pasadena Farm it is not considered judicious to try double cropping. One crop of potatoes and one crop of green manure will bring in more net returns than two crops of spuds in the same year from the same piece of ground, we have determined.

Our cover crops for the fall potato land are planted in February and plowed under in May. This process gives a maximum production of green manure, and still leaves two months for the decomposition of the green litter.

The cover crop for spring potatoes is planted in August and plowed under right after the first of the year. The potatoes are planted four to six weeks after the plowing under this crop.

It is easier to secure a spring than a fall crop. Not so much attention need be paid to the preparation of the land as regards moisture conditions. In the spring, the winter rains leave the ground in moist condition and the temperature is not so high that rapid evaporation will take place. The spring cover crop is plowed 12 inches deep and then the land is allowed to remain until just before planting. Double discing to a depth of six inches is followed by the use of a combination drag and harrow. This gives an ideal seed bed.

One of the greatest dangers to the potato industry is the rapid and unchecked spread of the nematode or eel worm. The presence of the nematode can be determined by cutting just lightly under the skin and then making an examination with a good field glass. If any pearly, balloon-shaped bodies are evident, you can be assured the famie nematode is present. These yearly bodies contain 500 or more young and when the seed is planted burst and liberate these young, which scatter through the soil, attaching themselves to tender rootlets or other growing material.

These minute organisms stop the flow of sap, thereby cutting down the yield of the plants and sometimes destroying them entirely. Any ground known to be badly infested with nematode, it would be unwise to plant potatoes or any other truck crop susceptible to its attacks. It is much better to raise barley or corn for two or three years until the past is eradicated.

PROGRESSIVE STEPS TAKEN

During the past year several big steps have been taken for the advancement of the potato industry of California. Some thirty certified seed growers from all over the State convened at Sacramento last December to organize the California Certified Seed Growers' Association.

Rules adopted at this convention make it necessary that any person desiring to have his crop certified must plant it from seed grown from certified fields, which in turn have been grown from hill-selected seed that has been certified.

Although the past two or three years have been discouraging for the production of potatoes, the old adage still holds true that the man who plays the game consistently through good and bad years will come out with a profit, while the "in and outer" will continue to receive his seasonal drubbings.

Producing Apples

(Continued from Page 13)

performs a good share of the labor connected with apple production.

"Why a farmer should turn over to an outsider a good share of his work has always been a mystery to me," continued Rogers, closely observing a magnificent tree which was being pruned by skilled workmen. "The average orchardist appears anxious to avoid as much work and worry as possible, regardless of the consequences.

Dealers consign Pajaro apples to commission men, who compete with each other in the city markets, which results in low prices. We have no well-known brand or standardized pack; no advertising campaign is conducted in behalf of our product and no concerted, united effort made to market it to the best advantage.

"An unfortunate feature of the business is that most of the packing and marketing is done by Slavonians, who have been accustomed to a hard struggle for existence in Europe and cling tenaciously to customs and ideals of the Old World. Scandinavians are good co-operators, but the Slavs have had little experience in working together for the common good and are slow to see the advantages which would result.

"Better marketing methods would add from 15 cents to 20 cents a box to the price of Pajaro apples. The valley produced 3000 carloads last year and has grown as high as 3700 cars. Three-fourths of our crop is sold in California, which greatly simplifies the selling proposition.

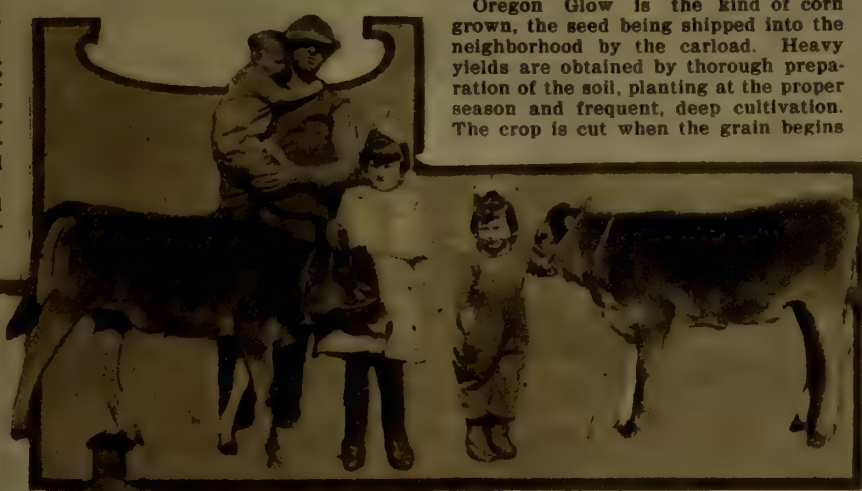
Building Up Herd of Heavy Producing Cows

Sonoma County Dairyman Wins Success by Increasing Butterfat Production

By O. H. BARNHILL

SONOMA County farm advisers and leaders of the Farm Bureau in that section point with pride to the achievement of Steve Crane, who—without the help of either capital or education—has built up one of the best producing dairy herds in the Valley Ford district.

Starting a half dozen years ago on a rented farm with the poorest kind of buildings and a string of scrub cows, Crane now owns the place and is milking twenty-eight high-grade and pure-bred animals, which last year produced an average of 413 pounds of butterfat; which is said to be the best record made by a herd of similar size in Sonoma and Marin counties.



This industrious dairyman considers children and calves his two best crops. This silo was the first building he put on his farm, although a house and barn were badly needed. "Dairying without a silo is like making bricks without straw," says Crane.

Fifteen of Crane's cows averaged 550 pounds of fat, while one gave milk which contained 617 pounds of butter-making oil. When it is considered that an average of only 180 pounds of butterfat per year was produced by the original herd and that the latter was built up to its present capacity in six years, out of the earnings of a run-down rented farm, one realizes what this achievement means.

USES "ELBOW GREASE"

The wheels of Crane's progress have been oiled with a plentiful supply of "elbow grease," poured from the can of self-denial. While others bought autos and went joy riding to the ocean beach, nine miles distant, this industrious dairyman labored early and late to increase his milk check, driving to town with a horse and buggy.

Although the buildings on the hundred-acre farm, which he rented and later purchased, were very old and worn, Crane continued to use them, investing his surplus cash in two silos. While the latter do not add to the comfort of living and working, they are helping materially to provide the means to build a good house and barn.

Weeding, feeding and breeding constitute the triple program by which Crane's cows have rapidly forged to the front in butterfat production. Poor milkers were spotted with the Babcock test and sent to the meat man; a special study of dairy feeds was made and the best in that line provided, while pure-bred bulls introduced the blood of rich milkers into the herd.

Fairy Boy is the name of the bull which is being used to further improve Crane's herd. A pure-bred heifer exhibited at the Valley Ford district stock show last summer won first prize in a class of twenty-eight. Nine other animals entered by Crane won eight prizes. His herd includes two pure-bred cows and twenty high-grades, eight heifers and twelve calves.

Crane considers a silo the key to success in feeding dairy cows. He has two which hold 56 tons. Both were filled last year with corn grown on twelve acres, which produced 125 tons of "cow kraut." The latter is cut into one-half inch lengths, which is considered more digestible than one-inch silage. The silos are made of wood, Simplex style, and cost a little over $400 each. They are 24 feet high and 12 feet in diameter, with concrete foundations.

Oregon Glow is the kind of corn grown, the seed being shipped into the neighborhood by the carload. Heavy yields are obtained by thorough preparation of the soil, planting at the proper season and frequent, deep cultivation. The crop is cut when the grain begins to dent, this part of the plant constituting about one-third the weight of silage. Ten-ton crops are grown on land which has been farmed for fifty years.

More about Crane's dairying methods will be told in the next issue of Orchard and Farm.

Wholesale Distributors of Kow-Kare and Bag Balm for California

GERMAIN SEED CO.,

Los Angeles, Cal.

Thousands of De Laval Separator Users Have Received 20 to 30 Years of Efficient Service.

As a result of the Oldest De Laval Separator contest in which it was announced $25 would be given to the owner of the oldest De Laval in each state, thousands of letters have been received, which prove beyond all question of doubt that 20 to 30 years of satisfactory service from a De Laval Separator is not unusual, and with reasonable care, to be expected.

$25 for the Oldest De Laval

This contest will be open until April 7th and other users of Old De Lavals who have not entered the contest, still have time to do so. Simply write us, giving the date of purchase, length of service, serial number, and a statement concerning its service. Even though your De Laval may not be as old as some mentioned here, enter it anyway, as it must be kept in mind that this contest covers every state; and in some sections separators have not been used so long as in others. Winners will be announced May 1st.

Following are a few of the many letters from old De Laval users, which are typical:

30 Years

"Our De Laval Separator was purchased July 12th, 1893. It has taken care of all the milk produced on this farm from 1893 until November, 1917, and we were milking over 30 cows at times. Since November, 1917, I have shipped the whole milk. The last time I tested the skim-milk it showed 2/100 of 1% fat."—Henry Petersen.

29 Years

"I have a De Laval Separator bought in May or June, 1894, which has been run twice each day ever since, but one day. It has many a day separated 2,000 lbs. of milk and is still in first-class condition."—Fred G. Palmer.

20 Years

"We have a De Laval Separator that we bought in the fall of 1903. It has been used twice a day nearly every day, separating on an average of 83,579 lbs. of milk per year, and is still in good repair and doing its work well. The last time that the skim-milk was tested by the testing association it was skimming to 1/100 of 1% fat. If this separator *ever* wears out we shall want another De Laval."—A. B. and J. M. Bicknell.

22 Years

"I purchased my De Laval on December 21, 1901, and it is still in very good working condition. My neighbor has worn out two other makes already and has the third. Mine still skims cleaner than his and I hope to use it about ten years yet. It is not to be worn out."—George P. Leibold.

25 Years

"My De Laval Separator was bought in the spring of 1898. We have used no other. This summer we had our skim-milk tested at the creamery and it tested 2/100 of 1%. It will be good for years yet."—Mrs. Tena Larson.

24 Years

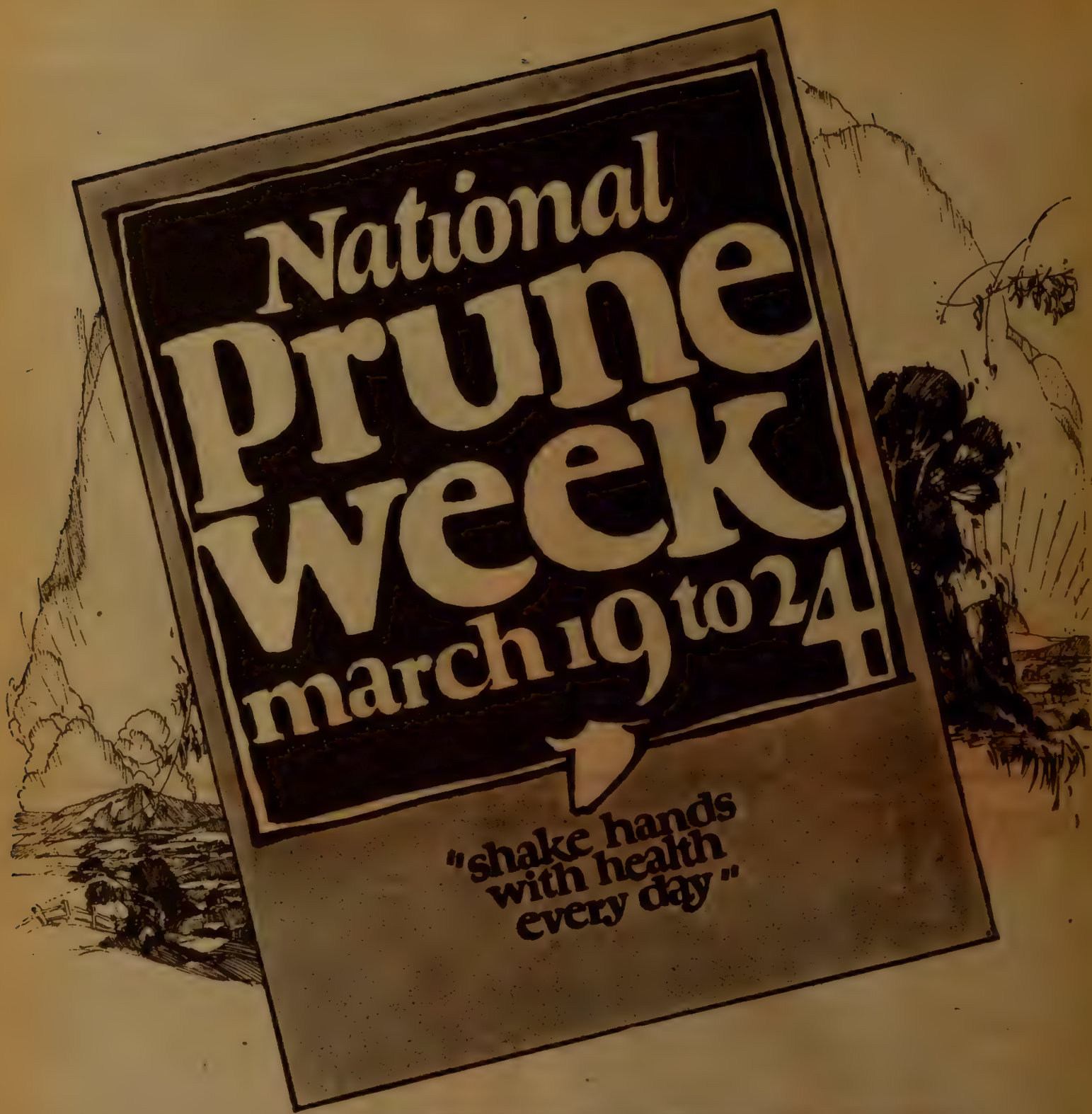
"My De Laval Separator was purchased in 1899 and has been in service every year. This machine has separated about 18,000 gallons of milk annually. It has given me excellent service and skims cold milk perfectly. My sister purchased a new De Laval last spring and has saved nearly enough to buy a good milch cow."—Emil S. Shubert.

Four to Five Times' More Use

Evidence such as this from thousands of users proves that a De Laval will last from four to five times as long as the average separator, and *do better work all the time.* It proves conclusively that the De Laval is the best and cheapest separator. The De Laval you buy today is the best cream separator ever built. With reasonable care it will last you a lifetime, and will pay for itself within a year. Sold on easy terms. See your De Laval agent or write us for full information.

De Laval Pacific Company

61 Beale Street San Francisco



For five years Sunsweet has been an ambassador-at-large bringing the story of prunes to homes the nation over. Today, thanks to Sunsweet, prunes are no longer just prunes. Prunes have arrived! Prunes belong—in the best of menu-company.

We in California should be doubly glad that prunes have won their rightful place in the daily diet of America. For Sunsweet is adding that much more glory to California's "place in the sun." It is to stress and impress the every-day importance of prunes that this week has been set aside as National Prune Week. This is a fine time to find out that prunes no longer start and stop with stewed. From salad to soufflé, from coffee cake to steamed pudding—there's no end to the surprise-dishes you can make with this fine fruit.

Make it a point to "look in" at your grocer's this week. See the special prune displays he has prepared for you. Ask him why he prefers to sell Sunsweet Prunes—rich, sugar-full, flavor-full sweetmeats—the finest California produces! And send for the Sunsweet Recipe Packet—"60 ways to shake hands with health every day"—it's free! California Prune and Apricot Growers Association, 35 Market Street, San Jose, California.

California

PRUNE & APRICOT GROWERS ASSN.
PACKERS OF SUNSWEET & GROWERS BRANDS

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

MARCH 25, 1923

Farm Hand Becomes Successful Rancher

'Hard Work Makes Heavy Crops," Says Henry Wickman, Butte County Farmer.

IS IT possible for a farm laborer by his own unaided efforts to acquire and improve a California ranch? The experience here related indicates that this may be accomplished. Some of the difficulties encountered are pointed out and suggestions made as to how they may be overcome.

By O. H. BARNHILL

Henry Wickman, the man with the shovel, believes that dairy cows and fruit trees make a profitable combination. Like many other progressive farmers, he considers a good silo the keystone to the arch of dairy success.

FOR ten long, weary years Henry Wickman, farm hand, "skinned" an eight-horse mule team and did other kinds of ranch work in the Sacramento Valley. Always he was looking forward to the time when he could own a farm of his own, but after a decade of laboring for others the realization of his dream still seemed far in the future.

At the beginning of the twentieth century Sacramento Valley farm land was comparatively cheap, yet to one who was working for wages the price seemed prohibitive, as only a very few hundred dollars could be saved each year. Finally, young Wickman decided he was ready to "shoot' at the mark of farming.

The first move i nthis direction was a very important one, and had much to do with Wickman's subsequent success. It consisted of a matrimonial trip to the old country, where a capable wife was secured and brought to this Land of Opportunity.

RENTING PROVES PRECARIOUS

The next step was to rent a 360-acre grain farm. The result was fairly profitable, encouraging Wickman to lease a larger place, one of 1400 acres. The first crop netted $1500, but one-third of this amount was required to pay the losses of the second season's operations.

After playing the renter's game another year Wickman decided he would never make any real money until he had some land of his own, upon which he could build up a safe and profitable system of agriculture. Forty acres of Feather River land near Gridley according was bought for $90 an acre. Half the purchase price was paid in cash, the balance of the buyer's slender stock of capital being reserved to put up buildings and buy stock and equipment.

"I figured that in a short time I would be able to pay off the $1600 mortgage," relates Wickman, but—would you be lieve it?—ten long, hard years went by before I was out of debt. When a man goes into a piece of raw land he doesn't realize how much work and expense it takes to convert it into a going farm, fully equipped with buildings, fences, stock, machinery and supplies."

PLANTS PEACH ORCHARD

Even at that early date, 1907, Gridley peaches were famous for fine quality and heavy production, and Wickman wisely planted five acres to Phillips and Tucsan clings. These trees still are bearing splendid crops of luscious fruit.

This orchard yielded ten tons per acre last year. Seventy tons of fruit were taken from the trees another year The fruit is sold to the local cannery.

"You bet I believe in co-operative marketing," answered the industrious Butte rancher, when questioned upon this point. "I am a member of the Peach and Fig Growers' Association, but before it was organized I had signed a five-year contract with the cannery. I intend to live up to my agreement, but shall assist the association in every way possible.

"Do I consider peaches a profitable crop? They have made good money for me. That's why I planted three more acres to Phillips two years ago and set Palor peaches on three acres of my best land last February."

This Poland China sow is one of the profitable "second fiddles" on the Wickman ranch. The English walnut tree, top-grafted onto a black walnut body, is another side line.

SMUDGING INSURES CROPS

Wickman was asked if the frost didn't get the crop some years. "Not since I put in one-gallon smudge pots six years ago," he replied. "Oil makes the best kind of orchard insurance. I use it whenever Jack Forst comes around and beat him to it with a crop of fruit every year. Only little work is necessary to keep the blossoms from freezing."

How to maintain the trees in an upright, unbroken position is one of Wickman's unsolved peach problems. Sometimes when the winter rains have made the ground very wet and soft the wind will blow the large trees over into a leaning position; while in the summer, when they are heavily laden with fruit, the wind often loosens the props, allowing the branches to bend and break.

Prunes also have been found profitable. Five acres of old trees bore only a half crop last year, but some years have produced five tons per acre. The fruit is marketed through the Growers' Association. Three acres of young trees give promise of future heavy production.

(Continued on Page 13)

These Phillips and Tuscan cling peach trees yielded 10 tons per acre last year. Another season they averaged 14 tons of fruit per acre. The Feather River bottom soil in which the trees are growing is considered ideal for peaches.

Not all California "peaches" grow on trees, as is evident from this picture. Plethoric peach profits probably produced this pretty smile.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
MARCH 25, 1923

Read the Touching Tale of a "Bum Steer"

The Scrub Must Go if California Beef Production Is to Be Made Profitable—Pertinent Facts Gleaned During Stockmen's Week

By WILLIAM REYNOLDS BUTLER

ABOUT the only mourners over the remains of a steer called "Aeroplane" are those interested in his qualifications as the star of future rodeos.

In the drama of the survival of the fittest, he occupied a leading role—on the range. Rumor has it he was a lineal descendant of the Mother Goose cow with the high jump record. Other than this nothing is known as to his pedigree.

WILLIAM R. BUTLER

O. L. Lovejoy, in charge of the University of California range at Shingle Springs, claims this "critter" was rightly christened, for in Eldorado County he held all altitude records. He is said to have chased all the deer off the range, and it was only after two years' rustling by the University cowboys that "Aeroplane" was finally corraled and sent to "The Farm at Davis" to secure a college training in beef production.

No amount of reasoning on the part of those of his kind in the feedlots could induce him to forego his erring ways, stay put and develop himself for the butcher's block as a college trained steer is taught to do. His antelope proclivities stayed with him and he persisted in demonstrating that he was built for speed and high altitude work and not for passive feedlot etiquette. He "took" every fence on the farm and bawled for higher fences over which to demonstrate his skill.

"AEROPLANE" WAS ELUSIVE

It was difficult for experts in market classes and grades of beef cattle to find him, when not in flight, long enough to establish his eligibility for any class whatsoever. After many attempts he was finally corraled, his class or grade noted, his picture taken and then "the butcher cut him down."

For purposes of comparison with a well-behaved college bred and fed steer, his carcass was to be used as a horrible example for cattlemen to gaze upon during the recent Stockmen's Week at the University of California College of Agriculture at Davis.

The graders put "Aeroplane" in the "Low Medium" class for steers on the California markets. Now we are told by the U. S. Department of Agriculture Marketing Service at San Francisco that about 80 per cent of all beef cattle consigned to California packers fall into the Medium class!

Some there were who thought the graders were just a little too severe on "Aeroplane" and they should have called him "Medium." Those that knew him during his 33 months of strenuous life called him other names that pass among cattlemen under certain conditions but which are never seen in public print.

BLOOD WILL TELL

Contrasting strongly with "Aeroplane," California Eli, a pure-bred Angus steer, bred and fed by University Farm, was sent to the butcher's block alongside of the range-bred "critter."

Eli was but 16 months old—less than half the age of "Aeroplane."

The steer with the College "polish" was rated, in market parlance, as a "Top Good" kind. During his sixteen months as a beef producer, he had taken on 907 pounds of live weight. On the block he yielded 530 pounds of marketable carcass or showed a dressing percentage of 58.4.

But during "Aeroplane's" riotous career of 33 months he stored up 907 pounds of hide, muscle and sinew, and dressed out only 432 pounds of beef with low market value, or a dressing percentage of 46.2!

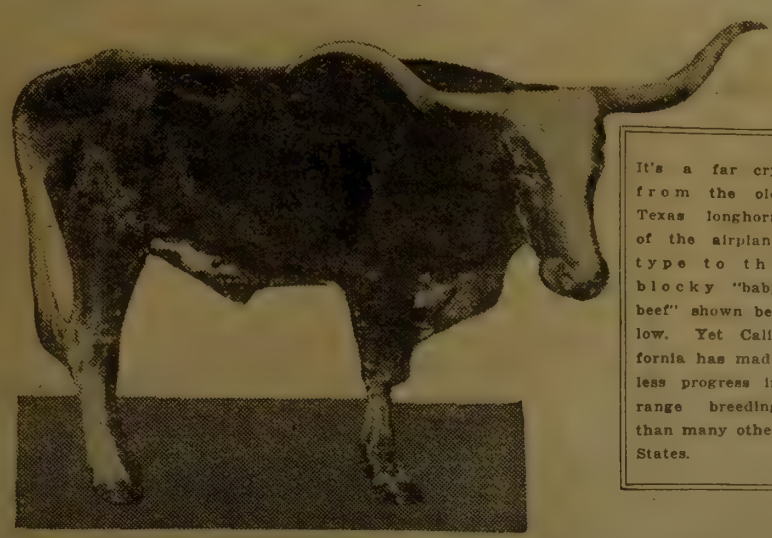
In order to drive home the lesson, these two carcasses were cut up before stockmen and students, who will be the future beef producers of California, by R. N. Weiss, president of the Northern California Meat Council, and L. F. Arnkecht, president of the San Francisco Butchers' Board of Trade. As they carved the carcass of California Eli, they exhausted all the superlatives in telling how glad the butchers of San Francisco would be to hang such meat on their hooks.

One could see with what pride these practical butchers made the good carcass into the choice retail cuts. "Aeroplane" got scarce consideration from them; they had no "stomach" for him or his ilk.

During the meat-cutting demonstration, these representatives of the butcher business told the cattlemen of the situation in the retail meat trade around San Francisco Bay. Briefly, their woes and how they are to overcome them were given as follows:

"The jobber and retailer in meat loses 5 cents a pound on every rough piece of meat he sells, but makes it up on the choicer cuts.

"The best hamburger steak comes from the neck, and is 10 cents a pound cheaper than the ground-up round which the average housewife specifies.


It's a far cry from the old Texas longhorn of the airplane type to the blocky "baby beef" shown below. Yet California has made less progress in range breeding than many other States.

BUTCHERS IMPROVING METHODS

"The butchers have been doing away with such sharp practices as putting parts of the chuck and neck into the rolled rib roasts. The meat council now is acting as a go-between for the meat distributors and the public. It is pointing the way to better understanding of the ethics of proper merchandising by the seller, and is seeking to educate the consumer in the value of the cheaper cuts and how to prepare them to tickle the palate."

A few years ago, these butchers boosted lamb sales to the disparagement of beef. They have learned a valuable lesson, but it will take some time to get the public back to a roast beef basis. Twelve to 15 cents of the consumer's dollar goes toward the butcher's wages, and meat cutters' pay goes on just the same whether business is good or bad. The stale meat goes to the scrap heap at 2 cents a pound when trade falls off.

There are too many men in the butcher business around the Bay and competition is so keen that nearly everyone is said to be in the red ink! It's time for the producer, the packer, the wholesaler, the jobber and the retailer to stop calling each other "robber." The public has reacted adversely to such tactics and it will take some time to regain confidence in the industry.

The only solution is for the breeder and feeder to bring up the quality of his product and for the butcher to hope for better days by playing fair in dealing with the public and in educating the housewife to appreciate choice meats and also how to make better use of the cheaper cuts. This is the consensus of opinion developed during the discussions of Stockmen's Week.

It is only at such gatherings representing the beef cattle industry as a whole that one gets a real perspective of the leaven of more economical and higher quality meat production at work. Here briefly is the status of the beef industry as it is in California today:

BIG PROBLEM TACKLED

Dr. C. M. Haring, Director of the State Agricultural Experiment Station, asserts four-fifths of California's land area never will be used for other than the animal industry, principally beef cattle production. The State and Government are at work on range improvement and conservation. Understocking and denuding of ranges are the big problems that are going forward toward solution at this time. Breeding progress, too, is noted.

The "better sire campaigns" are bearing fruit. This was evident at the sales of Shorthorn and Hereford bulls by the respective associations during Stockmen's Week. Practically every bull sold went to the range in such counties as Shasta, Trinity, Humboldt and Butte.

The University has a ranch at Shingle Springs, Eldorado County, where the effect of better range management and the effect of pure-bred sires on cows, "such as no cattleman in California would own," are being noted.

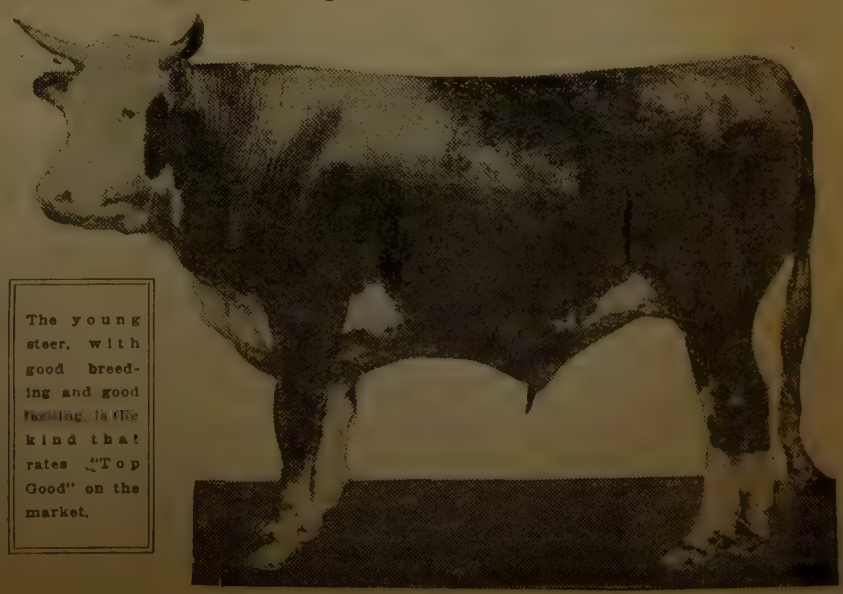
Already tests of calves, yearlings and 2-year-olds have been conducted at Davis. This work will be carried on for six or eight years more. The attempt will be to breed up the quality of the range foundation herd and at each step in the game to note the increased profit on the finished feedlot stuff. Two-year-olds will be eliminated from now on, as the tests show that they cannot be put through the feedlot at a profit.

GREATER EFFICIENCY DEMANDED

Ray Mead of the Animal Husbandry Division has figured out the following data which show what can be done with better range conditions, better breeding and more scientific work in the feedlot:

"The average dressing percentage of California grass-fed steers," says Mead, "is 52. If we can increase this by 5 per cent we will have more nearly what the market demands and could decrease the cattle population of the State 80,395 head and still produce the same total number pounds of beef."

From evidences of how practical range men are taking these pointers to heart it looks as though soon we shall see the passing of "Aeroplane" and his "poor relations." It will not happen in a day, but the markets are demanding beef on the order of "California Eli." This reform, it is believed, will bring about a happy solution of all the present grief in the beef cattle industry in California.


The young steer, with good breeding and good feeding, is the kind that rates "Top Good" on the market.

Praises Boys' Clubs

JUNIOR livestock clubs, says Charles M. Talmadge, one of the noted Berkshire breeders of the Northwest, often influence whole communities towards more and better hog production. The boy, Mr. Talmadge pointed out at a Stockmen's Week gathering, may be just as competent to care for purebred pigs as the average man to whom a breeder might sell. He related an instance of one of the Oregon club boys winning first prize on his animals in the open classes at the Oregon State Fair. The boy's father had exhibited animals for many years without making any remarkable showing, whereas the boy came into the list and completely eclipsed his father's record.—H. A. MILLER.

TEN CENTS FOR SHEARING SHEEP

A flat rate of ten cents a head for shearing sheep has been agreed upon by the Utah State Wool Growers' Association. The shearers pay for their own board.—V. E. A.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.

O. H. BARNHILL, Assistant Editor.

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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

COLONISTS NEED EXPERT ADVICE.

California colonizers have learned the necessity of employing expert advisers to assist land buyers in getting a profitable start in agricultural operations. Not only is professional counsel and advice given, but also the work of the colonists is co-ordinated and directed along best paying lines.

A careful canvass of the situation enables the manager of the tract to decide which system of agriculture is best suited to local conditions. Land buyers are shown the advantage of engaging in this particular kind of work and their efforts intelligently directed. Many of them have had no experience in the variety of farming which they undertake and without expert help many would be sure to fail.

The excellent work done by colony agricultural experts is very similar to that performed by county farm advisers.

FUTILITY OF PRICE CONTRACTS.

It is a common trait of human nature to want to play safe in the business game and let the other fellow take all the risk. The farmer is reluctant to take chances on the market and desires, if possible, to contract his crop for a specified price and shift the burden of market risks onto the buyer. F. o. b. sales have a satisfying sound, which is much more attractive than that conveyed by consigning to commission merchants.

Buyers do not, however, pay for goods until they get them and if by that time the market is not where they think it should be, some way is usually found to evade full payment. Long-time canners' contracts work out in a similar manner. If the price drops below what the canner can afford to pay, he must either repudiate his contract or go broke and quit business.

Orchardists who sell their crop on the trees do not always get the price agreed upon and canal companies can charge owners of water rights more than the contract price for water. On the other hand, farmers who sell products in advance at a stipulated price seldom or never receive the advantage of market advances.

WHAT IS THE POTATO SITUATION?

"The year 1922 no doubt was the most disastrous experienced by California potato growers in the last decade. With a combination of below normal yields and low prices the grower of commercial potatoes did not even realize his cost of production," says B. C. Bougher, superintendent of the Pasadena City Farms. "Government reports state there was an overproduction of 150,000,000 bushels of potatoes in the United States for the past year.

"The spring crop dug in Southern California last June was really a tragedy. Growers who had spared no expense in preparing the ground and buying the finest seed available were able to get only 60 to 75 cents per 100 pounds at their shipping point. This is the second such experience of producers in the south, and accounts for the fact that hardly one-third of the usual acreage is being planted this spring. The banks do not seem to relish the idea of accepting any more potato paper."

What, then, is the outlook? Some farmers believe this is the time to plant. Others fear the "rule of three," which might bring a repetition of the disaster. But if history is to repeat itself we should have at least two years of potato prosperity ahead. Are you gambling?

"What's New?"—Keeping Abreast of Agricultural Progress

Farm Products Buy Less

ALTHOUGH the farm crops produced in the United States last year had a money value 46 per cent higher than those produced 10 years ago, their purchasing power was 10 per cent less, measured in the amount of goods for which they could be exchanged.

Cheaper Butter and Milk

FARMERS in the United States received a billion dollars less for dairy products last year than in 1920 and $261,500,000 less than in 1921. Last year the farm price of butter dropped from 37 cents to 35 cents, while the price of milk was reduced from 22 cents to 19 cents.

Ship Wool by Water

SO LONG as freight and steamer rates remain at the present figures, all Pacific Northwest wool which is not used by local mills will be shipped by water to the Boston market, according to H. S. Coffin, of the Washington Woolgrowers' Association, who states that a saving of at least $20 a ton will be effected thereby.

Washington Has Hatcheries

FOLLOWING the accreditedd hatchery plan, as started by the Sonoma County Farm Bureau, the poultrymen of Whatcom County, Washington, under the leadership of B. S. Hiller, president, have established a similar system. Last year many chicks were shipped to Washington which were not up to the standard and many hatcheries inside the state are not turning out the best stock, a condition which the new association aims to correct. —KATHLEEN RODD.

North Citrus Belt Advantages

DAMAGE from the recent cold period to oranges in the Oroville section will be negligible, according to County Horticultural Commissioner Earl Mills. Some young shoots may be nipped, but otherwise no harm will be done. "An advantage to orange growers in this section," stated Mills, "is one that gets little public attention; that is the fact that orange trees here are dormant from November until March. In the south, the tree is growing during the full twelve months. The result is that during periods of sharp, cold weather our trees are more resistant to the cold than those of the south. In fumigation we have also found that we have the advantage. We can give much heavier doses to the trees here during their domant period than is possible in the south. The result is that one fumigation will accomplish its object here, where two treatments may be necessary in the south."

Hogging Down Small Grain

FOLLOWING the example of Eastern farmers, who "hog down" part of their corn crop, C. W. Scott, Yolo County Duroc Jersey breeder, harvests annually 300 acres of barley by the simple process of turning 300 hogs into the field as soon as the grain is about ripe and permitting them to remain there until the barley has been converted into pork. This plan was adopted because the land was so rough that the cost of harvesting by the usual method was too expensive.

Each fall 50 or 60 sows are bred early enough to produce pigs of sufficient size to do a good job of hogging down by the time the grain is ripe the following summer. The sows accompany their progeny and the whole herd has access to green pasture and pure water.

Scott plans to devote half of the 480-acre farm which he manages to alfalfa and the balance to barley growing. He is improving his herd, intending in time to grow nothing but pure-breds.

Making Milk Cows Pay

WEEDING, feeding and breeding are the three things necessary to improve butterfat production, in the opinion of W. R. Harriman, chairman of the dairy department of the Los Angeles County Farm Bureau. Since this important committee began its labors four years ago, the average butterfat production of cows under test has increased one-third and the number on record has risen from 900 to 4000, an achievement probably without parallel anywhere, according to the farm adviser's office.

The average number of pounds of butterfat being produced yearly by these 4000 cows is 312, which is twice the production of an average California cow. Taking the yield of the first 900 cows as a basis for comparison, the increased production of the cows now on test is worth $400,000 a year, which is added to the annual income of Los Angeles dairymen.

"Testing enables the dairyman to weed out the poor milkers," explains Mr. Harriman. "Feeding the best materials in proper proportion gives the highest butterfat yields, while the use of pure-bred bulls builds up a high producing herd."

People Using More Grapes

IT IS estimated the people of the United States are eating more than twice as many grapes as they consumed before the World War. California shipped 39,000 carloads of this fruit last year, while New York, Michigan and Pennsylvania supplied markets with 14,800 cars. This does not include raisins. It is safe to conclude, say local viticulturists, that a good share of this immense tonnage was consumed in liquid form.

Fruit Juices May Ferment

FRUIT growers are vitally interested in the question which has lately arisen concerning the legality of permitting the fermentation of fruit juices which have been manufactured in California homes. Thousands of licenses have been taken out to manufacture a maximum of 200 gallons of fruit juice per year in each permittee's home. After this beverage has been allowed to ferment and thus acquire a large alcoholic content, is it wine or only fruit juice? That's the question which is being discussed by Government officials.

Teach Apple Growing by Mail

FRUIT growers in California will be interested in the recent announcement from the University of California College of Agriculture that a ten-lesson correspondence course on Apple Culture is now available.

"There has been a great demand for some concise and reliable treatise on California apple culture and this course by F. W. Allen, assistant professor of pomology, should prove very popular," states H. M. Butterfield, supervisor of agricultural correspondence courses.

"Our normal apple crop has a value about equal to that of the total gold output of the State and the future development of this important industry will depend largely upon the cultural and marketing methods employed. There is a large apple acreage that will come into bearing in the next few years; therefore, growers will have a greater need to grow and market their crop in a profitable way."

All inquiries should be addressed to the Division of Agricultural Education, University of California, Berkeley, California.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

XIV—ROBERT W. HODGSON

ALTHOUGH, by reason of his official connection with the University of California as Los Angeles County Farm adviser, Mr. Hodgson is not an exclusive contributor nor an associate editor, his articles, which appear regularly in ORCHARD and FARM, are written especially for this magazine and appear in no other publication.

ROBERT W. HODGSON

"Bob" Hodgson is recognized as one of America's leading authorities on citrus fruits, but unlike many experts who have specialized, he has a broad knowledge of every phase of agriculture, gained through years of the hardest kind of work and study and travel through all parts of California and the Southwest.

In fact, Bob thrives on work; he worked his way through college, graduated an honor student and became a member of the faculty. And now as head of America's largest county farm bureau, he is said to have only one serious regret—that the days are not longer.

But even in the short space of each 24 hours, he manages to be in several widely-separated districts of his big territory, give a demonstration or two, address meetings, plan projects, and manage an efficient office, as well as directing the activities of a large force of assistants. Then, when he has "nothing else to do," he writes articles—helpful, practical, interesting articles that "hit the nail right on the head."

Robert Hodgson has done big things already in California—and he is one of the younger agricultural leaders. But he is blessed with the vision that sees a larger goal always ahead and he has the qualities that win.

Hodgson's articles reflect his own insatiable thirst for agricultural knowledge and his passion for scientific accuracy. Fortunate are the readers of ORCHARD and FARM in being able to draw upon his vast store of information. —J. C. K.

How to Prolong the Life of Citrus Trees

By J. ELIOT COIT

FOLLOWING is a condensed resume of the points brought out by principal speakers at the California Citrus Institute held in connection with the San Bernardino Orange Show. The principal topic of this successful and profitable meeting was "Care of Mature Citrus Groves."

J. G. M'BETH
Mgr. Bastanchury Ranch Co.

Too heavy watering of porous, sandy soils results in waste of nitrates into the subdrainage.

Don't begin irrigation earlier than necessary in spring because it may retard nitrification during bloom when the trees need nitrates most and when there is likely to be a minimum supply. This is especially important on heavy, cold adobe soils.

Less than 25 per cent of citrus groves are properly irrigated.

Irrigate according to the soil augurs rather than according to the calendar.

In heavy soils the best moisture content is somewhat below the theoretical optimum.

J. A. PRIZER
Sup't. Bastanchury Ranch Co.

Where no cover crop is grown on very heavy soils, deep plowing should be done in November across the irrigating furrows and the land left rough during winter.

Dry north winds in fall are one of the chief causes of small sizes in Valencia oranges.

Turn under the cover crop early in order to be safe, as too late plowing is often disastrous.

Irrigating furrows should be deepest in adobe soils and shallow in sandy soils.

Preventing formation of plow-sole is keynote to success. In some soils this can be accomplished only by generous additions of organic matter and deep cultivation.

The damage from root-cutting is often overestimated. It does little harm to cut roots by deep plowing if done in fall or winter and for the purpose of correcting soil difficulties.

Furrow manuring is a great success on sandy and loam soils, but is hardly worth while on adobe soils.

Subsoiling in orchards is dangerous and often harmful, but if done in fall may be justified if very difficult conditions warrant.

J. D. CULBERTSON
Asst. Mgr. Limoneira Co.

In discussing fertilization, Mr. Culbertson read a series of excerpts from letters from representative citrus men. The substance of most of these was that common experience proves California soils need principally organic matter and soluble nitrates.

Cover crops and manures had been proved of great value, while alfalfa hay was most highly recommended.

About 65 per cent of groves are underfed, while about 5 per cent are overfed.

It is best to apply bulky manures in January.

For the average grove a total of about 200 pounds of actual nitrogen is most economical while excessive amounts may bring on mottling on some soils.

Mr. Culbertson read an interesting letter from the late Dr. Cyril G. Hopkins, noted soil chemist. The letter was dated September, 1911, and was written just following the Soil Institute, held in Los Angeles.

Doctor Hopkins pointed out what the citrus growers need most is nitrogenous organic matter and suggested that growers would do well to acquire alfalfa lands on which to produce their alfalfa for fertilizer.

He recommended two to four tons per acre applied in fall, which should be left on the ground all winter to be plowed in very early spring.

C. A. JENSEN
National Orange Co.

Plow-sole is not caused by packing incident to tractor or teamwork, as is commonly supposed, but is due to an accumulation of soil colloids which are brought up by capillary movement of soil water and left immediately below the summer mulch.

Plow-sole may best be destroyed by occasional use of the stiff chisel-tooth cultivator in late summer and fall. The formation of plow-sole may be largely prevented by generous use of humus-forming materials.

L. L. MOORE
Elephant Orchards, Redlands

The practice of applying sulphate of ammonia in three applications during the year is questionable. The entire amount, as ten pounds per tree, put on in very early spring has given best results.

W. M. BRISTOL
East Highlands

Heavy clay soil on steep hill sides is most difficult to irrigate. Experience has shown that five inches of sandy loam hauled in and spread over the entire surface is of great benefit increasing the size of the fruit. This new soil holds the water in contact with the clay until it has time to be absorbed. An application of heavy soil over the surface of very porous sand also is beneficial, but in this case the chief function of the new soil is as a holding medium for the nitrogen, which would otherwise wash away.

R. S. THOMPSON
Highlands

Why worry about the dwindling supply of manure? It has been demonstrated that even in 30-year-old groves it is possible to maintain and even increase the humus content by growing two cover-crops a year. This is entirely practicable where sufficient water is available.

Housing Laborers

The American families employed on the Limoniera ranch near Santa Paula are cared for in fifty-nine cottages. Recently a group of thirty-six units has been completed. This group is artistically aranged on a court plan. They are constructed of hollow tile with plastered exteriors, modern in every way, with full plumbing and sewer system, electric lights and gas, and with ample garage accommodations. Rentals are nominal, ranging from $8 to $10 monthly per unit. Water is free and the front lawns are mowed and cared for at company expense. There is no restriction against children.

For the convenience of all employes, there is a company store where provisions and some staple clothing may be purchased at an appreciable cash saving.

In this way the Limoneira company is solving the help problem and is securing a very high type of efficient and contented workers.

But the need for provision of better housing quarters by no means is limited to large corporations. The owners of moderate sized ranches will find it easy to secure efficient help from the ranks of fellow citizens, by providing comfortable cottages at nominal rental. This is a most attractive inducement to the man with a family who is usually at his wits' end to meet the high rents demanded in the large cities.—J. E. COIT.

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Owensmouth **California**

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This is a well balanced ranch in a choice fruit and dairying district, on good roads, close to school. Modern house, bunk-house, big barn, pumping plant, reservoir, underground pipe lines, etc.; complete outfit of machinery and stock.

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Does Yeast Complete the Poultry Ration?

General view of Pioneer Hatchery Ranch, near Petaluma, where interesting tests in feeding yeast were conducted. Every nest on this up-to-date ranch is a trapnest

THAT chickens, as well as bread, can be "raised" with yeast is the latest and perhaps most unique discovery of the poultry industry. An increase in egg yield of 25 per cent, and in fertility of from 5 to 10 per cent, is reported by experiments in the Petaluma district. These poultrymen recommend the use of yeast as a supplement to the regular ration, to supply vitamines, increase bodily vigor and enlarge profits.

One of the largest and best equipped plants where the yeast has been tried is the Pioneer Hatchery ranch, located on the Bodega highway about one-half mile from Petaluma. Here, under the direction of the manager, Dr. E. Morris, a veterinarian, 100 hens have been used in an interesting test. Since Nov. 10, 1922, they have received mash containing one and one-half per cent of dry yeast.

Dr. Morris summarizes results as follows:

	Yeast fed pen 50 Birds Egg Yield	Non yeast fed pen 50 Birds Egg Yield
Nov. 10 to 20....	318	317
Nov. 21 to 30....	467	401
Dec. (31 days)...	996	765
Jan. (31 days)...	1022	794
Feb. (28 days)...	943	714
Total.....	3746	2991

Net gain of yeast-fed pen, 755, or approximately 63 dozen eggs.

At 30 cents a dozen, the increased yield would have brought $18.90.

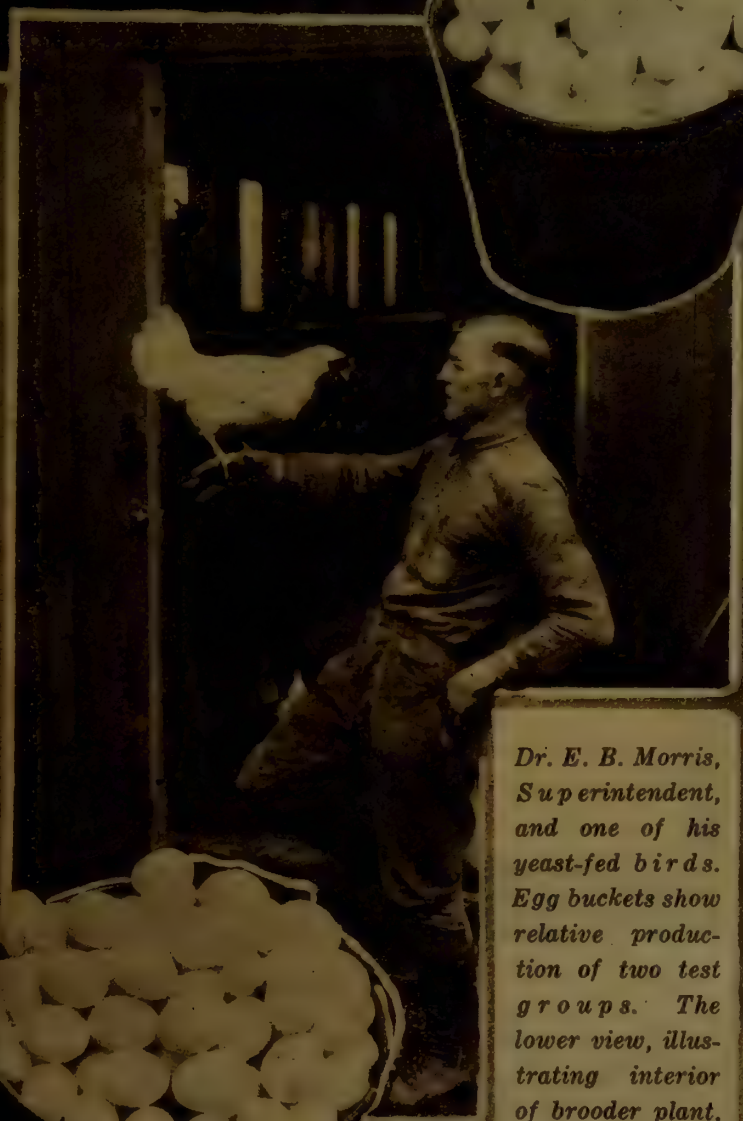
During the test 500 pounds of mash, containing one and one-half per cent dry yeast, was fed. Figuring the yeast at 75 cents a pound, the additional cost was $5.62. Deducting this amount from $18.90, leaves a net profit of $12.28.

In addition to the dollars and cents profit, Dr. Morris states he was impressed by the improvement in vigor and health of the flock.

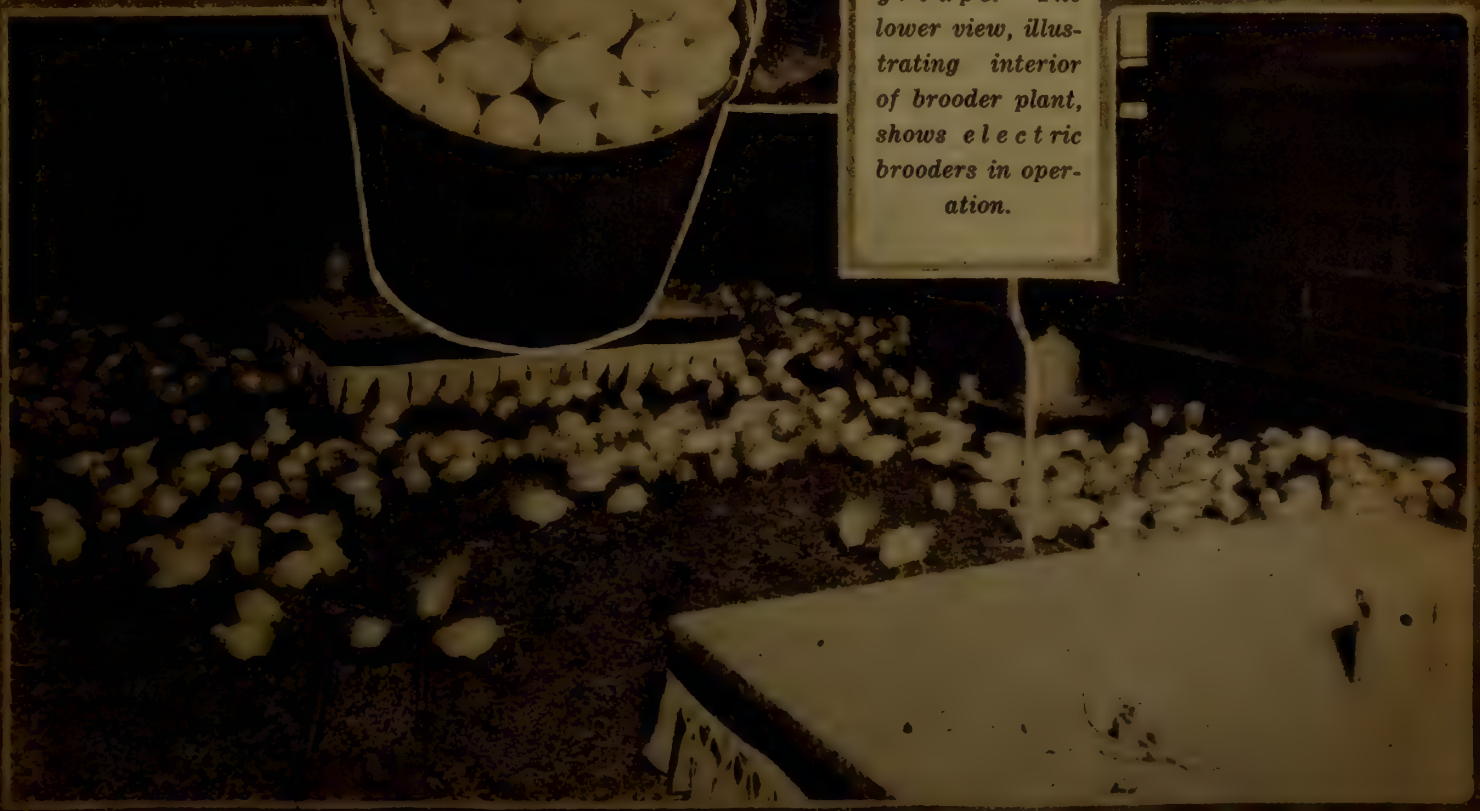
He points out the birds used in this test were pedigreed and trapnested stock, and the above egg records are compiled from trapnest figures.

Not only was egg production increased, but the test birds actually showed more vigor and had a better appearance than those which had not received the yeast, according to George Learned of the Fleischmann Company, who made a careful check of the results secured.

This observer also states the yeast-fed birds consumed more feed than those not given yeast. Furthermore, as shown by analyses of the droppings, they assimilated all their food, while the other hens wasted a certain percentage. Those not receiving yeast, it is shown, did not receive the full benefit of their ration.



Dr. E. B. Morris, Superintendent, and one of his yeast-fed birds. Egg buckets show relative production of two test groups. The lower view, illustrating interior of brooder plant, shows electric brooders in operation.



Of 6000 chicks, 2 to 9 weeks of age, which were given yeast by Dr. Morris, only 345 were lost. At 7 weeks, these youngsters weighed from one to one and three-fourths pounds, he states. In one fertility test, a 10 per cent increase in the hatch is said to have resulted from two months' feeding of yeast. In all these tests dried, compressed yeast was used.

Asparagus—A California Delicacy

By ROBERT E. JONES

ASPARAGUS is one of our California "specialties." The classification is my own, but I think it is justified, for the Golden State grows more than half the asparagus (in value) of the United States. California's annual p would buy 10,000 Fords!

Asparagus is classed in the trade s a vegetable, and has the nickname f "grass." The use of this name is pt recommended in the school room, owever, as it is quite as offensive o the teacher as "cânt" or "loupe" or cantaloupe.

While asparagus would buy a lot of vvers, most of the growers go in or more expensive cars, for asparagus is quite a reliable crop, both as o yield and price. It may be classed s one of the more stable specialties. s stability is probably due to the act that a grower can't start an asparagus crop with the change of the moon, as he might a lettuce or a potato patch. It is one of the few egetables that requires more than a eason to get a start.

The shoots do not begin to come in ommercial quantity until the third ear. The result is, of course, that grower, contemplating an asparagus lantation, "stops, looks and listens" efore he starts. Likewise it is possible quite accurately to gauge the robable production of the next year.

DELTA HEAVIEST PRODUCER

The Sacramento-San Joaquin delta s the heaviest asparagus producing istrict of the United States. Imperial Valley has gone in for asparagus to some extent and I am told now has about 500 acres. This Imperial asparagus is shipped East very early. The first month's production from the Sacramento-San Joaquin delta also goes to the Eastern market. It holds full sway back there until the Jersey crop begins to reach Gotham, and from then on most of the California asparagus goes into cans. You will find asparagus canneries strung along the river all the way from Sacramento to Stockton, and it is in these plants that the fancy pack of asparagus and asparagus tips, that may be purchased the country over, is canned.

Here is an interesting fact about asparagus packed for shipment fresh: It is packed in crates with the butt ends embedded in damp moss. Always a little space is left at the top, for the stalks absorb moisture from the moss and increase their length while making the trip East. I am told a stalk will grow as much as a half inch.

In the height of the season, which extends through March, April and May, asparagus is cut daily. Men go over the field, inserting long knives into the loamy soil and cut off the stalks far below the surface. Next day they pass over the same field cutting fresh stalks, for growth is rapid. Rainy weather or frost will

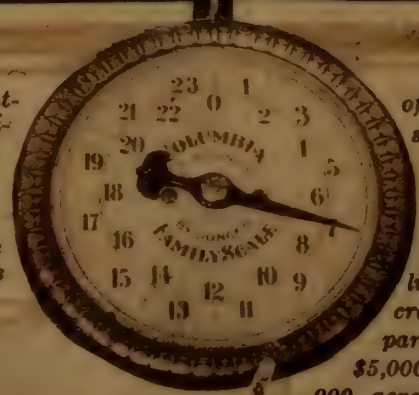
NEW DISTRICT IS FACTOR

Until the last few seasons the asparagus industry in Central California has been confined principally to the delta district. However, some new plantings in the Merced district and in Sutter County have proven quite successful. The Sutter Basin Company now has a planting of more than 100 acres nearly sixty miles north of Sacmento. This extension of the industry north and the good quality of the product have proved quite a surprise to "oldtimers." In order to grow, an industry in a new section must have a cannery nearby, for the season for profitable shipment closes in from thirty to forty days and the big supply that comes on until hot weather must go into cans.

Asparagus requires a loose, loamy, river bottom soil—a soil that will work up nicely. Otherwise the shoots won't grow straight and fat. It also requires a strong soil, for the crop pulls hard on fertility. If you want an asparagus patch pick out some soil of this kind in a proven district. You can grow beans and other annual row crops between the rows for a year or two—after that give the asparagus full sway.

Packing asparagus tips for shipment. The butt ends are embedded in damp moss, to prevent shrinkage. Space is left at the other end to permit of new growth, which sometimes amounts to one-half inch during shipment

Ridging asparagus rows. Careful cultivation is considered one of the essentials. Heavy chains smooth the ridges, to make easy cutting



The size attained by California asparagus is the marvel of Eastern consumers These two bunches of tips weighed seven pounds. The Golden State produces each year a million and a half crates of asparagus, worth $5,000,000, on 21,000 acres, mostly in the delta region east of San Francisco

Green asparagus tips, which some consumers claim possess more of a green pea taste than do the blanched kind

These blanched white tips, unlike their neighbors on the left, have grown underground

Walnut Growers Like Wire-Bracing

By ROBERT W. HODGSON

FACED with the necessity of supporting their trees under the stress and strain of foliage, crop growers in certain walnut sections of Southern California are rapidly falling in line with their deciduous fruit grower neighbors in the adoption of the central or "spider-web" system of wire-bracing, recently described in a circular published by the California College of Agriculture.

The necessity for bracing walnut trees appears to be largely due to changed methods of heading the trees while young, as this results in the objectionable open-vase form, which is almost invariably weak and subject to splitting at the main crotch. In certain districts this weakness has been accentuated by soil, climatic and cultural conditions, which have favored unusually rapid growth of the trees, with a resultant weak framework.

As a means of protection against loss of trees by breakage, which is a serious matter where the number averages not over twenty to the acre, some years ago the use of cross-wiring came into prominence in certain districts. In others, cross-bolting several feet above the main crotch was followed and in some cases the use of chains has been followed. No standard and satisfactory system had been developed, however; therefore, growers were in precisely the proper frame of mind to seize upon the new central wire-bracing system with avidity.

Although developed for much smaller trees, the principles of the new system seem to be especially adapted to use with walnuts. Some experimenting with different sized wires, screw-eyes and staples, will be necessary before the requirements for walnut trees will be known definitely. Enough has already been done, however, to give a very good idea of what will likely be the general application of the new system to the walnut industry.

With young bearing trees seven to twelve years of age, the standard system, as recommended for deciduous fruits, may be used, with one addition. A heavy iron washer or welded ring, No. 12 wire and moderately heavy galvanized welded screw-eyes furnish the materials for the main "spider web." The lower hanging branches are then suspended by No. 12 or 14 wire from the points of attachments of the main braces by means of large galvanized staples. The main braces will usually support four to seven branches with one or two "hangers" to each main branch.

With old trees the problem is somewhat more complicated and may require the use of more than one set of braces. In the average open-vase type trees, one set placed high up, from 12 to 18 feet, using No. 8 or 9 wire, a heavy welded ring and very large welded galvanized screw-eyes will suffice, but there is considerable more difficulty in handling the "hangers" than with the younger trees.

Where the trees have developed a central leader, branch bracing does not appear to be as necessary as with the open-vase type. There are many trees, however, which have a partial main leader framework system which require bracing. In such trees the use of a central ring is unnecessary. The leader branch may be used as a tent pole, with the other framework branches hung from it by means of wires attached to screw-eyes.

With the average tree, if the bracing is done in a workmanlike manner, the system is quite symmetrical and pleasing in appearance. In the case of large trees of the central leader type it may be necessary to install two sets of braces, one for the lower tier of framework branches and "hangers" and the other for the upper framework branches.

Ten-year-old walnut tree braced by central wiring system. Tool box, resting on wires, shows location of central ring.

Trees grown with a central leader may be braced by using this branch as a "tent pole" to hold the screweyes. The wires extend in all directions to the various limbs.

Above—Central ring used for open, vaselike trees. This one was photographed 20 feet from ground. Left—A group of 26-year-old seedling trees braced with central wiring system.

E. J. Sharpless, prominent Whittier walnut grower, with unique equipment used in wire bracing. Two sizes of wire are carried on reels.

How Many Tractor Hours?—Find the Answer in the Air Cleaner

AN engineer in the employ of one of the prominent California tractor manufacturing companies recently said: "Our latest model tractor under full load, in extremely dusty conditions, will run 3000 hours without any engine adjustment whatever and 6000 hours with only very minor adjustment, provided it has an efficient air cleaner for its carburetor; but without an adequate cleaner the engine will be absolutely ruined in 15 hours."

—*A. H. H.*

By A. H. HOFFMAN

Agricultural Engineering Division, University of California

CHEMICAL tests made by the University of California show the dust that fills the air in the average California field is 55 per cent sand.

This abrasive material, passing in through the carburetor with the charge of fuel, is caught by the oil on the cylinder walls, forming a grinding mixture which very rapidly wears out pistons, rings and cylinders, destroying compression and soon putting the tractor out of business. Some of the dust works down into the crank case and, mixing with the oil, cuts away at all the bearings.

In some tractors it is easy for dust and even fairly coarse sand to enter the crank case by way of the breather pipe. Breaths of dusty air go into the pipe, the dust adheres to the oily surfaces and clean air puffs out. The dust and sand gradually wash down into the crank case, and, circulating with the oil, work havoc with the vital parts of the machine.

A certain small tractor has its crank case breather pipe low down where it can get an abundance of dust and even coarse dirt thrown up by the front wheel. It has been found again and again when repairing these machines, that, if the breather pipe has a good air cleaner, the rear main bearing of the crank shaft is always worn most; while, if there is no cleaner provided, the front bearing invariably shows most wear. This also points to the principal reason why the timing gears of these tractors wear so rapidly and why the front piston and cylinder generally show more wear and scoring than the rest.

No air cleaner now on the market can be put on a tractor and "forgotten" and yet month after month continue to protect the engine adequately against dust.

Almost every one has a plate attached giving exact directions for the care it requires. The manufacturer is "the doctor." It is unsafe to neglect the doctor's directions.

All makes of cleaners need some care and attention. Those that have moving parts have troubles due to wear and accumulations of dust and oil; those that have small passages inside may clog up entirely; those depending on water or other liquid must have the liquid kept up to the level and the sediment cleaned out. Other kinds have other troubles, such as choking up with accumulated dirt and consequent cutting down of the power of the motor.

If all tractors in this State had on them efficient air cleaners correctly installed and well cared for, we would hear much less about "oil troubles," "carbonization of spark plugs," "loss of compression," etc., and the average farm tractor would enjoy a much longer lease on life, while the owner would save much ink that otherwise would go to write checks to pay repair bills.

The position of the air intake, whether down in the dense dust near the ground or up at the top of a "periscope" tube, makes a big difference in the amount of dust that enters. At the Forkner Fig Gardens near Fresno, A. H. McAllister, the engineer in charge of the Company's fleet of tractors, found that the addition of a "periscope" two feet high to the air intake of a water type cleaner on one of their tractors reduced the dirt caught per day to about one-tenth. The tube used should be smooth inside and free from sharp bends. The inside diameter should be large (at least two inches for a 10-20 tractor).

Analysis of the "carbon" found on top of tractor and automobile engine pistons and valves shows it to be more than half soil which came in with the air. Another fraction of the "carbon" is found to be made up of minute particles of steel and iron which the grit cut away from the working parts of the engine.

The tractor owner can well afford to find out whether his machine is getting only clean air or a regular diet of dust. If after a day's run in a dusty field no coating of dust can be wiped from the inside of the carburetor intake tube when the air cleaner connection is removed, the air cleaner has done a good job.

The writer recently completed tests on twenty-six air cleaners to determine their ability to remove field dust from the air entering a tractor engine. Several makes of cleaners caught above 98 per cent, while one caught only 43 per cent.

The amount of choking caused by the cleaners also was investigated. A full report is to be published as soon as possible. In the meantime most of the results may be had in mimeograph form (while the supply lasts), by writing to the Agricultural Engineering Division, University Farm, Davis, Cal.

The first tractor engine air cleaner was probably the one shown in the accompanying illustration—simply a sock held distended by a coil spring of hay wire. The inventor no doubt was some farmer made desperate by the expense of rapid wear.

The dry centrifugal probably is the first cleaner put out by a regular manufacturer. Although less than 50 per cent efficient, it is still found on many of the tractors in this State. Dry type cleaners range from about 43 per cent to above 99 per cent in efficiency.

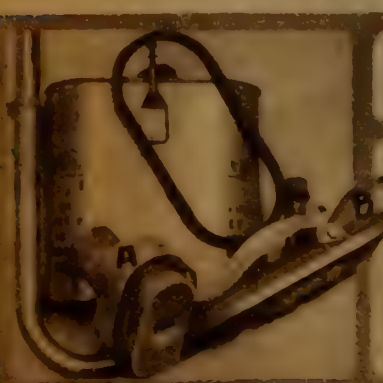
Cleaners of the water type range from about 89 to 96 per cent. One of the illustrations shows a water type cleaner taken apart. The long "periscope" tube takes in the air from a higher level and brings it inside of the float "A." The dusty air, passing through the perforations in the float and through a wire screen skirt, bubbles out through the water, leaving most of the dust behind.

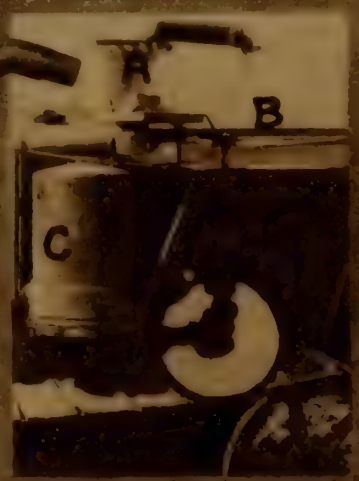
The "baffle," shown projecting from the under side of the lid, "B," is depended upon to prevent drops of water from going on over with the air to the carburetor. Some water in vapor form goes over, but this seems to be advantageous in that it tends to minimize formation of carbon and to make for smoother running, especially when kerosene is used as the fuel.

Oil type cleaners were found to range from about 96.5 to above 99 per cent in efficiency.

Dust is the reason for the short life of many tractors. Unless it is removed from the air entering by way of the carburetor and breather tube, the engine will wear out rapidly.

Pulverized orchard soil is good for trees but hard on tractors.





Above—Water type air cleaner, taken apart. The dusty air, coming through perforations, bubbles up around float, "A", leaving most of dust in water. Baffle, projecting below "B", keeps back drops of water.

Above equipment is used in efficiency field test. "A" is dry, centrifugal type; "B," the "absolute cleaner," which caught dust not caught by "A"; "C", an oil-type cleaner.

The first air cleaner was invented when a desperate farmer tied his sock over the carburetor intake. Right—a water-type cleaner. The water vapor keeps down formation of carbon and makes engine run smoother.

At the left is shown a dry, centrifugal cleaner in use. One of the earliest types manufactured. Still found on many tractors in California.

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By ONE OF US

EARLY DEMAND FOR RAMS

There is more inquiry for rams now than we have ever had at this time of the year. Prospects for 50-cent wool are good, and there is every reason to look forward to a good lamb market.

BUDS ARE HOLDING BACK

The cold weather of late winter was fine for the deciduous fruit trees, particularly the prunes and pears. The buds are remaining dormant and will permit spraying for quite some time yet.

BUSINESS IS PICKING UP

The purebred livestock business is a great deal more brisk than it has been for the past year and a half. We are getting a good many inquiries, and selling some pigs, a few sheep and a bull calf occasionally, which makes us feel good and seems to indicate a healthier tone to trade generally.

REAL SERVICE FOR GOATS

Every one who came by stopped to look at them—two crates on an express truck, and a goat and two kids in each crate. All were lying down. One goat had a kid on either side of her. In the other crate the two kids were lying together on one side of their mother. Both does were calmly eating hay, utterly unafraid and perfectly happy. For a lover of livestock it was a truly beautiful scene. It was a warm day and right at noon, but the thoughtful expressman had run the truck into the shade, so that the animals were not suffering from the heat.

Mighty fine to see such good care taken of stock by the express companies; real service, that is! The goats were billed from Live Oak to L. H. Russell, Los Angeles, and had come to Sacramento on the Sacramento Northern Railroad.

HOGS IN ORCHARD

How a hog loves to root in the soft ground and dig up roots and bugs! We put some manure around some of the trees in the pear orchard recently and the hogs have been having a fine time rooting it around. The hogs don't get a chance to run in the orchards much; but before we get to the spring plowing, and while there is some green stuff coming that they are very fond of, we give them this treat for a few days, and they certainly do enjoy it.

SPRAYING TWICE OVER

John thinks he has made a discovery that every one should know about. That is, to go over an orchard twice at each spraying in order to cover all of the trees all over—just as a barber does to make a clean shave.

No one ever tried harder to cover the trees thoroughly the first time than John and Harry did. They got thoroughly wet themselves—even with slickers on—and they were a lot more patient about the dirty job than most folks would have been. But when we looked over the trees we always could find dry spots. The second time over gets them, however, and we are proud of the job we have done this year.

IMPORTANT TO CLEAN SPRAYER

It takes a good while to learn some simple things. Anyone should know that the proper thing to do with a spraying machine after a job of spraying is finished is to clean it thoroughly before putting it away. But spraying is such a mean job and drags out so long, generally, that we are in a big hurry to get at something else—and the clean-up of the machine is neglected.

When we got through with the winter spraying this season we were in just as big a hurry to start another job as usual, but we got a mechanic to go over every part of the spray machine—clean everything, oil all parts, and put it all together ready for the first arsenate spraying of the pears. We learned from a representative of the company which made our sprayer that a good deal of the trouble experienced in starting up a machine that has not been used for some time is from dried spray material from the pipes through which the material is pumped. This scaly stuff gets into the pump, nozzles, refiller and other places and causes much delay. Therefore we took all of the pipes apart and cleaned them thoroughly. Although we had pumped gallons of water through them, it was surprising what a lot of stuff was left.

New parts were put in place of all that were worn. The engine was gone over carefully, and we feel as though we will have much less trouble when we start up next time.

LEAVING THE REPLANTS HIGH

After several years, we believe we have learned a little trick about replanting trees. The experience of most folks is that it is more difficult to grow a replanted tree than a tree in an entire new planting. We have found it so.

There may be several reasons for this—the older trees taking the moisture and plant food, and the young tree getting less care, perhaps.

But our principal reason for losing replants has been rabbits. We have had rabbits to contend with in all of our plantings, but when a big block of young trees is planted, the damage is not noticed so much.

We used to cut our replants back to 14 or 16 inches—as is the custom in this section—and we would lose a good many of them and have to replace them the next year.

John says we have some of the smartest rabbits in the world. He is authority for the statement that these rabbits will come up to a newly-planted tree on which the leaves are just starting and will sit up on their haunches and nibble these young leaves off as fast as they come out. You can see a simple tree has no chance with an educated animal of that kind.

Now we fool the rabbits. We leave the trees 36 or more inches high until they get started and shape the head later in the season. "I'm expecting to see some of these rabbits rigging up stilts," says John, "for they surely are fond of young fruit tree shoots."

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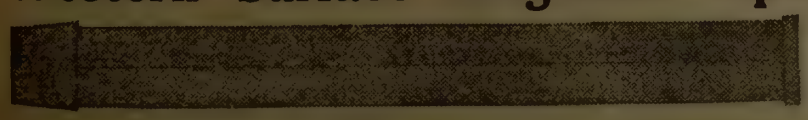

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Vacuum Fumigation

(Part 2 of Prof. Weldon's article on "Battling Bugs in Vacuum," which was begun in the March 18 issue.)

What is being done with dates can be done with other dried fruits, and already great progress has been made in the extension of the work. The process now is under consideration by the raisin growers, as insurance against insect attack in the popular Sun-Maid raisin package.

The application of this new method of fumigation to nursery stock treatment early suggested itself. It is a well known fact that certain borers are not killed by ordinary fumigation methods. Also that the egg stage of certain insects may be highly resistant.

By means of treatment in a vacuum fumigator, it is possible to kill certain pests and certain stages of other pests that heretofore have not been destroyed by fumigation.

By this method, any of the contact insecticides or fungicides could be used in the fumigator, and trees or plants can be treated under conditions which will insure maximum penetration. Already Mackie has become convinced that the peach tree borer, which is one of the most serious insect pests of the peach and one which has necessitated constant vigilance on the part of inspectors in order that its spread might be checked, can be completely eradicated by treatment of the infested stock.

Liquid treatment can be accomplished in five minutes and is absolutely devoid of temperature considerations. Mackie states also that the operation of the fumigator is so simple as to be fool proof.

The method used is simple. A strong, cylindrical, upright chamber is constructed of heavy boiler iron. Provision is made for the attachment of a vacuum pump so that the pressure may be reduced. The liquid insecticide is placed in the chamber and the nursery stock is placed in the liquid and left long enough for the reduction of the pressure the required amount.

In recent experiments, miscible oil, one part to fourteen parts of water, was used, and it was found that no borer, no matter how well protected in its burrow, could stand the treatment.

It is not possible for the most competent inspector always to detect the presence of tiny borers in a tree. Likewise it is difficult, if not impossible, to detect the presence of certain other pests; therefore inspection, while valuable, is not 100 per cent efficient.

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This is the egg farm Prof. Dryden wrote about in "The Country Gentleman."

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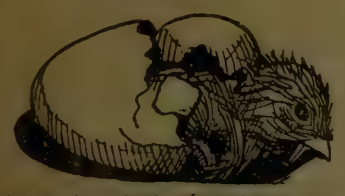

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Farm Hand Succeeds

(Continued From Page Two)

Wickman early realized the advantage of tying cows to his fruit trees. Dairying provided a steady income while the peach and prune orchards were coming into bearing. The cows also afforded a good home market for the hay and grain crops produced and maintained the soil in a high state of fertility.

Evidence of the natural and acquired richness of the ground is found in the heavy crops grown. For example, an old alfalfa field which had been pastured two years was plowed up and planted to Mariout barley, which yielded forty-four 120-pound sacks per acre. Part of the land then was planted to Indian corn, of which two and one-half acres filled a 70-ton silo. The rest made 50 bushels of grain per acre.

Butte County people point to this example of double cropping with pardonable pride: One hundred ten bushels of barley and 50 bushels of corn, a total of 160 bushels of grain on one acre in one year; 5280 pounds of grain and 28 tons of silage from the same area in twelve months.

IMPORTS FARM LABORERS

Wickman solves the labor problem by importing young men from Germany who make steady, reliable workers, and are on the job every day, month after month.

Hogs and walnuts are two profitable side lines on the Wickman ranch. The former convert dairy by-products into pork and the latter provide shade and nutritious nuts. Black walnut trees were planted around the farm buildings and along the roadside, being budded to English varieties when four years old. One hundred trees yielded 78 sacks of nuts last year.

Fruit trees gradually are supplanting dairy cows, only eight of the latter being kept at present, together with seven heifers. "Dairying is hard, confining work," explains Wickman. "I've served my time at the milk pail and am willing to let some one else taken a turn at it."

LAND PRICES ADVANCE

When questioned regarding the present chances of a farm hand saving enough wages to buy a Feather River bottom farm, Wickman had little encouragement to offer. "Raw land is now selling in this neighborhood for $400 an acre, which is more than four times what I paid. The cost of buildings and machinery also is much higher.

"The Government should make loans which would make it possible for a man with $2000 to buy 20 acres of this land, improve and pay for it out of what it can be made to produce. This would not only benefit honest, capable young men, but also would be of great advantage to the community and entire country."

Crane's Dairy Methods

Ten pounds of silage is fed to each cow twice a day, while seven pounds of oats and vetch hay and an equal quantity of "sure milk"—a prepared dairy feed—complete the daily ration. Vetch has been found to double the hay yield, three tons per acre being secured on old land. The ordinary purple vetch does not thrive in that locality, which is half way between Sebastopol and the ocean, but the black Oregon vetch grows to perfection.

Milk is marketed at the Valley Ford condensery, which pays 30 cents a gallon, deducting 20 cents per hundred pounds for hauling. Two cents a pound above the market price is paid for butterfat. Crane's cows were averaging 44 pounds of butterfat in February.

Steve Crane is a good example of a farmer who is making a conspicuous success by industry, economy and the exercise of good, hard common sense. The latter is aided by every available agency, such as the farm press, experiment station bulletins and the Farm Bureau extension service. Crane helped materially to "put over" the Valley Ford stock show, being a public spirited citizen who is always willing to labor for the general good.—O. H. B.

GIVING AWAY YEARBOOKS

Senators and representatives are giving away 1922 yearbooks of the U. S. Department of Agriculture, recently issued. Write to your Congressman for a copy.

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BUT—you can easily maintain vitality at summer level and decidedly increase the milk flow by a one-week-a-month use of Kow-Kare. This famous medicine for cows tones up the genital and digestive organs—enables them to throw off disease and make milk faster.

Thousands of dairymen follow this plan and find the very slight cost of the treatment repaid a hundred fold. Only a tablespoonful of Kow-Kare morning and night is required—and only one week out of the month.

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Bates Began Farming at Twelve

E. P. BATES, one of the hustling field men for the Peach and Fig Growers, began working on his father's farm in northeastern Missouri—22 miles from Hannibal, the home of Mark Twain—at the tender age of 12, and three years later was given charge of the entire 280-acre place, with its full complement of mules and negroes. His father was away from home on business most of the time, so that young Bates had things pretty much his own way.

"One of the best darkies that ever worked for us," Bates relates, "was a big fellow from Mississippi who was put off a steamer for some sort of devilment. He would follow two corn cultivators and cut out all the weeds, handling a hoe like some coons handle a razor. The colored farmers here in California are good workers, but in order to keep their respect, white folks cannot treat them as social equals."

Bates has no sympathy for people who complain of California weather and conditions, because the climate and surroundings here are so much superior to what people have to put up with in other States.

"Folks here don't know anything about bad roads," declares Bates. "Back in Missouri it sometimes takes a four-horse team to pull an empty wagon, for the mud will roll up and lock the wheels. As for disagreeable work and weather, let a native Californian haul frozen corn fodder in winter, when the mule team is ready to run off at the drop of your hat. Such experiences tend to make a man contented with life here in the Land of Sunshine."

After years spent in merchandising in Montana and Missouri, Bates came to California to find congenial outdoor work. He has driven a Ford 11,000 miles without repairs, using the same tires and spark plugs. He believes in careful driving and respects the rights of the road. Much depends upon how a car is handled the first 500 miles, he points out, and believes that a car has to be properly broken in, the same as a horse.—O. H. B.

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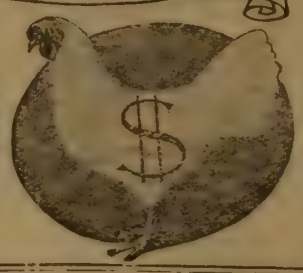

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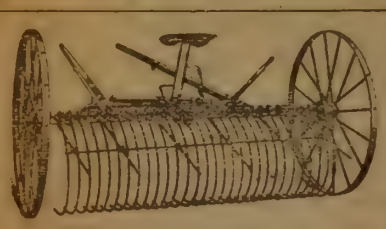

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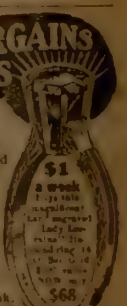

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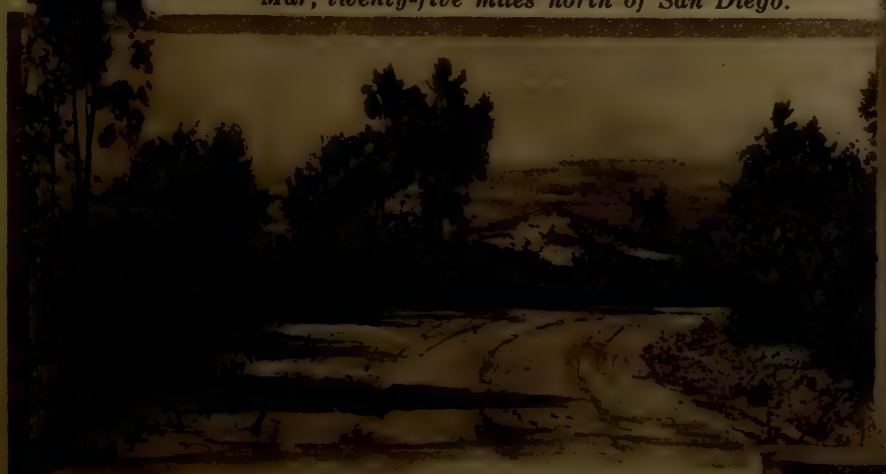
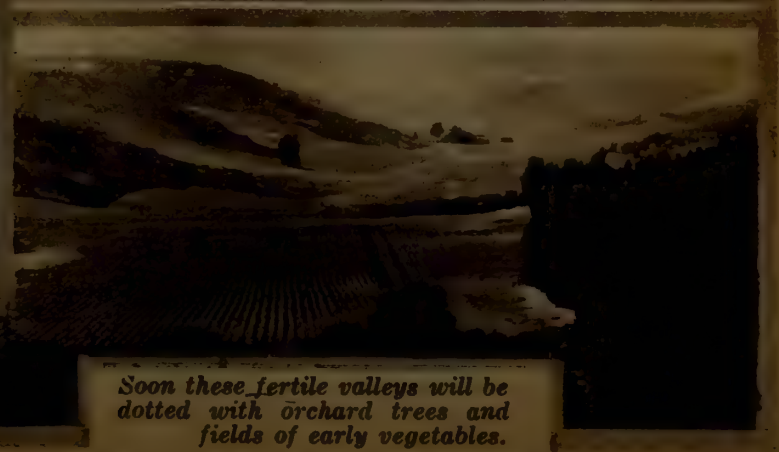
Thundering over the spillway, formerly unharnessed waters bespeak future production of bounteous crops. Lake Hodges, shown at right, has a capacity of nearly 38,000 acre feet.

This multiple arch dam, designed by Eastwood, and constructed at a cost of about $500,000, will provide irrigation for thousands of acres near Del Mar, twenty-five miles north of San Diego.

Eucalyptus groves beautify the famous Santa Fe ranch



For months, crews of men have been at work laying out such roads as this one, following the contour of the rolling hills; taking advantage of natural scenic beauties.



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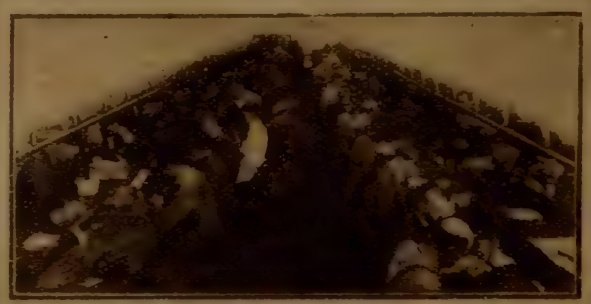

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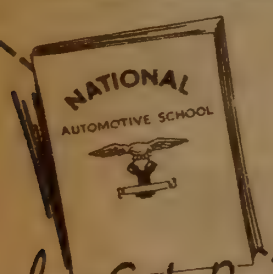

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SECTION OF THE SUNDAY EXAMINER

APRIL 1, 1923

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ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
APRIL 1, 1923

Winter Rhubarb, a Promising Crop

Southern California Specialty Farmers Make Fat Profits During the Lean Season by Capitalizing Their Well Known Climate

(See illustrations on Page 7)

FABULOUS profits have been made in rhubarb raising. But they are not made every year, and the pieplant producer has his troubles just like every other fellow who's playing the farming game.

True, during the period of peak prices, Southern California growers realized more than $2800 an acre. In this case the crop was picked five times and canneries took all the output not demanded for fresh shipment. During another year frost and sluggish demand created havoc and left many growers "in the red."

"A lot of wild stories about rhubarb profits have been circulated," says R. L. Reynolds of La Habra, one of the largest and most successful producers in the southern part of the State. "As a matter of fact some years are good and some decidedly bad. The man who stays in the business year after year can depend upon good average profits.

GOOD MARGIN OF PROFIT

"The cost of production is not excessive, compared with the yield per acre—especially when one considers that rhubarb is a perennial crop. Once established, it will yield for several years." Some enthusiasts believe this remarkable plant will yield indefinitely if properly managed. Embree has eight-year-old plants, and Wagner says rhubarb need never be "too old" if given plenty of fertilizer.

The success of Southern California producers has been due largely to the development of improved varieties.

Mr. Reynolds is said to have paid $3500 for 5000 plants of Embree's Giant Cherry. He also grows Wagner's Giant Cherry and other improved sorts.

This grower estimates costs of production about as follows:

Culture, including irrigation, $125 per acre.

Fertilizing, $75 per acre.

Harvesting, $140 per acre.

The latter item depends, of course, upon the yield. Picking and packing cost about 35 cents a box (30 pounds net) at this ranch.

Prices vary greatly. Last year some growers received $3 a box and harvested 300 boxes per acre at one cutting. The number of crops harvested in a season depends largely upon weather and market conditions, but as a rule only two or three cuttings are made.

One advantage in growing this crop is that the harvest may be delayed pending improved market demand, and that as much or as little of the crop as desired may be pulled at any one time.

PERIOD OF BEST PRICES

The period of best prices for Southern California growers usually is from February 15 to April 15. However, in practically frostless sections stalks may be pulled during practically every month in the year, and the market often is high during the winter. Frequently good sales are made in October and November.

During the late spring and early summer northern rhubarb reaches the Los Angeles market, and the East is plentifully supplied from local sources, so that most Southern growers allow their fields to "rest," applying enough irrigating water to keep the roots well supplied and the young, tender shoots alive and cultivating frequently.

Although cultural practices vary in different localities and according to variety, most producers agree upon the necessity for fertilization. W. J. Embree of El Monte is perhaps the heaviest user of commercial plant food. He applies 200 to 500 pounds of nitrate of soda, which is spread along the furrows and disked under. In addition, he gives a top dressing of barnyard manure when available. Most growers use some form of nitrogenous fertilizer in late summer and again during the winter for the spring crop. Some believe in mowing down the stalks at the end of the season.

Mr. Embree now has about 15 acres devoted to this crop—all planted to the variety developed by himself—Embree's Giant Cherry. In addition to the returns from market sales, he enjoys a profitable demand for root divisions for propagation.

GOOD YIELD OF CUTTINGS

One two-year-old plant will yield three or four cuttings, while as many as ten may be obtained from a six-year-old plant, he states. New plantings usually are made from March to June, depending upon conditions.

Embree is recognized as one of the most successful growers in the South. He recommends copious irrigation. "Give the plants water before they show the need of it," is his slogan. Frequent cultivation, he points out, is equally essential. He states that the rhubarb is more than 95 per cent water.

Most growers plant in rows four feet apart, and three feet apart in the row—or 3630 plants to the acre. Reynolds of El Monte, however, believes it more profitable to plant in rows six to seven feet apart, and three to four feet apart in the rows. A large part of the acreage on the Subtropic Fruit Farms, under Mr. Reynolds' management, is inter-cropped in young citrus orchards. In fact, rhubarb has proved very successful under these conditions.

Mr. Reynolds believes plants grown in orchards should be at least seven feet from the trees. The yield, when it is grown as an intercrop, is reduced from one-sixth to one-fifth as compared with open planting.

Fred W. Kelsey, El Monte nurseryman and real estate operator, who grows rhubarb as a "hobby," raised it very successfully between the rows of a fig orchard.

"Rhubarb is easy to grow," says Kelsey. "Success is largely a matter of location. We are learning the futility of planting where heavy frosts are frequent."

LIKE LOCAL SORTS BEST

Unlike Northern California growers, who specialize in summer varieties such as the "Strawberry," Southern growers prefer the special types developed by local producers.

One of the most successful of these has been the "Panama," a prodigious yielder which has been widely planted. Another is "Wagner's Giant," developed by the veteran Pasadena nurseryman, who has been called "the father of the industry" in the southern part of the State.

Other varieties are the Brandywine, which many consider better than the ordinary Crimson or Strawberry, the Giant Amber, Burbank's Giant Crimson and the Senator, a newer type.

An efficient marketing association is functioning in the south, and although it does not include the Japanese growers, or in fact a number of the larger American producers, it represents a large acreage and has accomplished much during its comparatively brief existence.

El Monte may be said to be the center of the industry. A small acreage near Escondido, San Diego County, is owned by R. N. and R. G. Martin.

Mahew Norton of Montelvo, Ventura County, has about four acres. The La Habra planting totals nearly 35 acres, and one Japanese grower is said to have 25 acres. Smaller plantings are scattered throughout the San Gabriel Valley and in foothill districts.

What are (Continued on Page 5.)

South Coast Awakening to New Agricultural Development

Great Irrigation Projects—Ideal Climatic Conditions—Romance and Production

IMPORTANT events of far-reaching agricultural significance are pending in the South Coast district of California. San Diego, Los Angeles and the rich back country will share equally in the awakening that already is following recent development of water for irrigating.

For mile after mile along the Coast highway, motorists have been accustomed to seeing vast areas of fertile lands lying idle or devoted to superficial dry farming. Soon all this will be changed; the new-old magic of irrigation is working the miracle that has transformed so many sections of the semi-arid West.

To the investigator it seems at once odd and unfortunate that intensive development has taken place in many regions less favored in soil and climatic resources, while this wonderland has slumbered. For be it known that few parts of the world have a more equable climate than the coast and foothill districts lying between Los Angeles and the Mexican line.

ADAPTED TO EARLY CROPS

Established plantings here and there show the value of these lands for the production of winter vegetables, citrus fruits, early grapes and similar valuable products. And as a home place for year around enjoyment, this beautiful country bids fair to take a leading place among California's loveliest. The only factor that has held back its growth in population and production has been lack of water. Now all this is changed.

Two important irrigation projects, closely related, yet separate, have been developed. One of these is the Henshaw dam, near Santa Isabel, forming "Lake Henshaw," a body of water capable of irrigatinf more than 30,000 acres.

This project was constructed under the auspices of the San Diego County Water Company, of which William G. Henshaw, San Francisco capitalist, is president and John Treanor vice president. Another personality closely associated with the development of the South Coast is that of "Colonel" Ed Fletcher of San Diego. The engineering work has been under the supervision of the offices of J. B. Lippincott.

The other dam, which controls the flow and flood waters of the San Dieguito River, forms a reservoir known as "Lake Hodges," named after Vice President Hodges of the Santa Fe Railway, to whose vision and energy is due much of the important work that is taking place.

One of the big tracts of land which will be opened up as a result of irrigation development is the beautiful 9000-acre Rancho Santa Fe, near Del Mar, which will be irrigated from Lake Hodges.

GREAT ACHIEVEMENTS

Quietly and without publicity, a big organization, under the management of L. G. Sinnard, has been at work for months, building roads, laying water mains, constructing buildings and otherwise making ready for the new community of homes which soon will grace the rolling hills of the romantic old ranch. More than 125 men, with full complement of tractors, mules and modern equipment, have built some fifty miles of road, and accomplished a vast amount of other work.

An attractive hotel of true Spanish design and equipped with every modern convenience is nearing completion. The walls are of true Spanish adobe construction.

The hostelry is but one of a group of civic center buildings, designed by famous architects and laid out with artistic judgment, so as to take full advantage of natural scenic beauties. In fact, all construction, including private residences, must conform with strict regulations.

Not only the aesthetic properties, but also factors affecting production, have been given careful consideration. Soil and water surveys : comprehensive climatic studies form the basis for future planting of fruits, vegetables and the many specialties that are expected to add hundreds of thousands of dollars to California's agricultural wealth.

Established plantings here and there have shown the wonderful adaptability of the South Coast district to a variety of early quality products, including citrus and semi-tropical fruits on the higher lands, deciduous fruits, walnuts and winter vegetables. The best advice will be available to landowners in laying out their orchards, and in planting, cultivation and marketing.

The project differs from the average colonization plan in many ways. Every possible precaution to insure the success of each purchaser will be observed. No "shoe-string" development will be allowed. Building restrictions and other requirements will eliminate automatically the buyer with insufficient capital to finance his project. The plan is to develop a community of ideal country homes, with emphasis upon income production, desirable living conditions and wholesome environment.

NATURAL SCENIC ADVANTAGES

The natural "lay of the land" with an attractive beach only five miles distant, the city of San Diego but twenty-five miles to the south, and Los Angeles one hundred miles to the north will aid materially in the attainment of this ideal.

But it is recognized that upon the fertility of the soil and the skill with which production is controlled, will depend the ultimate success of the project. Inasmuch as a return of $500 to $800 per acre on fruits and vegetables is not uncommon in this district, the production factor is peculiarly certain. A year-around growing season makes double cropping possible in many instances. High winds are practically unknown, and there are no extremes of heat.

In fact, everything points to the success of this unique project, builded upon a foundation of both romance and wonderful natural resources. The atmosphere of the Spanish Padres is being preserved; yet the most advanced methods, perhaps, ever employed in similar work are exemplified in the general plan. Romantic past and unquestionably wonderful future are being linked by present initiative and vision. Truly the men engaged in this great work are empire builders, adding perhaps more than they themselves realize to the resources of the Golden State.

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JAS. C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS

J. D. Bixby Sr. — Robert E. Jones
Luther Burbank — W. S. Killingsworth
William Reynolds Butler — Herbert A. Shearer
Dr. J. Eliot Coit — Prof. F. H. Stoneburn
Walter H. Gardner — Helen Temple
W. S. Guilford — George P. Weldon

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

FARM BUREAU BRINGS AGENTS

A strong Farm Bureau is one of the main things which makes possible the securing of extension service agents. This reason alone would justify joining this very useful organization, believes R. D. Hodgson, Los Angeles County farm adviser. Smith-Lever workers cannot be secured by a county where less than 20 per cent of the farmers belong to the Farm Bureau. It is, therefore, to the interest of the entire community, Mr. Hodgson points out, to boost the Farm Bureau.

HOGS HAVE TUBERCULOSIS

Among the hogs slaughtered under Federal inspection in 1921, more than four million were found infected with tuberculosis. This disease is transmissable from cattle to hogs and is decreasing in the former and increasing in the latter, because there is no systematic effort being made to stamp out the ailment in hogs, as is the case with cattle. Tuberculosis may be transmitted from either of these animals to human beings, scientists declare.

BEST TIME TO BUY FARM LANDS.

One of the best times to buy farm lands is when the crop which they produce is temporarily unprofitable, because of a price slump or other unfavorable conditions. Such things usually cause real estate values to drop to an unreasonably low level, which spells opportunity for the thrifty land buyer.

California lands devoted to the production of prunes, grapes, oranges, cotton and many other crops have suffered unreasonable price depressions. Investors who have the courage to take advantage of such conditions ultimately profit thereby, because of the inevitable return of higher prices.

BETTER CITRUS CONTAINERS NEEDED?

That the standard crate used for shipping citrus fruit, particularly grapefruit, eventually will be improved upon is the opinion of many leading growers. Paper box manufacturers are working on the problem and many interesting experiments with cardboard cartons have been conducted. One grower, at least, has tried shipping grapefruit under his own brand directly to consumers, sending small cardboard containers by express. He found, however, that deterioration and injury resulted in many cases where long shipments were made, and has abandoned the plan except for short distances. Much diversity of opinion exists, but it is to be hoped that out of the experimentation and discussion will result improved methods of benefit to both producer and consumer.

CHOOSE THE FARMING PROFESSION

A California capitalist is planting 65 acres to peaches and prunes for his two nephews, who are attending the State University at Berkeley and as yet are undecided what profession to study. The uncle sees bigger money and a surer income from a Butte County orchard than from any other profession open to the average Californian. Besides, the fruitgrower remains at home and has a steady, permanent business.

A success story recently published in ORCHARD and FARM told how a young Oregonian, who had fitted himself for the engineering profession, decided to become a poultryman instead. Starting with no capital, in ten years he has made a good living and amassed $20,000 worth of property. The sure prospect of a permanent home life was what caused this young man to choose the profession of agriculture.

"What's New?"—Keeping Abreast of Agricultural Progress

Colusa Ships Many Lemons

THE shipping this season of 250 cars of lemons by the Mills Orchard Corporation, whose orchards are in the vicinity of Maxwell, Colusa County, indicates how the citrus belt is being moved northward.

Making Meat Flour

THE great surplus of New Zealand beef cattle, which cannot be marketed by usual methods profitably, has led to the manufacture of meat flour. It is claimed that the latter can be cooked more quickly than meat in its natural form, thereby effecting a saving in both time and fuel.

Fox Farmers Organize

EIGHTY-SEVEN Alaskan fox farmers recently effected an organization for the benefit of their industry, which is carried on principally on outlying islands, which possess little agricultural value. Fish heads and tails, discarded by canneries, form an important part of fox rations. There are 500 ranchers in the United States raising between 12,000 and 15,000 silver foxes, according to the Department of Agriculture. The latter is helping solve some of the difficult problems encountered in fox farming.

Adams Recommends Alfalfa

MORE alfalfa is recommended for the Imperial valley by R. L. Adams, professor of farm management, University of California, who addressed a number of meetings in that locality.

"Alfalfa growing and the feeding and fattening of cattle, sheep and hogs have a definite place in a white man's agricultural program," asserts Prof. Adams. "Imperial Valley farmers should, in addition to these industries, devote more attention to horticulture, especially the growing of grapefruit and early table grapes. A judicious acreage of early lettuce, cantaloupes and other truck crops should be maintained."

Selling Hogs Profitably

ALTHOUGH the Farm Bureau charges no more for selling hogs co-operatively than the transaction is expected to cost, a surplus of $5000 has been acquired in this manner in the San Joaquin Valley.

The commission is to be reduced to a point below cost, in order to consume accumulated profits. In spite of the acquisition of the latter, Farm Bureau members have received higher prices for their hogs than have those who sold direct to dealers.

The number of hogs being sold at auction by the Bureau is increasing, 44 per cent more being disposed of in this manner in the San Joaquin Valley during last January than for the corresponding month last year. The price averaged four cents higher.—FLOYD BYRNES.

Sell Grain at a Premium

MEMBERS of the Imperial Valley Farm Bureau Exchange obtained $5 a ton more for the $325,000 worth of 1922 grain which that organization sold than they would have received if the Exchange had not been on the job, according to F. A. Wolz, manager.

Previous to the Farm Bureau operations, Los Angeles dealers forced Imperial ranchers to pay the freight on their grain to the city, also charging freight on shipments of seed grain from the city to the valley—"catching them coming and going," according to Mr. Wolz.

Imperial farmers now obtain Los Angeles prices for their grain. As a result of the great success of this co-operative marketing, it is expected that an increased number of grain growers will sell their crop through the Exchange. The charge is 50 cents a ton, which not only pays expenses, but also builds up a substantial reserve fund.

Paulus Sounds Warning

OREGON fruit growers who contemplate solving the problem of profitable prices for loganberries by establishing co-operative canners are warned by R. C. Paulus, manager of the Oregon Growers' Co-operative Association, that such projects usually fail.

"The chief difficulty encountered in such movements," states Mr. Paulus, "is the lack of sufficient supplies to keep the cannery in operation a good share of the year. To attempt to do business with a variety of fruit is to invite failure.

"Before establishing such a cannery it would be better to market surplus fruit through other channels, even at a loss, while additional varieties are being planted and brought into bearing. Besides prunes and loganberries, which are plentiful in most parts of the Willamette Valley, strawberries, gooseberries, red and black raspberries, Evergreen blackberries and cherries should be grown. These fruits will keep the factory profitably employed most of the year, which is the secret of success in the cannery business."

Water Plenty in Tulare

THE water table in Tulare County has risen to within a few feet of the surface and there is more snow in the mountains east of the San Joaquin Valley than for 20 years, it is reported. It is believed that unusually heavy crops will result from a plentiful supply of irrigation water.—FLOYD BYRNES.

Birds Destroy Milo Maize

ONE-TENTH of the 20,000 acres of milo maize grown in the Imperial Valley is destroyed by blackbirds, according to the U. S. Department of Agriculture, which estimates the annual loss from this source at $50,000. The only practical method which has been found for preventing further losses is to patrol the fields with shotguns during the morning and afternoon feeding periods of the birds. The aim is to frighten the fowls by noises, rather than to kill large numbers. Aeroplanes are used to scare ducks away from Sacramento Valley rice fields.

Cutting Up Ranches

FOR the first time in the northern part of the Sacramento Valley there is a general movement toward the division of large ranches. Much land which hitherto has been planted to rice in Colusa and Glenn Counties will be cut up immediately into small farms. Some of the land, which has been used for rice growing, is ideal for orcharding.—M. L. WILSON.

Buying New Zealand Beef

UNCLE SAM is feeding 14,000 American soldiers at Hawaii on New Zealand beef, according to H. A. Jastro, who recently returned from the Islands. It takes sixteen days to ship beef from New Zealand to Hawaii, while meat can be moved from California to the same point in from four to seven says, Mr. Jastro states. The reason why the South Sea product is used, he explains, is because it is so much cheaper than that which is grown in the United States.

Those Who Serve You

Introducing to our readers the associate editors, regular writers and special contributors who make up ORCHARD and FARM'S brilliant staff. Each is a recognized authority; each is actuated by the common ideal of service.

XV—LEWIS Y. LEONARD

LEWIS Y. LEONARD, better known in the Sacramento Valley as "Ole," is at present Farm Adviser in Sacramento County, where he is most ably performing the duties of that office.

Mr. Leonard has had an extensive agricultural experience and a particularly broad and fundamental training. His specialty is horticulture and he is known as an expert in tree surgery. One of his hobbies is landscape gardening.

Among the many things which Mr. Leonard has done for the rural sections of Sacramento County is the movement which he started several years ago for the improvement of school grounds. At the present time dozens of beautiful school grounds in Sacramento County stand as a monument to his desire for the beautiful.

For several years Leonard was connected with the U. S. Department of Agriculture, during which time his duties carried him over a large part of Western America, thoroughly acquainting him with the agricultural problems of this area.

An untiring worker, full of zeal and enthusiasm, Leonard is ever active in spreading the gospel of better farming in Sacramento County. Under his direction, extension work in agriculture in this district has witnessed a very gratifying and substantial growth during the past three years.

Another of Leonard's hobbies is publicity and his friends agree that one of the strongest factors in the success of his work has been his liberal use of the legitimate avenues for spreading agricultural news. Situated in the most central county in the Sacramento Valley, he is in close touch with developments in that part of the State. Among his many accomplishments is skillful photography and the excellent pictures he makes indicate he has long since passed the novice stage.

Mr. Leonard contributes frequently to ORCHARD and FARM, many of his articles being illustrated with his own photographs. It is typical of Mr. Leonard's writings that he always visualizes and points the way to better things, giving his "stories" an inspirational character which makes them at once pleasing and constructive.

YOUR GARDEN of FLOWERS

by Helen Temple

OWING to the similarity of our Southern California climate to that of the West Indies, which is the native home of the poinsettia, this shrub does remarkably well here, so should not be left out of your garden of flowers. Severe frosts will kill them, so we must give them protection in the frost belts.

HELEN TEMPLE

Poinsettias are usually pruned in early April. It is practical to use the prunings as cuttings for new plants, which will bloom for Christmas if started early. Cuttings must not be allowed to dry out. Start them in sand or sandy loam, either in cutting boxes or outdoors. Young plants should not be set closer than a foot and a half apart. After they have established a root system and sent out new top growth, mulch with old manure and straw and irrigate about once a week. When pruning, cut back all old growth quite severely. This makes stronger plants and larger blooms.

In Southern California all seedlings that have formed two or three true leaves should be transplanted in early April.

HARDY CHRYSANTHEMUMS

Hardy chrysanthemums and carnations should be started as early in the spring as possible in all sections of the State. These flowers are general favorites in our gardens and are so hardy that California's climate is hardly capable of killing them.

I have been most successful with chrysanthemum cuttings set in the open ground, while carnation slips have rooted much more quickly in cutting boxes. Use sand and sandy loam about six inches deep in cutting boxes, setting the cuttings two inches apart and as deep as the first leaf, when starting carnations. Keep the boxes in partial shade and the plants well watered. They will root in about four weeks.

Chrysanthemums, if planted early, will bring an abundance of late fall blooms. When starting chrysanthemums from cuttings in the open, a trench about six inches deep filled with sand and sandy loam should be provided. Where late frosts prevail it may be necessary to provide protection for young plants, so starting plants in boxes is recommended. Young plants from healthy new growth make the finest blooms, so care should be exercised in choosing the cuttings. The latter root in about four weeks, when they may be transplanted, if necessary.

LARGEST CARNATION KNOWN

Every year brings new varieties in both the carnation and the chrysanthemum families. One of the latest carnations to find favor among enthusiasts is the Triple Alliance, the largest carnation known. It is in a class by itself. One feels certain that it is three carnations on one stem until examination reveals but one. The three sections are very large and the petals long and ruffled. The top part makes a distinct crown, with the two lower sections fitted compactly beneath. This new carnation is distinctly pink in the center, shading out gradually through delicate yellow to white at the edges, pencilled with pink. It is quite fragrant.

There are a number of unusually fine chrysanthemums. One of the most beautiful among the incurved, early pink varieties is the Chieftain, while the Hamburg late pink is the latest to bloom. The Royalty is another novelty variety. It is very large and tightly incurved, being as golden as our vanished $20 gold pieces.

SOW POPPIES OFTEN

Poppies are not easily transplanted, although a clump of California poppies may be carried in from the hills and transplanted successfully. Sow the seed thinly where plants are to grow. For successive blooms make several sowings at intervals of two weeks, or keep the flowers picked. The best poppies grow from early-sown seed. For a permanent bed of poppies which will need little or no care except during the blooming season, prepare the bed where the soil is comparatively rich. Rake in the seeds lightly, then tamp down with roller or plank. After seedlings appear keep down weeds and don't let the ground dry out. Poppies will reseed themselves year after year.

Flanders Poppy is the emblem of the American Legion and has become quite famous since the World War. The improved Shirley and the Shirley double hybrids are very fine, especially when planted in a bed. The latter offer a variety of the finer colors and are more compact than ordinary Shirleys. The Iceland poppy is a hardy perennial, flowering the first year from seed, while Oriental poppy usually waits until the second year to blossom. These flowers are very fine for brightening effects, being easily grown and very hardy.

START FLOWERING VINES NOW

In the "good old summer time" we almost live under the cool protection of a vine that in a few months has grown from a little seed. A few of the most easily grown vines are the morning glory, moon flower, honeysuckle, passion flower, hops, centrosema, wild cucumber and kudzu. The latter does not propagate from seed easily, as it does not germinate well, but root division brings heavy vines in a very short time. The centrosema vine is the dressed-up name of the well known butterfly pea, which is one of our popular climbing flowers. It is a continuous bloomer until the frost nips it. The passion flower is not hardy, but is one of our most beautiful climbers, so should not be counted out where we have room for it.

Many gardeners are planting dahlia bulbs at this time in Southern California. They are grown with success if planted early or late. Dahlia seed, however, should be sown at once. Seed dahlias will produce flowers if planted early. Quite often we grow odd flowers from dahlia seed, so we may find ourselves the originators of new varieties either in the doubles or singles.

Other bulbs which should go into the ground at this time are the Jacobean lily, tuberoses, cannas and gladiolus. The last named flower is one of the most popular grown today. A garden is not complete without some of them, especially in California where their culture is so easy.

A point of general interest among ORCHARD and FARM readers who are growers of greenhouse plants is one concerning the strawberry geranium. "It deteriorates quickly," many complain. I find this plant to be very susceptible to heat and drought. It should be grown in a cool place, protected from wind and hot sun and kept moist. It does best in a mixture of pure leaf mold and sand.

Go After Gophers Now

By O. H. BARNHILL

A DEMONSTRATION in rodent control, with special reference to gophers, was recently held at the Ord ranch (Butte County) by W. C. Jacobsen of the pest control service of the State Department of Agriculture, assisted by H. E. Paxton of the County Farm Adviser's office.

Jacobsen has had years of successful experience in fighting underground enemies, which are said to delve deeper into the earth and barricade their runways when they hear his step approaching overhead. Although the weather was very disagreeable, a large number of farmers and Gridley High School students attended the meeting, indicating that rodent control is a live subject in that district.

The demonstration was held in an old alfalfa field, where there were numerous gopher mounds. An iron probe was used to locate the subterranean tunnels and also to make an opening through which poisoned bait was dropped. The best method of setting traps was illustrated and many rodent control questions answered.

HOW TO MAKE A PROBE

The probe was made of ¾-inch water pipe, 55 inches long, and had a foot rest screwed into a T coupling 17 inches from the small end, to which was welded a sharpened rod. The other end was closed and pointed and was used to enlarge the small hole made with the other end for dropping bait into the tunnel. A small trowel or a 12-inch iron spoon were recommended for digging into the gopher holes.

Common wire traps were used in the demonstration, although other makes were exhibited. "It is advisable to plant two traps in each runway," said Mr. Jacobsen, "one on either side of the opening, because there is no sure means of knowing just where the gopher is at the time the traps are set. Push the trap well back into the hole, pressing it firmly into the dirt which has been loosened up in the bottom of the runway.

Cover the hole carefully, because if light is allowed to enter the hole the trap is apt to be sprung by dirt which the gopher will push ahead to plug up the hole in order to exclude snakes."

Sweep spuds, carrots and parsnips were recommended for bait. Samples of these vegetables were shown cut into ¾-inch cubes and dusted with powdered strychnine alkaloid, the bitter taste of which had been disguised by mixing in a little saccharine. One ounce of poison is sufficient to treat a gallon of bait.

GASSING GOPHERS EFFECTUALLY

Calcium cyanide gas or carbon bisulphite were recommended for suffocating rodents. A tablespoonful is poured onto cotton waste, corncobs or other absorbent material, quickly pushed into the hole which has been opened into the burrow and the latter promptly closed to prevent the fumes escaping. A better way is to use a small bellows, with which the fumes may be forced into the gopher's quarters.

"Drowning gophers is a good way to get rid of them," said Mr. Jacobsen, "where it is practicable to flood the field. It is essential, however, to see that none of the rodents escape to higher ground when the water drives them out of their holes. A good dog is a great help in this work."

It was explained that one reason why methods of rodent control sometimes failed was because they were not used at the proper time of the year. Gassing, trapping and poisoning are each most efficacious at certain seasons. The best time to use these measures is as follows:

April—trap and gas; May and June—trap; July, August and September—poison; October and November—poison and trap; December, January, February and March—gas, trap and poison.

EXTERMINATE RODENTS EARLY

"If rodents are exterminated before the spring litters appear, several of these 'birds' may be killed with one stone," explained Mr. Jacobsen. "The trouble, however, is that the average farmer is not roused into activity against his underground enemies until the latter's annual work of destruction is well under way and the animals are multiplying like rapid calculators."

Following is the approximate time of the year when the main crop of young gophers begin leaving the nest: Southern California, March 20; San Joaquin and Sacramento Valleys, April 1; Owens Valley, April 15; foothills of the Sierra Nevadas, April 30; northwest coast region, May 15.

W. C. Jacobsen (with probe and poisoned bait) demonstrating best methods of exterminating gophers.

Raising Rhubarb Proves Profitable

(Continued From Page 3)

the prospects for expansion of the rhubarb business, and how about future demand? Let Fred Kelsey answer this question:

"The Eastern market practically is untouched. In 1921, when there was no freeze, the association handled 12,858 crates, 30 pounds each, which were marketed as follows:

	Crates
"Sold in Los Angeles and San Francisco, Oct. to Dec.	1,874
"Sold in San Francisco, Jan. to May	2,133
"Sold in Los Angeles, Jan. to May	4,622
"Seven car loads East amounting to	4,229
"Total	12,858

"Los Angeles and San Francisco absorbed 8629 crates and the East 4229 crates; two-thirds of our output went to our two local cities. Chicago alone would take as much as Los Angeles and San Francisco if it had the chance."

What Lassen Lumbermen Eat

THREE Lassen County lumber companies spend approximately $1,500,000 a year for farm products. Susanville people, it is estimated, consume one-fourth as much more. Lassen County farmers receive only a small portion of these vast sums which are being spent locally for agricultural products.

The Farm Bureau is effecting an organization whereby the products of local ranchers will be collected and marketed in wholesale quantities to large buyers. The companies mentioned use the following quantities of farm produce in the course of a year:

Fresh apricots, 175,000 pounds; apples, 138,000 pounds; asparagus, 81,000 pounds; beets, 43,900 pounds; string beans, 9300 pounds; cabbage, 175,400 pounds; cucumbers, 3,430 dozen; sweet corn, 4440 dozen; carrots, 69,000 pounds; cauliflower, 118,500 pounds; celery 16,800 pounds; grapes, 5400 crates; lettuce (head), 699,300 pounds; watermelons, 136,000 pounds; other melons, 77,800 pounds; fresh green onions, 15,300 pounds; sacked onions, 91,600 pounds; peaches, 2750 crates; pears, 800 boxes; plums, 1260 boxes; Irish potatoes, 431½ tons; peppers, 7520 pounds; summer squash, 6800 pounds; winter squash, 19,900 pounds; tomatoes in boxes, 156,250 pounds; strawberries, 2850 pounds; other berries, 18,100 pounds; rhubarb bunches, 1450 pounds; dressed beef, 502,460 pounds; dressed veal, 335,560 pounds; dressed pork, 70,700 pounds; dressed turkeys, 13,200 pounds; live poultry, 35,100 pounds; dressed poultry, 4800 pounds; butter, 171,100 pounds; eggs (fresh), 6750 cases; hams and bacon, 144,000 pounds.

Nitrate of Soda

a natural product carrying 16% of immediately available Nitrogen, has for many years been proving in the hands of practical fruit growers that if properly used

It is Safe

Results are certain.
Its use is profitable.
It improves the fruit flavor.
Picking need not be hurried.
Keeping quality is enhanced.

If used with the acid phosphate necessary for plant feeding the soil condition is not impaired but much improved.

Fruits Cereals and Vegetables

are all benefited by its use.

Nitrate of Soda is soluble in water but is not deliquescent and may be kept indefinitely in the bags in which it is shipped without danger.

Any form of manure or chemical fertilizer may become harmful if abused in its use, but the latitude in the use of Nitrate of Soda is wider than any other form of Nitrogen. Its continued use over long periods under California conditions has demonstrated this fact.

Send for my free Bulletins

They may assist you to obtain the splendid results of many other California growers.

Dr. William S. Myers, Director

Chilean Nitrate Committee

25 Madison Avenue, New York

Save Money on Better Fence

BUY AT MANUFACTURER'S PRICES
MY CATALOG TELLS YOU HOW

BUILD an all-steel fence around your ranch and save money. My prices on highest-grade steel fencing are so low that you cannot afford to consider substitutes. I buy tons and tons of fencing which are shipped direct to my warehouses by water at a tremendous saving in freight. I share this big saving on freight with you by reducing prices.

MY STIFF-STAY FENCE—NOTE THE SPECIAL KNOT

Here is a fence that is specially designed to give long service on Pacific Coast ranches. The illustration shows the special "Pacific" knot that is so constructed as to be entirely flexible for uneven ground and open so that moisture cannot accumulate and cause rapid deterioration. Used in combination with "Red Top" Steel Fence Posts, it makes a strong, sturdy, attractive fence that will give perfect satisfaction and last for years.

Write for My FREE Book on Farm Fencing

It gives a lot of information that will be valuable to you. Also quotes my low prices on all my high grade fencing products.

Red Top Steel Fence Posts — **Square Deal Gates**
Pacific Stiff-Stay Fence — **Monarch Wrap-Stay Fence**

FREE BOOK

Harry Baylies, "The Fence Man"

Specializing in Practical Farm Fencing

Dept. 208 432 Pacific Finance Bldg., Los Angeles, Cal.

Going to Build?

Send for our Price List of Lumber. We save you middleman's profit. Sash, Doors and Builders' Supplies.

Contractors' and Builders' Supply Co.

1401 Fifth St. Oakland, Cal.

Bee Hives and Supplies

Headquarters for Everything Needed in the Care of Bees

Send for late price list and free booklet.

The A. I. ROOT COMPANY, Dept. B,
1824 E. 15th St., Los Angeles, Cal.

PACKERS OF AIRLINE HONEY

Home Farm Happenings

By One of Us

MULES ARE IN DEMAND

A mule buyer has been around the neighborhood looking for good, big, young stock. We sold an unbroken mule coming four years old for $175, and a neighbor sold some a little higher than that.

There are more horses and mules at work in this part of the country than there have been for some time—and there seems to be good reason to expect good mules and horses to be in demand for many years to come.

TRADES TWO FOR ONE

About three years ago John attended an auction sale at a neighbor's place. A good-looking team, with harness, was "put up." John bid $100 and got the team.

The horses were young, of good size, rather upstanding, in good condition—and the harness was worth $25. He wondered what was the matter, and soon found out. They were sold because they were too "high-lived" for ordinary farm work. One was mean about taking halter and bridle and one was balky at times. The ordinary hired man had lots of trouble with them.

Our man Tom can handle almost any horse, however, and they have done a lot of hard work for us. But they are not pleasant animals to have around and have caused a good deal of profanity; therefore, when a horse trader came along the other day looking for a trade, John traded him the two for one good mule. It was a funny trade, too, for both John and the trader are perfectly satisfied and both are sure the other got the worst of it!

APRIL NORTH WINDS

"The ground is sure in fine shape now," said John the other day, as we walked through the prune orchard. "Every bit of rain we have had all winter has gone into the soil and it is thoroughly soaked all the way through," he continued.

"But we mustn't forget the April north winds," said I. "Remember that we never yet have been quite as smart as old Mr. North Wind. Every year we swear he will never catch us again, and every year he does; every year there is some part of some field that we do not get worked up in time to save the moisture."

"Yes, that's right," said John, "but I believe we can corner him this year. When the ground gets just right to work we've simply got to fly at it and not let anything else interfere until we get all of it in shape. Every year we have had some rush job and we have done it, hoping that we might get another shower of rain to put the soil in shape to work again. But each time we have missed it, and we ought to learn our lesson sometime and do the thing right."

SCORE ONE FOR THE MULES

A little thing happened this week that makes us like horses and mules better than ever. And, while the tractor involved in the case had bad luck, it does not prove anything against tractors—for they have come to stay.

When the spring rush is on, we usually hire some teams to help out—and generally a tractor—the latter especially for plowing and discing the orchard.

Well, this week we had a big, fine four-horse team from one neighbor and a tractor from another. Both started to work in one field we were getting ready to seed to alfalfa. At first the tractor seemed to have a lot the best of it—moving considerably faster than the team. Then, after a couple of hours, something happened to the steering apparatus of the tractor, and it was laid up for four days.

The team kept right at it, and the land is prepared and seeded. The way conditions have been for the past two or three years, this time we have gained with the team, and would have lost had we been depending solely on the tractor, will mean the difference between a stand of alfalfa or no stand.

We realize there is a big place for the tractor on Pacific Coast farms—that their number is increasing and will continue to increase. And in some cases the speedier work of a tractor when time is the determining factor may make the crop. It all depends on circumstances—but horses and mules are wonderfully dependable.

JUST ONE

Small order will in time convince you of the SUPERIOR QUALITY of

Geo. C. England's

Southern California Single Comb White Leghorns

both as to layers and good standard type as well.

TRAPNESTED

Every day in every year since October, 1912.

Our method of packing hatching eggs will insure you of safe arrival to any address. An order for

JUST ONE

Setting is all I am asking you for now.

GEO. C. ENGLAND

P. O. Box E-337,
Inglewood, Calif.

KILL THEM ALL

Every Rat and Mouse Easily Destroyed by New Discovery. Not a Poison.

Absolute freedom from rats, mice, gophers and all rodents is now assured everyone through Hick's Rat-Kill. No more trapping or poisoning only a few; kill every one.

Hick's Rat-Kill kills rodents only. Harmless to children, pets, poultry and stock. Spread anywhere. Rats eat it and die quickly outside, hunting water. No smell. Endorsed by Farm Bureau Experts. Proven by hundreds of thousands of satisfied users.

Mr Burch says: "Rats were greatest pests. House, barns and all outbuildings were full of them. Haven't seen one since using your Rat-Kill."

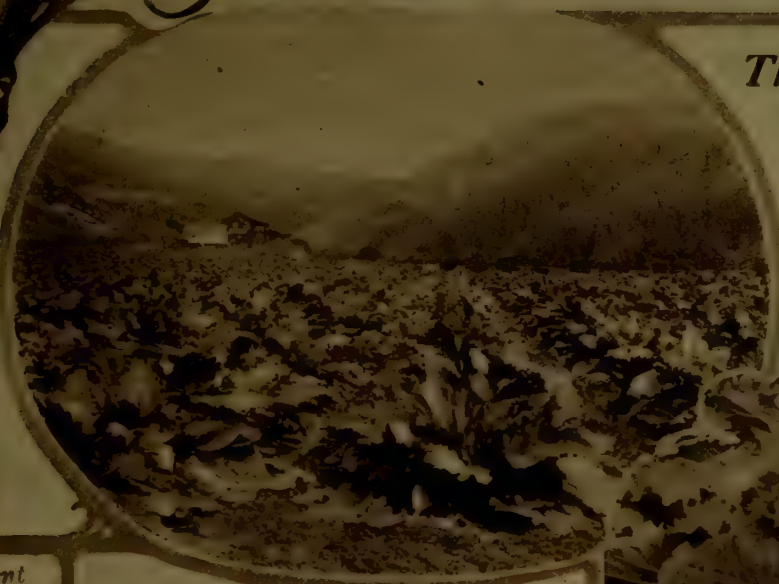
Send No Money—just your name and address to Chas M Hick & Company, Dept. 213, 1018 So. Wabash Av., Chicago, Ill. Mr. Hick is so confident that Hick's Rat-Kill will kill every rat that he will send you two large $1.00 packages (double strength) for price of one. When they arrive, pay postman only $1.00 and postage. If not absolutely satisfied after 30 days' trial, your money will be refunded. No one need hesitate to accept this offer as it is fully guaranteed. Two big Chicago banks say Mr. Hick will do exactly as he agrees without argument. Write today before this trial offer is withdrawn.

Cook With Coal Oil Gas

The simplest and most economical coal oil gas burner ever known has been patented by Leonard Conow of San Francisco. This great invention is entirely different from other burners now in use. Fits any wood or coal stove. Heats oven and water-back. No priming, no roaring, no carbon. Just turn a valve and get an intense heat that is regulated at will. Cheaper than coal or wood and better. Brings happiness into the home.

To prove that the Conow Burner is exactly as represented, the manufacturers agree to send the outfit on 30 days' trial and let you see how it works before deciding to keep it. Write today for free literature, which explains all. CONOW BURNER CO., 1[illegible] Columbus ave., San Francisco, Calif.

The Rhubarb Harvest



The "Makin's" of Many Pies

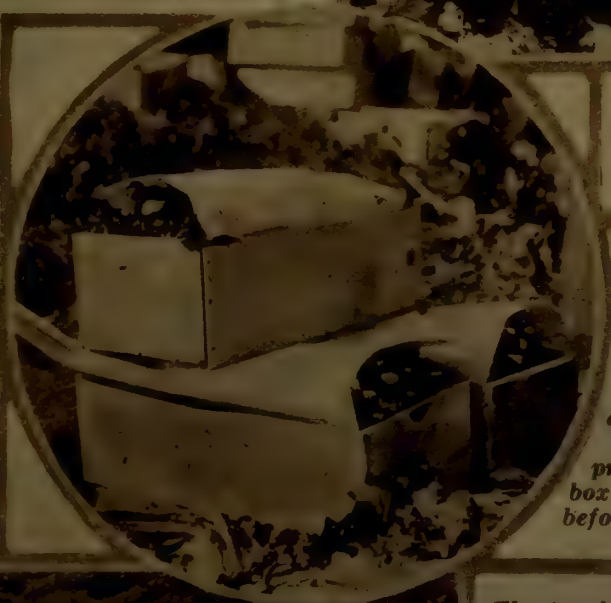
WITH more than 150 acres (estimated) devoted to the production of rhubarb, Southern California has developed a profitable winter specialty. The bulk of the crop is marketed before the Northern California pie-plant is harvested.

R. L. Reynolds, president and manager of the Subtropic Fruit Farms, La Habra, one of the largest producers.

Rhubarb has been called the "fruit tree of the vegetable kingdom." Once established, the plants yield for several years. Practically frost-free locations are desirable for winter production. The per-acre yield is enormous.

Harvesting the crop. The stalks are "pulled" and laid in piles in the field. The pickers select the larger stems, leaving immature stalks for later use. The time of harvesting depends largely upon market and weather conditions.

Improved varieties are grown in the Southland. The Giant types are preferred. Commercial producers have paid as much as 75 cents each for root divisions of desirable sorts.



The stalks are trimmed with a sharp knife and laid in paper-lined boxes holding about 30 pounds. Keeping and shipping qualities have been improved greatly by selection and acclimatization.

Below are shown packers at work in the field. Stalks not up to the standard or showing blemishes are discarded.

To the left are crates ready for the press. Each box is weighed before nailing.

The top is nailed on the box while it is held in the foot-power press as shown. The "trade" desires uniformity of pack, with stalks of solid color and equal size. The rhubarb association is attempting to standardize the pack on a quality basis.

The rhubarb illustrated is the Embree's Giant Cherry variety. The originator is said to have been offered $35,000 for the exclusive right to propagate this type.

Why Dairymen Come to California

By ROBERT E. JONES

THE dairy cow can do more for the upbuilding of agricultural California than a dozen chambers of commerce. It seems strange that our land developers and subdividers do not talk more about dairying to prospective settlers from the Eastern States.

California real estate salesmen have a great deal to say about our spectacular crops, such as grapes, oranges, peaches, prunes and various vegetables, but overlook their best bet—the dairy cow.

It is really surprising how many excellent "talking points" the California industry possesses. It will pay all who are interested in the development of the State to make a careful study of such arguments, for they may be used to bring here a most desirable class of settlers.

On the other side of the Rocky Mountains there is a large reservoir of trained dairymen from which to draw, while the supply of trained growers of California specialty crops is scant.

TRAINED DAIRYMEN SUCCEED

This is a point of great importance, because one of the main reasons why settlers fail in a new country is because they are untrained in the profession they attempt to follow. The principles governing the production of California fruits and vegetables are quite different from those employed to raise crops in the Eastern States, but dairying methods are much the same everywhere. A man who has made good money in milk and butter production can engage in the dairy industry almost anywhere, with a reasonable assurance of success.

From the land seller's standpoint, a dairyman is an especially desirable customer. He is more likely to meet his payments than a fruit grower, because a milk cow begins to pay dividends right away, while trees require several years to become profitable.

The following points may be presented to an Eastern dairyman who is a prospective California land buyer:

BUILDING EXPENSE IS LESS

Your overhead for buildings will be less in California than in States which have hard winters, where cows must be kept indoors six months of the year.

Your feed will cost you less than in other States, because of our long growing season, which gives us green alfalfa nine to twelve months of the year, depending upon what part of the State in which you settle. This statement may be developed to a highly convincing degree by the presentation of figures from the State and Federal Departments of Agriculture and by stories of actual experiences of dairymen here in California.

A cow, other things being equal, will produce more milk for a given amount of feed in California than where the climate is colder, because she does not require as much feed to keep her warm. This is self-evident. We all know we eat less in warm weather than in cold. It's the same with a cow.

Figures of the U. S. Department of Agriculture show the average annual yield of milk per cow, in pounds, to be as follows:

United States	3412
Iowa	2709
Illinois	3044
Minnesota	3044
Michigan	3965
Pennsylvania	3990
Wisconsin	4016
New York	4317
California	4610

These figures are significant. The only States that approach California in yield per cow are Wisconsin and New York, where dairying has been developed to a high degree of efficiency, where better breeding has been carried on intensively, and where there is a large percentage of high-producing pure-breds.

California has good markets for dairy products. The price of butter in San Francisco for the last two years ranged two cents above Chicago; formerly Chicago always averaged above San Francisco. California people each eat nine pounds more butter a year than does the average inhabitant of the United States. California is importing butter from other States; yet recent export figures from the port of San Francisco show there is a large and increasing demand for California dairy products in the Orient, South American west-coast countries, the Philippine and Hawaiian Islands. All this indicates that there is a good market here and its future is assured.

California bankers are becoming more and more liberal in aiding dairymen in the purchase of good cows. They will help finance the dairy settler. In the dairy districts of California we find bankers are of the greatest help. They back our "better bull" and "better breeding" campaigns and are now actually learning to base their loans on the productive value of a cow, instead of her beef value.

The California dairy industry has a well-established organization, the California Dairy Council, to advance the interests of this business along broad educational lines.

This splendid herd of Holsteins and set of dairy buildings are at Napa State Hospital.

A Jersey dairy in Stanislaus County. These contented cows seem at home.

String of heavy-producing Holsteins at the Jane Garden farm, property of Fred W. Kiesel, financier and purebred stockman of Sacramento.

Dairy scene in the Sacramento Valley, sometimes called the Holland of America because of the similarity of the favorable dairy conditions in both countries.

Reclaiming Dredge Despoiled Farm Lands

By O. H. BARNHILL

TWENTY years ago J. H. Leggett sat upon a pile of rocks, gazing disconsolately over the wreck of his 175-acre farm, which gold dredgers had turned upside down, leaving huge heaps of stone and ridges of rocks as far as the eye could reach.

Underneath a million tons of worthless material lay excellent fruit soil, with an abundance of water for pump irrigation. It seemed a shame to abandon the land, which lay near the Feather River, close to the city of Oroville.

Why not utilize the surface rocks for road material? They were of fine quality for this purpose, being hard and sharp when crushed into suitable sizes. A deal accordingly was made with a nearby rock crusher company, which paid $100 an acre for the privilege of removing the upper strata of stone from 175 acres of the Leggett farm.

THREE KINDS OF CROPS

Soil which had yielded a crop of gold was thus made to give up a crop of rocks, after which the owner turned his attention to making it produce crops of fruit. Several acres were leveled and planted to figs, grapes and cherries, amid the jeers and scoffings of incredulous neighbors, who freely predicted complete and final failure.

Irrigation water was easily pumped from a shallow well, but applying it to the trees and vines proved a difficult matter. Large and small gravel made the ground so porous that water could not be conveyed through ditches, nor by the latter distributed to the root systems successfully. The problem finally was solved by the use of iron pipes, from which the water is sprinkled onto the grapevines and fruit trees. No cultivation is given.

Years of variety tests indicate that black figs, Tokay grapes and a kind of sweet cherry called the Black Oregon, do best on such reclaimed land.

The growth made by these trees and vines and the large crops of fine fruit which they bear, standing in what appears to be a solid bed of rocks, taxes the credulity of those who are unacquainted with local conditions.

Upon examination, sufficient soil is found between the rocks below the surface to feed the roots of tree and vine.

FRUIT RIPENS EARLY

But what is the advantage of growing trees in such rocky soil? Mr. Liggett was asked. "Earliness," he replied. "The early bird catches the high price worm in the fruit market. Our grapes ripen two weeks ahead of those grown on ordinary land in this region and are a month ahead of Lodi vineyards. We get $2 to $2.50 per 23-pound box—10 cents a pound—which pays us well for climbing over the rocks.

"Oranges grown in our test plot ripen the latter part of September, but require too much water to be profitable."

A number of eucalyptus trees were planted on some unleveled land nineteen years ago. In that time the trees have thrice been cut down for wood, the stumps now supporting a fourth crop. The inhabitants of an apiary find this a congenial place to spend the winter.

Upon a small plot of ground which escaped the devastating dredge, vegetables, cherries and small fruits are produced profitably. Lettuce is the standard winter crop, being marketed from January to June. Los Angeles head is the variety grown. Tomatoes ripen ten days or two weeks ahead of others raised near Oroville and are sold for 8 to 10 cents a pound, which is several times the usual price paid for this vegetable.

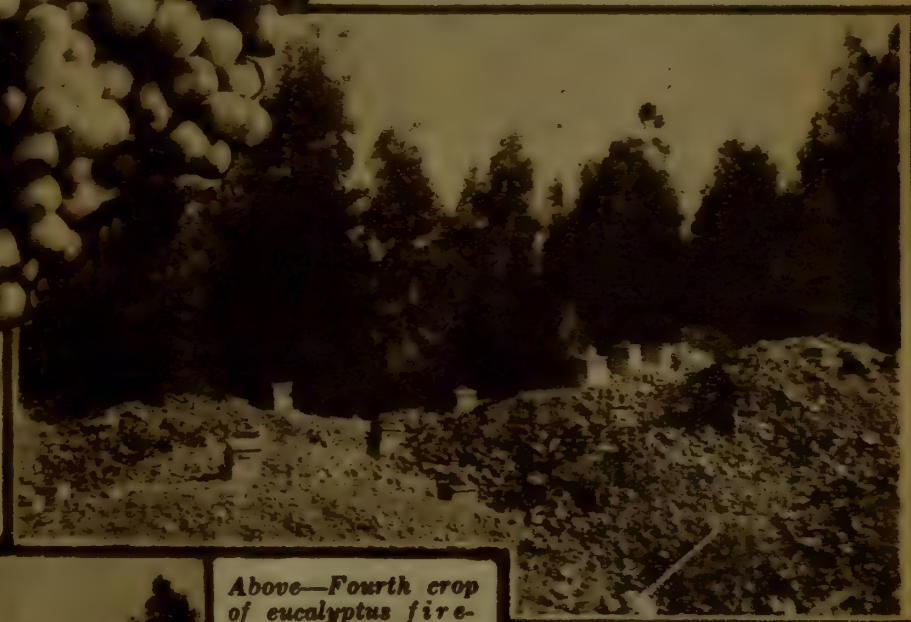
OTHER TREES TESTED

Possessing a love for experimentation, Mr. Leggett has planted a great variety of trees and plants. One of the former is called the Australian beef tree. It resembles in appearance the pine, but when the needles are closely examined they are found to look like small rushes, while the seed pods, or cones, are no larger than the end of one's finger. The strangest thing about this tree, however, is the way it affects cattle, who appear greatly enraged thereby, tearing young specimens to pieces with their horns.

Mr. Leggett does not advise any one to rush into the business of growing fruit on reclaimed dredger land. In the first place, the market for rocks is quite limited, while all dredged land does not contain enough soil for fruit growing. Mr. Leggett's successful experiments indicate, however, that there are interesting possibilities in this line of work.

Can Rocks Produce Figs and Grapes?

"NOBODY but Leggett would be foolish enough to plant grapevines and fig trees on a rock pile," declared his Butte County neighbors. Seeing the success of Leggett's venture, however, others are planning to follow his example. Early ripening is the great advantage of fruits grown on land covered with rocks, which absorb the heat of the sun during the day and give it out at night, according to Farm Adviser Drobish.



Above—Fourth crop of eucalyptus firewood grown on dredged land in 19 years. Below—Harvesting winter lettuce. Australian "beef tree" in background.

Grapes grown on dredged lands ripen two weeks ahead of others.

Mr. Leggett and one of his fig trees. This tree is growing on reclaimed dredged land which is so rocky that weeds can't find a foothold, rendering cultivation unnecessary.

Control Woolly Aphis

THE woolly aphis is one of the hardest of all orchard insect pests to control. After they have been cleaned off the limbs they will bob up serenely the following season, causing the orchardist to wonder where they came from. The explanation is simple: One form lives upon the roots of trees, afterwards crawling up the trunk and out onto the branches.

Any good contact spray, such as Black leaf 40, will kill the aerial form of the woolly aphis, which betrays its presence by a cottony exudation. The underground form, however, is harder to destroy. Dr. A. M. Morrill commends running a probe 15 to 20 inches down into the ground and pouring in two or three ounces of carbon bi-sulphide, plugging up the hole so the fumes will get in their deadly work. If the chemical comes in contact with the roots the latter will be deadened.

Another method is to remove several inches of dirt around the trunk of the tree, making a circle four or five feet in diameter, then sprinkle on a few pounds of tobacco dust. The difficulty with this plan lies in finding the tobacco dust. Cigar stems can sometimes be procured from cigar makers. A 10 per cent solution of Nicodust may also be used in the fall or early winter, so that the rains will leach the nicotine down into the ground.

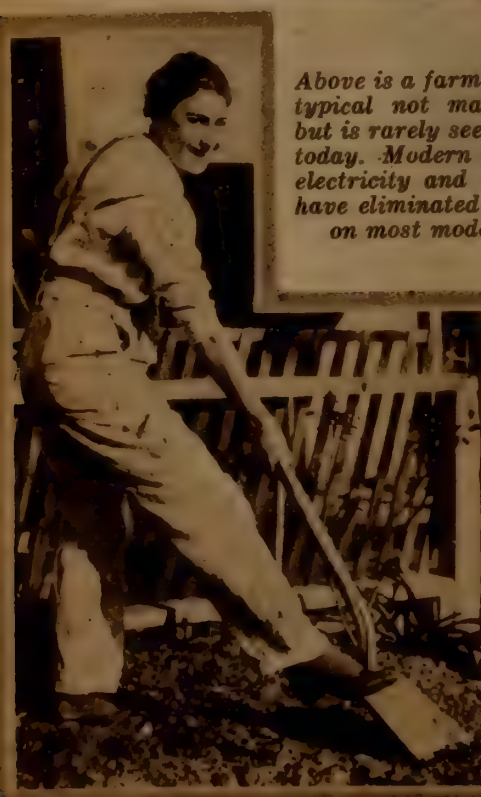
County Farm Adviser Hodgson of Los Angeles tells how J. E. Calkins of Covina, who has an apple orchard at Tehachapi, has had excellent success with common kerosene. Authorities agree that kerosene will kill apple trees, but Calkins uses it right along without harming his orchard. It would not be safe, however, to spray with this material in the moist coast regions, Mr. Hodgson points out.

Fair Feminine Farmers

It looks as though Mrs. Roy Cluver would experience some difficulty in taking home this trio of baby porkers.

Although the "farmerette" is not coming in for as much publicity as she received during the war, she is still on the job, with her sleeves rolled up. This young woman handles a heavy tractor successfully.

The diversity of California products is shown by the prize corn (above) and the Sacramento Valley tobacco at the left. Both grown by women!



Above is a farm scene that was typical not many years ago, but is rarely seen in California today. Modern water systems, electricity and the gas engine have eliminated such drudgery on most modern ranches.

Miss Louise Fuldy lives in San Francisco, but that doesn't prevent her delving in the soil. She produced an excellent crop of "spuds" in her back-yard garden.

Finderne Fayne, a prize producer, property of the Somerset Holstein Co., is milked by a woman.

New Way to Rid Poultry of Lice

Rev. G. R. Mente Tells of Amazing Discovery Which Keeps Hens and Chicks Free From Vermin

Few Drops of Liquid in Drinking Water Does It—No More Dusting, Spraying or Greasing

"I have used your remarkable Lice and Mite Remedy with fine results," writes Rev. G. R. Mente, Methodist Parsonage, New Washington, Ohio. "It proved all you claimed for it. Mentioned this at a Farmers' Institute a few weeks ago. Consequently, farmers by the dozen have been after me ever since to find out where and how they could get it. Rush me $5.00 worth to help out. Your remedy not only does away with Lice and Mites, but it has put a stop to the poultry losses in this community. You are a great benefactor to poultry raisers."

Easy and Simple to Use

This remarkable new discovery which Rev. G. R. Mente used is Imperial Lice and Mite Remedy. Just a few drops occasionally in the fowls' drinking water makes Lice, Mites, Ticks and all vermin go like magic. No more disagreeable and unsanitary dusting, spraying, greasing or dipping. Equally good for Chickens, Turkeys, Ducks, Geese and Pigeons. Fine for baby chicks and makes them healthier, sturdier and grow faster. All poultry raisers know that sickly, lice-infested hens cannot lay or have good hatches. Vermin sap the very life and strength of hens and baby chicks. Stop these losses now. Guaranteed not to affect eggs or flesh of fowls in any way. Also a splendid egg tonic and blood purifier. Costs but a trifle, on money-back guarantee of satisfaction.

White Diarrhoea Remedy Free

(Regular $1.00 Size Package)

At last a sure treatment for this dread disease. No muss. No fuss. Comes in condensed tablet form to be dropped occasionally in chicks' drinking water. Raise every chick hatched. Economical to use. Be prepared. These remedies should always be on hand.

SEND NO MONEY. Just your name and address to Imperial Laboratories, Dept. 6289, Kansas City, Mo., for one regular, full size $1.00 bottle of Imperial Lice and Mite Remedy (double strength), and they will include free of cost, a regular $1.00 box of Imperial White Diarrhoea Remedy. Pay postman only $1.00 and few cents postage on arrival.

If you have a large flock, this Special Introductory Offer also applies on a double quantity of both remedies—two regular $1.00 bottles of Lice and Mite Remedy, and two regular $1.00 packages of White Diarrhoea Remedy at an additional saving all for $1.75. If you prefer the larger quantity, simply specify that you be sent this regular $4.00 value for only $1.75. Readers risk no money, as Imperial Laboratories are fully responsible and will refund the cost on request any time within 30 days.

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Equipped with
Standard Keyboard

Here is the NEW 1923 OLIVER TYPEWRITER, the finest, fastest and most perfect typewriter ever built. It is equipped with the standard 8-row keyboard so any typist can use it at once, and anyone who learns on it can operate on any other machine. Easiest typewriter on earth to learn on. You can SAVE $25 to $50 or more, on a NEW from-the-factory, 1923 model Oliver if you'll write AT ONCE. Let us tell you why and HOW we can sell this wonderful standard make typewriter at so low a price. The 1923 Oliver is the climax of 28 years of typewriter manufacturing. It is the fastest, most quiet and easiest typewriter to operate. WRITE TODAY for FREE Catalog and interesting free TEST TRIAL offer, prices and easy terms. Test it a week free at our risk. Act at once, before you forget.

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From Pittsburgh, Pa. $97.25

Prices Smashed on this better, faster cutting machine. Saws logs, limbs; falls trees. 10-year Guarantee. Cash or Easy Terms. Free Book and Special Offer. Write quick before sale ends!

OTTAWA MFG. COMPANY

2211Q Wood St. OTTAWA, KANS. Room 2351Q Magee Bldg. PITTSBURGH, PA.

Big Money Boring Wells

Have water on your own farm. In spare time make wells for your neighbors. It means $100 extra in ordinary years, double that in dry years. No risk—no experience needed.

Outfits for Getting Water Anywhere

Earth augers, rock drills and combined machines. Engine or horse power. *Write for easy terms and free catalog.*

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100% PROTECTION FOR LIFE

from *one* vaccination with Cutter's Liquid or Solid Blackleg Aggressin. Absolutely safe. Cutter's Solid Aggressin Injectors work just like Blackleg Pill Injectors. If Cutter's Aggressin is unobtainable locally, write

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"The Laboratory that Knows How"
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N.B.—Old Style Powder and Pill Vaccines still made for those who prefer them

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Bee Notes

By J. D. BIXBY SR.

Destroy Foul Brood

WHEN American foul brood is found at this season, it is best to brimstone the bees and render the combs into wax, as the colonies usually are too weak to be worth saving. In some cases, however, it pays to combine such colonies into one or two strong swarms, shaking them in the usual way and providing them with a good young queen.

If European foul brood is discovered, unite enough colonies to form one big strong swarm. Remove the combs containing diseased brood and give the bees the best queen you can spare. A large force of bees is the most effective means of cleaning up this disease.

Yellow Thistle

YELLOW star thistle is a valued source of choice honey to the Sacramento Valley beekeeper, but a great pest on farm land. It is known botanically as Centaurea Cyanus, and is first cousin to the beautiful Centaurea of our flower gardens and to the Napa thistle of Tocalote (knee thistle) that infests the stubble fields all over California.

From an almost unnoticed weed in the Sacramento Valley a dozen years ago this weed has spread over an enormous acreage. It has worked its way south to the lower part of Monterey County, where it is appearing along the irrigation ditches.

Overflowing rivers have been the chief instruments for the distribution of star thistle. On overflowed lands it often reaches a height of eight feet or more and is so thorny that cattle cannot penetrate a thicket of these weeds.

This plant pest yields excellent crops of very light amber honey from May 15 to June 30, or later, which sells readily to Eastern buyers, often under the name of "Shasta" honey.

In 1921 several Southern California beekeepers "made a killing" by moving bees by rail to Butte County and securing a large tonnage of star thistle honey. In 1922, however, the yield was so small that little profit remained after the cost of moving was paid.

Orange Honey

WHEN the writer came to Southern California from the buckwheat honey section of New York twenty years ago he was surprised and delighted in the springtime to find cement walks wet with delicious nectar from orange blossoms above. He at once decided to save some of the fragrant nectar which was going to waste. Local beekeepers told him it could not be done, explaining that the blooming season came too early, the days were too short, nights too cool, fogs too frequent and, above all, the colonies too weak.

Two years later I marketed several hundred cases of beautiful white orange comb honey. The following means were employed to save this valuable crop:

The bees—good, common hybrids—were carefully prepared for winter and given abundant food stores. As spring approached and pollen became more plentiful, each swarm of bees was fed, on bad days only, about a tablespoonful of sugar syrup mixed with honey, to stimulate them and keep the queens laying.

Orange trees come into full nectar-producing bloom from March 10 to April 10. About 30 to 40 days before these dates the apiary was gone over carefully and the number of frames containing sealed brood noted. All colonies having more than three were strengthened by adding combs of food drawn from hives having three or less, until each strong colony had at least six frames of brood.

All completed colonies were given a super of brood combs to afford the queens more room. Where run for comb honey these brood combs were removed and section supers supplied, as soon as nectar began to flow freely.

Practically all bees were shaken from the combs when transferred to avoid getting the queen. The weakened colonies were left with no sealed brood and, consequently, with a disproportionate number of nurse bees. It is surprising how fast they will "come on"; give them an extracting super and let them "go to it."

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Strong, vigorous little white Leghorn chix, having the ideal combination of pedigree and vitality, *chix that will grow, thrive and produce*—can be ordered here now!

These little huskies are produced, without forcing, from ACCREDITED HATCHERY flocks that have unlimited range 365 days in the year. Males are pedigreed, with a record by sire's dam of from 240 to 297 eggs per year.

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The kind that live and thrive, lay and pay. We hatch from purebred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 12½c; Reds, 16½c; Barred Rocks, 17½c; White Wyandottes, 26c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELEC-CHICK HATCHERIES, Dept. "L," Burbank, Calif. References: State Bank of Burbank.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

HUSKY CHICKS from our 200 egg S. C. White Leghorn 2-year-old hens, mated to cocks of famous egg strains, $15 per 100. HATCHING EGGS, $7.50 per 100. Customers write they lose only 1 to 3 per cent. Also White Plymouth Rocks, Black Minorcas, Anconas. Laying hens, pullets and cockerels. PURE BREED HATCHERY, Route 1, San Mateo, Cal.

WHITE LEGHORN BABY CHICKS from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: February, $16; March, $14; April, $12.50; May and June, $12. Safe arrival of full count live, strong chix guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 418 Sixth St., Petaluma, Calif.

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BUFF LEGHORNS ONLY!

BABY CHICKS, $16 per hundred. Don't buy chicks until you get my free circular. MRS. W. T. WHEELER, Berkeley, Calif., Rt. 1, Box 496-E.

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WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

BROWN LEGHORN PRIZE STOCK BABY CHICKS & EGGS. GREAT OPPORTUNITY TO QUALITY BREEDERS. WE OWN CREATOR, INGOMAR, FIREFLY—BEST ON COAST. CASA DE ROSAS, CARMEL, CAL.

CHICKEN FEED CUTTER — Only $8.50. Hundreds used. Prepaid anywhere. Write for Feed Cutter catalogue. ARNOTT & CO., Inc., Wholesale Implements, 112-118 S. Los Angeles St., Los Angeles.

SOMETHING GOOD in WHITE LEGHORN CHIX—Best strains at reasonable prices. All popular varieties hatching each week. LINGO-DELL RANCH, Eleventh and Verdugo Sts., Burbank, Calif.

S. C. WHITE LEGHORN BABY CHIX from our own bred to-lay stock. Our prices are right. Model Poultry Farm. W. C. Smith, Prop., Corning, Calif. Established 1904.

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S. C. WHITE LEGHORN BABY CHICKS—McFarland strain, $8-$10 a 100. Mail orders C. O. D. Safe arrival. Hatcherymen's Ex. 5872-A, Moneta ave., L. A.

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DRYDEN POULTRY BREEDING FARM, Concord, Calif.—High-producing O. A. C. White Leghorns and Barred Plymouth Rocks, Pedigreed cockerels. Eggs for hatching.

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If you want any, don't just buy anywhere, but get them direct from the incubators of a hatchery where "Quality" is the watchword. Our "Quality" chicks are electrically hatched, strong and sturdy, and from good stock. All leading varieties. We specialize in very choice S. C. White Leghorns from hens of very heavy egg-yielding reputation. Hatching eggs and electric brooders. Write for prices.

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Capacity, 125,000 eggs.

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CERTIFIED White Leghorn Quality Chicks at Utility Prices. Choice free range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.50 per 50; $12 per 100. Special prices 500 and 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1899. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 Seventh St., Petaluma, Calif.

GET GOOD CHICKS—White Leghorns, R. I. Reds, Barred Rocks. Hatches every week. From birds selected for egg type, carefully culled. Safe arrival guaranteed. Write for circular. Booking now for 8 weeks' old White Leghorn pullets. The J. H. STUBBE POULTRY RANCH & HATCHERY, Box 67-C, Palo Alto, Calif.

WHITE LEGHORNS—Chicks and hatching eggs from individually selected, orchard range birds. An unusually alert, vigorous egg-laying strain of real merit. Progressive poultrymen demand the best. Surprisingly low prices; ask for them. Curtis White Leghorn Ranch, R. 2, Box 29, Gardena, Calif.

BOURBONS—Round breasted, compact, quickly maturing. Ready for the early, high market. Large flock; high winners. Eggs now. Buff Orpingtons; males, eggs, chicks. Free catalog. THE FERRIS RANCH, Grand Ave., Pomona, Calif.

SPENCER turken, a new turkey-chicken. Large fowl, meat turk. flav. Avg. 200 eggs. Booklet for stamp. Spencer, R. 1, Santa Cruz, Cal.

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CARMEL MAMMOTH BRONZE TURKEYS, BEST IN CALIFORNIA; GOLDBANK-COPPER KING STRAIN; BABY TURKS AND EGGS. WONDERFUL FOUNDATION STOCK AT RIGHT PRICES. ORDER NOW. Casa de Rosas, Carmel-by-the-Sea, Calif.

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CHOICE GLADIOLAS at reduced prices—12 bulbs, all standard named varieties, regular retail price $1.50 to $1.75, sent postpaid for $1. 30 bulbs for $2. ROSEDALE FLOWER GARDENS, Pacific Grove, Calif.

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KENTUCKY NATURAL LEAF TOBACCO—Chewing: 5 pounds, $1.75; 10 pounds, $3. Smoking: 5 pounds, $1.25; 10 pounds, $2; 20 pounds, $3.50. Send no money. Pay when received. FARMERS' CO-OPERATIVE TOBACCO UNION, Paducah, Ky.

HOMESPUN TOBACCO—Chewing, 5 lbs., $1.75; 10 lbs., $3; 20 lbs., $5.25. Smoking, 5 lbs., $1.25; 10 lbs., $2; 20 lbs., $3.50. Send no money; pay when received. CO-OPERATIVE TOBACCO GROWERS, Paducah, Ky.

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Have your own wool made into Batts, Comforters and Mattresses; old wool bedding made new. Write for prices and shipping tags. CRESCENT BATT & BEDDING CO., Stayton, Oregon.

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California Irrigated Lands

NOW OPEN FOR SETTLEMENT to experienced farmers only. In tracts of 40 acres or less. Located in the heart of Fresno County, with a population of 125,000.

If you are a REAL farmer with $5000 capital or credit, or have dairy stock or farm equipment for development, we can locate you on 40 acres of this land on a cash payment of only $1000. Balance 12 years at 6%. Applications for these tracts of 40 acres or less WILL BE ENTERED IN THE ORDER RECEIVED.

These rich irrigated lands are suitable for deciduous fruits, grapes, vegetables, alfalfa, hogs and poultry. Especial opportunity now for Dairymen. Good roads, modern schools, churches, railroad and auto bus transportation. Creamery being built now.

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Write for free descriptive literature to W. H. Jones, First National Bank, San Joaquin, Fresno County, Calif.

MR. AND MRS. POULTRY FARMER—The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than those we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been Hoganized. Prices for April are as follows:

	50	100
White Leghorns	$6.00	$11.50
Rhode Island Reds	9.00	18.00
Barred Plymouth Rocks	9.50	18.50
Anconas	9.00	18.00
Brown Leghorns	8.00	15.00
Buff Orpingtons	9.50	18.50

May we not have your order again this year? Conkey's Buttermilk Starting Food will raise healthy chicks.

ANSEL W. ROBISON,
1196-98 Market st., San Francisco, Calif.

P. S.—WE ARE THE PACIFIC COAST AGENTS FOR BUCKEYE INCUBATORS AND BROODERS. SEND FOR CATALOG.

THE CHARLES WEEKS SYSTEM OF INTENSIVE POULTRY AND BERRY FARMS. ONE ACRE AND INDEPENDENCE, or the fine art of earning a comfortable living on one acre in California. For those who desire to dwell in sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles. Write for literature. Charles Weeks, Owensmouth, Calif.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners. SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

FINE 180-ACRE DAIRY RANCH—Fully equipped, near the County Seat; 350 per acre, including 40 milk cows, 20 head of cattle, teams and farming implements; easy terms. For particulars, address Harry Miner, Madera, Calif.

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ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

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HONEY—California's best, direct from producer to you. It's pure. Just as the bees made it. 5-lb. pail, $1.00; 10-lb. pail, $1.75. Postpaid to third zone. Y. X. WILLIAMS, 86 Hester Ave., San Jose, Calif. Phone 8330-W.

BEEKEEPING instruction booklet explains fully. Mailed for dime. SPENCER APIARIES, Sawtelle, Calif.

IMPLEMENTS AND TRACTORS

USED FARM IMPLEMENTS, Harrows, Cultivators, Plows, Tractors, Tractor Tools. Save half price. ARNOTT & CO., Inc., 112-118 S. Los Angeles St., Los Angeles. Between First and Second Sts.

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AUTOMOBILE owners, garagemen, mechanics, send today for free copy America's most popular motor magazine. Contains helpful articles on overhauling, repairing, ignition, carburetors, batteries, etc. Automobile Digest, 566 Butler Bldg., Cincinnati.

Railway Mail Clerks—Start $130 mo.; expenses paid. Specimen examination questions free. Columbus Institute, H-7, Columbus, Ohio.

HUMAN HAIR GOODS

SWITCHES, Transformations, Bobs, Puffs, Curls, Braids, etc. Sent on approval. Cash or credit. Combings made up. BROWN & BROWN, Suite 8, 523 East Broadway, Long Beach, Cal.

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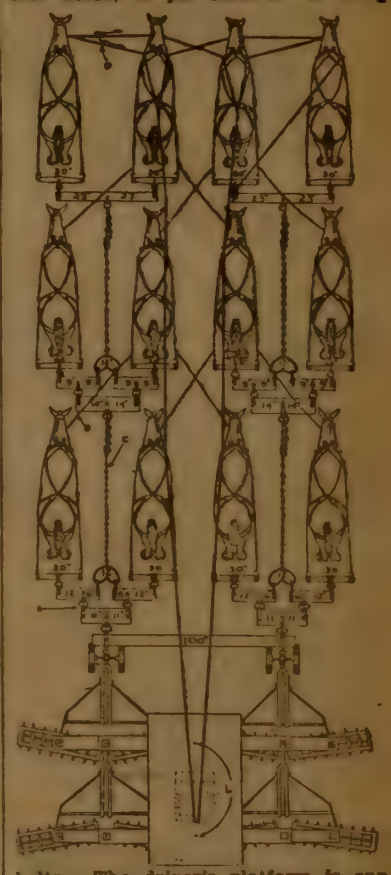
HEMSTITCHING, PICOTING Attachment. Fits any sew. mach. Does beau. work. Illus. des. B. Krafft, Box 896-OF, San Francisco.

Twelve-Horse Hitch

By H. A. SHEARER

THE diagram shows how to hitch twelve horses to two heavy double discs so that each horse will pull his share of the load. It also shows how to drive twelve horses with one pair of lines while riding two big discs.

Referring to the diagram: A—Use long clevises and a fairly long ring. There should be ten inches space between the eveners. B—Halter tie chain. C—Draw chain. It is a heavy log chain with grabhook and ring. D—Tie strap running from bit of inside horse through bit of next horse outside, thence back to hame of inside horse, as per arrows. L—King



bolts. The driver's platform is supported by stringers that reach across from one disc to the other.

This diagram is made to show why the eveners for the twelve-horse team are made with holes that line straight across from end to end of each evener. No teamster can drive twelve horses at once and keep them all in perfect alignment. The straight line eveners will give each horse the same pull.—

(Copyright, 1921, by Horse Association of America.)

Why Bounties Fail

THE reason the bounty system is a failure in controlling rodent pests is that after the animals have been thinned out in one locality, professional trappers transfer their operations to another section, until the rodents in the first locality have multiplied sufficiently again to make trapping profitable, according to W. C. Jacobsen of the State Department of Agriculture.

Men who were employed by Massachusetts officials to destroy the imported moth which a few years ago seriously injured shade trees in the New England States are said to have "planted" the pests in new localities, in order to insure future employment for themselves.

Co-operative work on the part of those whose property is injured, under the direction of official experts, has been found the most satisfactory method of exterminating insect and rodent pests.—O. H. B.

FACTS ABOUT NEMATODES

Important facts about the nematode, serious insect plant pest, are contained in a circular which may be obtained by applying to H. J. Ryan, Los Angeles County Horticultural Commissioner.

SPERRY
"Save the Babies"
BABY CHICK FEEDS
Every Dealer Everywhere

Tractor Industry Recovering

By WALTER H. GARDNER

THE tractor industry has been sick. There have been tip-toeings around the house, anxious whisperings and much learned consultation and shaking of weighty heads. But the doctors didn't seem to agree on the malady and the possibility of recovery.

It almost looked as if the physicians had fed the patient the wrong medicine and wanted to keep the family out of the room until he could sit up and grin, or until he was too far gone to squeal on the learned ones.

But Mr. Tractor Industry has ceased picking at the pillow case. He is beginning to roar for something beside custard. He is convalescent and some whisper that he is actually standing up and demanding his working clothes.

WHY THE TRACTOR SUFFERED

There were no farmers present when Mr. C. A. Musselman, head of the Chilton publications, announced recently to the California Tractor Club the result of a national canvass and survey made by his organization. But there is no reason not to be frank about what was said and every farmer who has a tractor or expects to have one should be interested in the intimate nature of the discussion.

"We have been confronted with the fact that we took too much for granted and placed too much faith in the tractor as a miracle worker and paid too little attention to its mechanical imperfections," said Mr. Musselman. "Immediately following the period in which America's most cautious as well as shrewdest buyer—the farmer—placed a lot of machinery of questionable value on his land, the country at large was faced with a problem of readjusting agricultural values, which would at the same time permit the farmer to exist.

"The crippled buying power of the farmers for the past two years, plus the memory of early mechanical misfits, produced a period of inaction, which sent the tractor industry back to the starting line."

COMPLICATION OF DISEASES

There's the diagnos's of an expert. It wasn't either the mechanical faults nor yet the post-war depression that sent the industry to bed; but the two of them together. The patient was too young—or too good—to die and Mr. Musselman brought reassuring reports from the bedside.

"We now find on farms over 3,000,000 automobiles," continued Mr. Musselman, "2,525,000 telephones, 458,000 gas and electric lighting plants and only 457,000 tractors. It is, therefore, evident that the great farm market for tractors has been served very inadequately and that when the utility of the tractor is shown, as that of the automobile and telephone has been, it will be used by millions instead of the hundreds of thousands."

We can remember the time when a tractor that could be kept running for 10 minutes at a demonstration by two mechanics, a factory expert and a couple of salesmen, was held to be worthy of sale to the farmer. Those machines have now fallen by the wayside. The farmer didn't continue very long to buy them. It soon ceased to be profitable to make such monstrosities.

The tractor companies that have survived are today making machines that can be sold to critical buyers. Tractors that are displayed by dealers and advertised are now without exception capable of delivering satisfactory, efficient and economical service.

WIDER MARKET FOR TRACTORS

In the speech above referred to Mr. Musselman made the point that the tractor dealer was going to be able to reduce expenses and increase his service by adding to the farm field the demand for tractors from highway builders, contractors and industrial users.

"In 1917 the total expenditures for highways in the United States," said he, "was $280,000,000, while in 1922 it amounted to $720,000,000. There are but 315,000 miles of hard-surfaced road out of a total of 2,800,000 miles of public highways."

It will thus be seen that the tractor was neither a mechanical miracle, as was claimed in the boom days, nor was it ever kicked over the fence by the horse, as some would have had it about two years ago.

Only a handful of tractors have survived; but these machines—if we are to believe the expert quoted—are worthy of the confidence and possession of every farmer who has the acreage to put them to profitable use.

Books for Farmers

"How I Made $10,000 in One Year With 4200 Hens," published by Joseph H. Tumbach, R. R. No. 2, Pasadena, Cal. Price, clothbound, $2.50; paper cover, $1.50 postpaid.

The author, who started about twelve years ago with little knowledge of the poultry business and who has learned by doing, gets right down to brass tacks and gives facts and figures. He has one of the most profitable egg farms in California, and he tells just how his success has been achieved. It is of equal interest to the beginner or the "old-timer."

Australia and New Zealand. Published by Rand, McNally & Co., Chicago. By W. D. Boyce, well-known Chicago publisher and author. Price, $3.75.

This sumptuous volume is profusely illustrated with interesting photographs of scenes showing all phases of the Island Continent and New Zealand, with special reference to industries and government, climate and natural resources. As a prominent competitor for Pacific markets, Australia should be better known by the people of the western part of the United States. Boyce's book offers an excellent opportunity for acquiring this knowledge.

The Home Garden, published by the author, L. C. Johnson, Pomona, Calif.

This little booklet sells for 60 cents and is chock full of homely wisdom and pointers on plant and vegetable growing, the result of the author's long and successful gardening experience. Mr. Johnson loves growing things and in his little book tells just how he breeds and feeds them. The volume contains much interesting information fresh from the fountain pen of a real dirt farmer.

Germains
Panama rhubarb
produces biggest crops when other rhubarbs are dormant
Our FREE folder gives a dozen other reasons why PANAMA is a big money-maker.
READ IT!
Germain Seed & Plant Co. Established 1871
N. E. Corner Sixth & Main Sts. Opp. P. E. Depot
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SAMPLE FREE
YOUR COWS—
Have they udders like these?
THE condition of the udder and teats has everything to do with the milk yield. Avoid hard milking and restricted flow by keeping the tissues soft and silky—free from hurts and sores.
Bag Balm guards udder health in thousands of dairies because its effect is so prompt and thorough. Its great penetrating and healing powers quickly clear up cuts, scratches, chaps, inflammation, bruises anywhere on the body. For relieving Caked Bag it has no equal. Effective in treating Bunches and Cow Pox.
Never get out of Bag Balm. It has so many uses in keeping little hurts from getting big. Druggists, general stores and feed dealers sell it, 60c for big 10-ounce package.
If you have never tried Bag Balm, clip coupon below and mail to us for liberal free sample. Give name of your dealer.
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Solving Solano's Water Problem

By RAY C. GRUHLKE

SPURRED to action by the excessive cost of electric pump irrigation, which costs $20 per acre for power alone, northern Solano County farmers are seeking to find a practicable method of ditch irrigation. There are two sources from which water may be obtained—Putah Creek and Borrow pit.

The latter is located in the Yolo bypass of the Sacramento River and contains considerable water in even the driest years, unused and unappropriated. In order to get this water onto the land around Dixon, however, it would have to be carried over five lifts, having a combined height of 70 feet.

In order to obtain water from Putah Creek the construction of two dams would be necessary: one at Devil's Gate, 170 feet high, impounding 90,000 acre feet of water; the other at Gulnoc, 140 feet high, holding 144,000 acre feet of water.

IRRIGATE LARGE ACREAGE

The annual cost of the water thus conserved would be $6.90 per acre, according to the engineer's estimate. Seventy thousand acres could be watered from these reservoirs.

The water pumped from Borrow pit would cover 80,000 acres. The cost of this irrigation would be about $5.85 per acre each year, it is estimated, and the cost of construction $37.40 per acre, including drainage. The latter is important, as much of land to be covered lies low, extending eastward from Dixon to the bypass.

Not only is the cost of the present pumping practice excessive, but the supply of water thus obtained leaves a large acreage of land without needed irrigation. Small farmers who are unable to secure water are said to be the chief advocates of constructing the irrigation works described, which would probably cost $6,000,000 and take ten years to put into operation.

Science's Discovery Routs Chicken Lice

Mineralized Water Gets Rid of Dusting or Spring — Birds Delouse Themselves Fine for Baby Chicks and All Poultry

A recent discovery promises to revolutionize all the commonly accepted methods for keeping poultry free from lice and mites. This wonderful product keeps the poultry always lice-free without the poultry raiser doing any work. It is the simplest, easiest, surest and best method ever discovered.

Hick's Lice-Go, which is the name of this remarkable lice remedy, is dropped in the chicken's drinking water. Taken into the system of the bird, it comes out through the oil glands of the skin and every house or nut leaves the body. It is guaranteed to help the hatchability of the eggs and cannot impure the flavor o fine eggs or meat, is harmless to chicks and does not affect the plumage. A few days treatment at the start and then a little added to the drinking water each month is all that is necessary.

Send No Money—just your name and address to Chas. M. Hick & Company, Dept. 443, 1018 So. Wabash Ave., Chicago, Ill. A card will do. Mr. Hick is so confident that Hick's Lice-Go will get rid of every louse or nite that he will send you two large double strength $1.00 packages for the price of one. When they arrive, pay postman only $1.00 and postage. Sell one to your neighbor and get yours free. If you are not absolutely satisfied after 30 days trial, your money will be refunded. This offer is guaranteed by two big Chicago banks, who say that Mr. Hick will do exactly as he agrees without question or argument. Write today before this remarkable trial offer is withdrawn.

Since the days of King Tut-Ankh-Amen, the CLARKADOTA is the only new fig. It's a Seedless Canning fig. It's a fig that can be shipped East in perfect condition.

It's skin will stand the process of canning without peeling. It does not split, crack, sour or have black mold. It bears a continuous crop all summer.

Clarkadota Fig Plantations at Stockton are sold on easy terms. We do all the work. All the money you pay goes on principal. We take the interest and taxes out of the crops.

Clarkadota Fig Plantations are two miles out of Stockton. It's just like buying a suburban home and the greatest bargain in California.

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OUR PRICES—Hatching Eggs: 15, $2; 100, $12; 500, $55; 1000, $100. Baby Chicks: 100, $25; 500, $120; 1000, $230.

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Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES

WHAT THE HEN DID

"Twenty-three billion." Such terms ordinarily are used only in astronomy. But that is, roughly, the number of eggs laid by the merry hen of the United States during the last year. When a hen crosses the road in front of your speeding machine, she does not seem to count for much. She certainly doesn't regard herself highly or she would not be such a fool; but all the hens in America last year produced $854,207,000 in wealth.

THE BARLEY PROBLEM

Since prohibition came and the war-time scarcity of wheat passed, the matter of disposing of the barley crop has given deep concern. Barley is an important California staple. In fact, California, normally, grows more barley than any other State of the Union. It is of interest, therefore, to learn that recent experiments at the California Experiment Station of Davis show "it pays to feed barley to hogs." The experiment showed that barley was worth from $2.12 to $2.20 a hundred, marketed through hogs.

TILLY TAKES A REST

Tilly Alcartra, the greatest cow of bovine history, with her marvelous record for milk and butterfat production, is sojourning in Southern California, taking the rest cure. For Tilly, after giving birth to seven healthy calves, has taken a rest from motherhood. She is a fine picture of robust femininity, with a lustrous coat and vigor that belies her dozen years. There still is hope that she may give to the world another son or daughter. But if Tilly produced not another calf, her record for achievement outshines that of millions of selfish humans as a contribution to human welfare. Man placed a value of $50,000 on one of Tilly's suits.

NEW CANNING PEACH DISTRICT

Extended plantings of canning peaches are being made along the Bear River bottoms, in the Sacramento Valley between the eastern State highway and the Feather River just west of Wheatland. This is comparatively a new district for canning peaches, although it is not so far from the famous Yuba City orchards. The district will be recalled when the "Wheatland riots" of nearly ten years ago are mentioned. Since that time some of the old hop land has been planted to peaches and the trees grew so rapidly and produced so abundantly that now large orchards are being set out to the west of Wheatland. One planting of more than 300 acres is under way. Much of the land must be cleared of cottonwood trees and underbrush, which are common on the rich river bottoms of the Sacramento Valley.

EFFICIENCY IN FARMING

City critics to the contrary, farming has made a magnificent record for increased efficiency. Julius Barns, president of the Chamber of Commerce of the United States, in a recent speech said there were 1,700,000 fewer people engaged in agriculture in 1920 than in 1900. Yet production has increased 50 per cent in the last 20 years. It certainly is a wonderful record of achievement when an industry can release nearly 2,000,000 workers to other industries and still increase its production by 50 per cent. This has been accomplished through labor-saving inventions, through scientific discoveries which have checked disease and brought to light better methods, through "breeding up" livestock and through more intelligent management. There is yet much to be improved in farming. This is true of all vocations and all life. Arthur Brisbane says so far we have only an "imitation civilization."

AN OLIVE DISCOVERY

Grapevine telegraph information reaches me to the effect that something big is in store for the olive industry. It is said one of the big packing corporations of California shortly will announce a method of processing olive oil which will cut the cost down from 20 to 50 per cent. The story goes that laboratory work on this process has been under way for some years. The plan is to build a big plant in the heart of the Sacramento Valley, where thousands of acres of olives have been planted. The trouble with the California olive oil today is the fact that it cannot compete on a basis of equality with the Italian oil, which is produced by cheap labor. I understand California processes today are quite as up-to-date as those of Italy, but the Italian manufacturer does not have to pay so much for labor.

IN THE "GAME" 71 YEARS

The Capital Dairy at Sacramento has been in continuous operation under the same management since 1852, which is some record for a California dairying institution! This dairy really belongs to the "institution" class now, and should not be considered just a farm, because of its standing in the community and the record it has made for a quality product and the improvement of dairy cows. How many dairies in California are 71 years of age? The Capital Dairy was started by Albert Meister's father. Albert Meister is the present owner and has George Meister associated with him. The fathers of these two men were once in partnership. A consistent plan of breeding up dairy cows for greater production has been carried on for nearly 30 years. Today a cow in the herd that drops below a standard of production goes out, and is supplanted by a freshening heifer. Herd development methods and good business practice, based upon a high quality product, have paid well the owners of the Capital Dairy.

MANY COWS FOR DELHI

Walter Packard, superintendent of the Delhi Colony, established under the California Land Settlement Board, tells me it is planned to purchase 300 cows for settlers there. These cows will be selected animals and probably will be of the Holstein breed, since that is the breed adopted by the Livestock Association there. Large quantities of alfalfa have been brown at Delhi. In fact, the Delhi farms are far ahead in hay production, which is a good thing. So many new farms are short on feed and long on cows, which makes it necessary to go out and buy hay. It is natural that Delhi should reach a stage where the dairy cow should be called in. She pays her way as she goes along and does not have the disadvantage of a tree, which takes four to ten years to grow before any crop is to be had. The Delhi Cow Testing Association has made a fine record for average production of butterfat per cow. The cows on the project have all been carefully selected for production and health.

HOW HE CHOSE MARIN

Marett B. Boissevaine, Farm Adviser of Marin County, "a man who" (as the toastmaster would say) is making a real record for improvement work in the north-bay district, was in the wilds of Wyoming when the desire to come back to the Coast arose in his breast. So Boissevaine wrote out to California, asking if there was a vacancy. There were two or three and one was in Marin. The Boissevaines had been far away in the wilds for some time, two days from Denver, and they rather longed to get within a few hours of a big city. They got out the map. Marin was near San Francisco, and that was the county the Boissevaines selected for their new home. When he reached California the new farm adviser learned he had chosen a county which was generally considered in the farm adviser fraternity as a hard one. But Boissevaine likes Marin and has found some real work to do there. He is the sort of man who likes a real job, and he has been able to accomplish much in aiding dairymen to get more feed from their land. The introduction of the vetch-oats crop to replace oats alone, has been very helpful. Vetch-oat hay is better for the dairy cow than oats, and the tonnage per acre is much greater. Boissevaine is a product of Washington State College, but spent some of his boyhood in Southern California.

Florin Claims Tokay Origin

Interesting Chapter in Grape History Told by Sacramento County Farm Advisor

By LEWIS Y. LEONARD

IN PASSING a fruit stand or corner grocery one sees few fruits displayed that attract more attention than the Flame Tokay grape, which has been especially valuable as a revenue producer. There are many districts which produce this excellent fruit, but the Florin district, Sacramento County, probably has a claim to its first history.

It was early discovered that grapes were adapted to the Florin region. James Rutter cast his fortunes in Sacramento County in 1852 and six years later homesteaded 160 acres in Florin. Shortly thereafter he planted a vineyard, which is still thrifty. This vineyard enabled Rutter to send the first crate of grapes and the first raisins to the Eastern market.

It is interesting to note that as far back as 1872 Rutter received a medal for the best grapes exhibited at the American Institute of New York. In 1873 he won a medal from the Pomological Society at Boston and again in 1874 at the Nebraska State Fair.

Packing house of the Florin Fruit Growers' Association. In 1920 there were shipped from this district 709 carloads of Tokay grapes, which averaged $1750 per car.

DISPLAY ATTRACTS SETTLER

It was Rutter's American Institute grape exhibit at New York that possibly was responsible for a romantic incident. A visitor at the Institute, a young man with his life before him, was particularly impressed with Rutter's display. So deeply did he desire to move to California that he finally accomplished that ambition.

Rutter had an only daughter and in time the newcomer became acquainted with her and they were married. The "stranger" now is known as L. M. Landsborough, the father of the grape and strawberry industry of Sacramento County. His ranch now is incorporated and known as the James Rutter Corporation. The various members of the family are stockholders.

In a recent grape survey by Prof. F. T. Biolitti, viticulturist of the State Department of Agriculture, he traces the Tokays back to Sacramento County and it was possible that the original vines came from this ranch.

In this history it is shown also that the Rutter ranch was the home of the first pumping plant in the State for irrigation purposes. It was an old bucket wheel affair, the motive power of which was a horse driven round and round, hitched to a sweep such as is used on cane and cider mills. The advance in pumping methods is marvelous, for now practictily the entire district is covered by water raised with electricity or gas engines.

GRAPE INDUSTRY EXPANDS

Wonderful strides have been made by the Florin district in Tokay grape production. In 1920 the Florin district sent 709 cars of 930 crates each to the outside market. These averaged nearly $2.50 per crate. The grapes are sent to Eastern auction markets, principally at New York, Boston, Philadelphia and Chicago.

Mr. Landsborough is positive that while other factors have added their quota to the increased prices of table grapes, none has been more effective than the standardization act of the State Department of Agriculture. This, he says, gives the purchaser confidence to buy with the knowledge that the packages are honestly packed with good fruits. Other factors are better market conditions, wider distribution and general prosperity.

L. M. Landsborough, father of the California Tokay grape industry.

"As a mortgage lifter the hog has nothing on a De Laval Cream Separator"

"My work as field man for the Wisconsin State Dairymen's Association," says Herman Marx, in a recent letter, "brings me into contact with a great many farmers and a great many separators. Of all the farmers who own separators, I find about 80% of them own a De Laval.

"For close skimming, low upkeep, easy running and long life it is hard to beat a De Laval. I have adjusted a good many separators and I find that the easiest one to adjust is a De Laval.

"A hog has always been called a mortgage lifter, but he has nothing on a De Laval Separator. I have known several instances where the buying of a De Laval in place of some other they were using saved enough money to pay the interest on a fair sized loan."

—A remarkable tribute to the De Laval Separator, not only because it shows that the majority of experienced farmers in the great dairy state of Wisconsin use and appreciate the De Laval, but because it proves that it makes them money as well.

The present De Laval is the best De Laval Separator ever made. It skims cleaner, lasts longer and is easier to clean and operate than any other. It will pay for itself in a year's time, and is sold on such easy terms that you can use it while it is doing so. See your local De Laval Agent or write us for complete information.

De Laval Pacific Company
61 Beale Street San Francisco

Sooner or later you will use a
De Laval
Cream Separator and Milker

"Spans them over"

It's an uphill pull—this road from chickhood to henhood—with many a risky crossing. From the time they are six weeks old until they are sixteen, growing chicks need all the help they can get to "span them over."

You must remember that these little fellows are as active and unruly as little children who are just "finding their feet." They are always hungry. They will eat anything. And they are apt to take on fat very fast. Therefore—

You must be doubly careful about the feed you give them. *Fat* does not make good layers or good breeders. It takes *bone and muscle* to do that. And it takes Sperry SUREGROW to give them the essential bone-and-muscle food values that chicks must have for sturdy, vigorous growth.

Here is a time-tested feed that has saved many a poultryman the mistake of giving his pullets too violent and forcing a feed. Sperry SUREGROW is a uniform, balanced feed that makes for natural, rational growth. It's surprising, too, how such common chick troubles as indigestion, moping, slow growth, are remedied as soon as you get chicks going and growing on SUREGROW. Remember, too, that you will get the best results if you feed SUREGROW dry in hoppers—so the hungry, active birds can "get" to it all day long.

P.S.

That stands for Pullet Scratch—and it's an important postscript too! There comes a time when pullets must be taken off from Baby Scratch because the granulation is too small; and, on the other hand, the adult Scratch is too large. Here's where Sperry Pullet Scratch fits in! Made of cracked wheat, cracked corn, cracked milo maize and cracked Egyptian corn—it saves poultrymen money by supplying growing chicks with the right size granulation. No guess-work, no waste. Your dealer has it in the yellow-striped bag.

SPERRY SUREGROW

Help your pullets develop right—get this book free!

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Please send me your book "Makes Hens Happy" which contains expert directions on developing pullets.

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

APRIL 8, 1923

Photo by Alsop.

Peaches Pay for Feather River Land

By O. H. BARNHILL

THE prodigious crops of peaches now being produced in the Gridley district (Butte County) indicates that the early argonauts of California never uncovered any richer "pay dirt" than that through which the lower Feather River runs. The profits being piled up by those who are "mining" this fertile soil make those who panned out golden nuggets on Bidwell's Bar look, in comparison, like piking pioneers.

The rocky mountain ledges along the upper reaches of the Feather River have long since been relieved of their riches, while the inexhaustible agricultural wealth of the bottom lands still lies largely untouched. Various devices have been experimented with for bringing this wealth to the surface and putting it into shape where it could be converted into cash.

This fine farm home is sheltered by one of the magnificent oaks for which the Sacramento Valley is famous. The twin towers shelter silage, water and milk

This metal box makes brush burning easy, as it is only necessary to pitch the trimmings into the fire, which is hauled from tree to tree. Although the peach trees are short pruned, they are long on bearing, the owners holding it pays better to grow fruit than brush.

The three things which have proved most efficacious for this work are peaches, cows and alfalfa. The first named article has the greatest drawing power, but the last two are necessary to maintain the reservoir of soil wealth in such shape that it can be continously drawn upon.

SOLVE FARMING PROBLEM

At least, that's the way Metzler and Waterbury figured it out and their success with this agricultural triumvirate indicates that they have found the correct solution of the problem of farming Feather River bottom land. They paid for their twenty-acre place with a single crop from a nine-acre peach orchard, the fruit being sold to a Gridley cannery for $105 a ton. They admit this experience was unusual and spectacular, but "what's the dif," they ask, so long as the farm is paid for.

The land was bought thirteen years ago, when real estate was a good deal cheaper than it is now. Four hundred dollars per acre is the price at which the best farm land is selling in that section at the present time. Peaches are bringing only about half the price mentioned, but even at $50 a ton, a 54-ton crop on four acres—which is what these men gathered from four-year-old trees—would bring $2700—$675 per acre.

Thirteen and one-half tons per acre is not considered a maximum yield. Seventeen and three-fourth tons were picked from 160 square rods of six-year-old trees. *(Continued on Page 13)*

Alfalfa is cut seven times a year and yields better than a ton at each cutting. It is the standard soil renovator in the Sacramento Valley.

As high as 24 tons of corn silage have been harvested from a single acre. Silage and alfalfa are fed to dairy cows, which are the main spokes in the fertility wheel.

Gridley peaches go nine to the yard, as this picture proves. Their quality is said to fully equal their size.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
APRIL 8, 1923

Thin Peaches Severely and Systematically

Timely Instructions for Thinning Deciduous Fruits, With Chart Showing Number of Fruits Per Tree Needed to Produce a Given Tonnage

By GEORGE P. WELDON
Pomologist, Chaffey Junior College of Agriculture

WHILE thinning has been recognized by apple and peach growers, as a practice that is necessary, there never was a time when growers were so greatly impressed with its importance. Two things primarily have awakened the California fruit growers to greater effort along this line of work; these are a change of pruning which has meant greater production, and a demand on the part of the trade, especially in canned fruits, that they conform to certain standards regarding size.

GEORGE P. WELDON

The change from the old system of severely cutting back the tops of peach and apricot trees to the modern method of long pruning has resulted in greater production. It is likewise true that there has been such an increase in production that common sense has sometimes been thrown to the wind and trees have been left to hold up a load of fruit much greater than they can possibly grow into proper sizes.

The only remedy is thinning. Some one who reads will suggest short pruning as a remedy. In the opinion of the writer the day of extremely short pruning is over, because it is practiced at a great sacrifice of fruit; furthermore, it is possible by long pruning to induce a tree to bear much more fruit than a short-pruned tree will bear.

LARGE SIZES PAY BEST

The trend among canners toward larger sizes of peaches and apricots is indicated in the recent action of two organizations—one representing a large body of peach and apricot growers north of Tehachapi, the other of growers of the same fruits in Southern California—whereby the minimum size requirement of 90% of the peaches the coming season will be 2⅜ inches. This means a material raising of the price standard.

Apricots must run not over 14 to the pound; last year 16 to the pound was the minimum.

This tendency to demand larger fruit has been developing for some time; it is due to the fact that canners find a ready demand for large sizes, while small fruit is often a drug on the market, resulting in too great a holdover from season to season.

SEVERE THINNING JUSTIFIED

That the fruit grower is justified in making every effort to grow large fruit, even though the canners were not demanding it, may be plainly seen from the following data, which were gathered during the past season by William J. Schaefer, superintendent of canneries for the California Growers' Association. Mr. Schaefer carefully weighed a great many peaches of different varieties and sizes, therefore his figures are accurate.

The accompanying table shows the number of cling peaches of different sizes that are required to weigh ten pounds. Every fruit grower who has access to these figures should study them carefully, as they furnish the best thinning argument that can be found:

Diameter of peach	Number in 10-lb. sample
2 inches	76
2⅛ inches	63
2¼ inches	56
2⅜ inches	45
2½ inches	38
2⅝ inches	33
2¾ inches	29
2⅞ inches	22

SOME STRIKING COMPARISONS

This table reveals the striking fact that one 2½-inch peach weighs as much as two 2-inch peaches. Also that one 2⅞-inch peach weighs 3.45 times as much as a 2-inch peach and 1.72 times as much as a 2½-inch peach. With this knowledge it is apparent that no one can afford to raise the minimum size of 2⅜ inches.

These figures do not tell the whole story, as it is the larger sizes—2½ inches or more—that constitute first grade fruit; the smaller sizes compose the lower grades. With a differential in price of 50 per cent between first grade and second grade fruit the grower who has small fruit is out of luck.

Since large size in peaches is necessary and since thinning will result in size, there should be some definite instructions that will guide the grower in the thinning of his crop; but those who have had experience have found it difficult to lay down fixed rules. Familiarity with the amount of fruit that trees should bear has been the only guide and too often the work of thinning must be entrusted to men who have little or no knowledge of tree production.

CONSIDER VARIOUS FACTORS

The amount of fruit that a peach tree should bear depends upon several things. In the first place the tree itself must be large and thrifty for heavy production. Everything being favorable, the production of an orchard in full bearing should be nearly ten tons per acre. Since 2½-inch fruit is the most desirable size, it is well to estimate production on the basis of this size. A ten-ton-per-acre crop of 2½-inch fruit would mean where the planting is 24x24 feet, 1010 fruits on an average tree.

When one attempts to apply a rule for thinning he will find that during a season of heavy setting it is difficult to do so, especially if the rule pertains to the distance apart that the fruits are to be left. It is quite a general practice for thinners to space the fruits so that none is closer than six or eight inches apart. Such a rule will often result in serious overproduction. The competent thinner will not only estimate the amount of fruit that a tree will bear, but also that which individual branches should carry.

THINNING SCHEDULE FOR PEACHES

No. Tons Per Acre Desired — Number of peaches per tree, of 2¼-in., 2½-in. and 2¾-in. sizes to produce desired tonnage per acre as shown in left hand column, from trees planted the different distances indicated below:

Tons	20 ft. x 20 ft. 108 trees per a.			22 ft. x 22 ft. 90 trees per a.			24 ft. x 24 ft. 75 trees per a.			25 ft. x 25 ft. 70 trees per a.		
	2¼"	2½"	2¾"	2¼"	2½"	2¾"	2¼"	2½"	2¾"	2¼"	2½"	2¾"
1	104	70	54	124	84	64	149	101	77	160	109	83
2	208	140	108	248	168	128	298	202	154	320	218	166
3	312	210	162	372	252	192	447	303	231	480	327	249
4	416	280	216	496	336	256	596	404	308	640	436	332
5	520	350	270	620	420	320	745	505	385	800	545	415
6	624	420	324	744	504	384	894	606	462	960	654	498
7	728	490	378	868	588	448	1043	707	539	1120	763	581
8	832	560	432	992	672	512	1192	808	616	1280	872	664
9	936	630	486	1116	756	576	1341	909	693	1440	981	747
10	1040	700	540	1240	840	640	1490	1010	770	1600	1090	830

INSTRUCTIONS

After determining about what tonnage per acre the orchard should produce, refer to horizontal column in table opposite this tonnage figure and follow this column to the figure in vertical column, beneath the 2½-inch size in section of table which contains the nearest number of trees per acre, to your planting. This figure represents the average number of peaches to leave on a tree.

Training Trees With Twine Instead of Pruning Shears

By WILLIAM B. PARKER

DRIVING up the road from Placerville toward Lake Tahoe one wintry morning, I noticed W. A. Caldwell in his pear orchard with a ball of white twine in his hand. On the other side of a partition fence stood Tom Smith, gesticulating with a dangerous-looking pair of pruning shears.

The argument appeared to be exciting; therefore I stopped my machine and approached the pair of pear growers. "Hello, Bill!" heartily hailed the man with the twine. "Come settle this for us."

"All right, Caldwell," I replied. "But what is the trouble?"

"Same old story: Tom says that if I will allow him to do so, he will climb the fence and show me how to prune a tree. I tell him if he does, I will 'hog tie' one of his trees until it looks like a pear factory and not a sawed or thinned out hat rack."

"But I am using the long system of pruning," countered Tom. "While I thin out and cut back to laterals, my trees do not look like hat racks, as they used to do when we short pruned. Now look at them, Caldwell; don't they look with their limber limbs covered with fruit spurs? Just look at these buds; can you beat 'em?"

"I don't know that I can beat them, Tom, but I can certainly equal them," replied Caldwell. "Now, look here: The framework of my trees is stronger than the framework of your long-pruned trees, and they will carry a heavier crop without the necessity of props or wire bracing. I get a greater diameter of trunk and limbs in proportion to height of tree, without the loss of any growth, than you do by pruning.

This pear tree was trained according to the Caldwell system, and is one of those alluded to in the conversation, which convinced a neighbor of the advantages of the tying method.

"I begin when the tree is 1 to 3 years old," explained Caldwell. "I bend the limbs in an arch and tie them to the trunk with this four-ply white twine. The height of the bend depends on the diameter of the branch. The slender ones are bent at a lower point than the stockier ones.

"When my trees start to grow in the spring the buds at the point of the bend are the highest ones. They become the terminal buds, in effect, and send up shoots. The part of the branch beyond the bend is horizontal or lower, therefore it develops into a fruiting branch, while the inner part of the branch rapidly increases in diameter and forms the strong arch that I have in all my main branches.

"See how this branch holds my weight and all the yanking I can give it. I'll wager you will not let me treat any of the limbs of your trees this way."

Neighbor Smith, showing no disposition to grant the desired permission, Caldwell continued:

"The following year I have two or three limbs to tie down from each of the first series. I can pull them around and fill in any space that is open, while you have to leave it to the tree to fill in open spaces. I continue thus with the (Continued on Page 11)

ORCHARD and FARM

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"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

RENTER AND LANDOWNER—PARTNERS

The only satisfactory basis for renting farm land is that which recognizes the landowner and renter as equal partners in a long-term co-operative enterprise. They must share alike the risk of crop failure and low prices; must divide the work and expense of equipping the farm with buildings, livestock, feed, seed and implements; both should bear the burden of building up soil fertility and each should have an opportunity to participate in the profits resulting therefrom.

This plan precludes cash rent and short-term leases; forces the soil robber to resort elsewhere; promotes that feeling of mutual confidence and good will which impels renter and landowner to work for each other's interest, knowing that profits and losses will be shared equally.

In some of the older agricultural States there are large landowners who have been very successful in renting their farms, using a form of lease which conforms to the principles mentioned. It is not a get-rich-quick scheme, but for long-term, substantial profits is a decided success.

GUARANTEEING TREES TRUE TO NAME.

Buyers of nursery stock often cannot understand why trees are not guaranteed true to name. After planting a supposedly choice variety and spending much time and labor to bring it to bearing age, it is a great disappointment to find that the tree is of an inferior sort. Few experiences will so try the rural temper or make a farmer feel like going on the warpath after a merchant.

The trouble in effecting a satisfactory settlement in such cases lies in the difficulty of proving that the trees in question are the identical ones which were bought for another variety, also in fixing the amount of damages. To refund the price paid for the stock would not repay the planter for the time and expense of growing the tree.

The best ways to avoid such trouble are to deal with reliable local nurserymen and to study the characteristics of the trees planted, so as to be reasonably sure they are labeled correctly.

HOW TO HELP FARMERS PROSPER.

Everybody admits that good times in the United States depends mainly upon the prosperity of the farmer, because agriculture is the basic industry of the country. Everybody professes a willingness to help the husbandman to attain the largest measure of success. This being the case, why is it that he who tills the soil is often forced to sell the fruits of toil for less than the cost of production and do without needed equipment and conveniences?

Middlemen who say they are anxious to see the farmer make money persist in taking the lion's share of the consumer's dollar, leaving the producer a mere pittance; mechanical and professional workers, manufacturers and officials employ every effort to see that their own interests are protected even though the farmer be sacrificed.

The prosperity of the producer can best be promoted by co-operation on the part of all classes, a willingness on the part of everybody to divide prices and privileges on an equal basis.

"What's New?"—Keeping Abreast of Agricultural Progress

Bringing Bees to Sonoma

TWO thousand colonies of bees are being brought to Sonoma County from the Fresno district, to pollinate fruit trees and make honey. The rental has been fixed at $2 per hive. H. A. Weinland, Sonoma farm adviser, arranged the project.

Scarcity of Nursery Stock

PRUNE and peach trees are two agricultural products for which the demand exceeded the supply in Tulare and Kings Counties last spring, orchardists being unable to obtain enough trees to fill their planting requirements.—FLOYD BYRNES.

Norway Makes Nitrogen

THOSE who are skeptical of the practicability of the plan of extracting nitrogen from the air will be interested to learn that an enormous plant in Norway is being operated successfully for this purpose, according to A. E. Barens of the Los Angeles Lemon Club.

Tulare Dairy Commissioner

TULARE County now has a dairy commissioner, who is paid a salary of $2000 by the County Supervisors. H. E. Martin, president of the Tulare Farm Bureau Center, is filling the position until a man can be found who can devote his entire time to the work.—FLOYD BYRNES.

Storing More Eggs This Year

THERE were in storage in Petaluma the middle of March 6168 cases of eggs, while at the same date last year there were only 4380 cases held in storage. Shipments have likewise been considerably heavier.—KATHLEEN RODD.

Prices of Plow Land

AVERAGE prices of plow lands March 1, 1923, were as follows for the States named: Iowa, $153; Illinois, $126; California, $113; Georgia, Alabama and Mississippi, $26; Montana, $22. These figures represent the highest and lowest prices of cultivated land in the United States.

Petaluma Record Shipment

DURING February Petaluma shipped 141 carloads of eggs, the largest amount ever sent out in one month from the "World's Egg Basket," exceeding by 32 carloads the shipments for the same month in 1922. These figures do not include the eggs placed in storage.—KATHLEEN RODD.

Gains from Gopher Control

AT a cost of $3500, Dona Ana County, N. M., was rid of gophers, which were costing the farmers $60,000 a year by destroying crops and burrowing into irrigation canals, according to the U. S. Department of Agriculture, which co-operated in making war on these rodent pests.

Oil Preserves Many Eggs

FROM February 24 to March 6 the Poultry Producers of Southern California processed 4403 cases of eggs and stored 1409 additional cases of unprocessed eggs, a total of 2,092,320 eggs in ten days. The processed eggs were treated with a solution of oil.

Thousand Hens Pay Nurse

THE united efforts of 1000 hens, working steadfly to fill the egg basket, are necessary to pay the wages of a single nurse, at prices which prevailed in March, estimates George Kreutzer, superintendent of the State Land Colony at Durham (Butte County). The nurse's wages were counted at $7 a day and the eggs figured at 16 cents a dozen.

Save 8000 Tons of Oranges

NEARLY 8000 tons of frosted oranges were salvaged by the Exchange Orange Products Company during the past year. This immense amount of damaged fruit was handled so successfully that fully one-half the money invested in the business is expected to be returned to the member associations.

Orange oil, candied orange peel, dehydrated peel and peel in brine are some of the products manufactured by the company. Vinegar and marmalade "stock" were also made in an experimental way. About 500 tons of pulp was fed to cows, with highly satisfactory results, according to the company.

Securing Cheap Silos

BY pooling their orders for a dozen silos and ordering them through the county farm adviser's office, the farmers of San Luis Obispo County obtained a discount of 45 per cent on regular prices. The San Luis Obispo Farm Bureau lacks only four silos of having reached their 1923 goal.

New Style Egg "Flats"

AN Indian firm is making egg "flats" containing cup-shaped depressions, which distribute the weight of the egg over the entire surface of the end, thus lessening the danger of breakage and rendering unnecessary the use of excelsior pads. A million flats have been tried with very gratifying results, according to reports. An exporter packed 500 cases of eggs in the usual way and 500 with the new style flats. The latter arrived in perfect condition, while the former suffered serious breakage. The difference in profit on the two shipments amounted to $1100. Two thousand cases since have been exported with the new flats and 2500 cases are being prepared for shipment to foreign points.

Recovers Prune Overpayment

THE California Prune and Apricot Growers' Association has obtained judgment against Mrs. Paola Castello for $800 alleged to have been an overpayment for her 1920 prune crop. At the time the money was paid the prune market was in good shape, but later "broke," leaving the association with insufficient funds to make returns to members according to the original estimate.

This was the contention of the plaintiff in the suit brought before Judge P. F. Gosby, of the Superior Court of Santa Clara County, to recover the amount named. Because of the decision favorable to the association, it is expected that other alleged overpayments soon will be recovered from members.

Blight Takes Heavy Toll

BLIGHT killed 300 acres of pear trees along the Sacramento River last year, causing a loss of $200,000, according to R. C. Dorsey, who estimates that the pear crop in that section will be 200,000 boxes less this year, on account of blight injury to the orchards.

Lack of experienced blight cutters during the season when the most damage is done is said to be the greatest difficulty encountered in the control of this destructive disease. Mr. Dorsey believes it is necessary systematically to inspect orchards every two weeks for two months after blossoming time, carefully cutting out and burning all diseased wood. It is important to cut out a large quantity of wood adjacent to that which has been discolored, in order to kill all the blight bacteria.

Cure Lemons With Gas

THAT the curing and coloring of citrus fruits will be revolutionized by the use of ethylene gas is indicated by experiments recently conducted by F. E. Denny and E. M. Chase of the U. S. Department of Agriculture in the packing house of the Whittier Citrus Association.

Ethylene may be bought in Baltimore at two cents per cubic foot. It is about as heavy as nitrogen and will diffuse itself quickly and evenly throughout the air, according to Mr. Denny, who estimates the cost of curing a carload of lemons by this process at one dollar, or possibly fifty cents. Six days are required for the treatment. One cubic foot applied twice a day to one-half car of fruit is sufficient to obtain satisfactory results.

The gas is not inflammable, will not cause headache and may be used with an ordinary fumigation tent, say the men who made the tests. It works best at a temperature of 65 to 70 degrees.

Poisoning Prairie Dogs

THE clearing of an area 120 miles long and 10 to 20 miles wide in Cochise and Graham Counties, Arizona, of prairie dogs—which formerly numbered 5,000,000—is a splendid example of the excellent rodent control work being done by the biological survey of the U. S. Department of Agriculture.

The lands in question had been denuded by dogs and left bare and desolate; now they are covered with grass knee high. Alfalfa and grain are being grown, while fat stock and fine farms are replacing rodent "villages."

Eight hundred stockmen co-operated with the Department in the dog drive, using carbon bisulphide and other fumigants to kill the pests. From 75 to 95 per cent of the animals are usually killed by the first application of poison.

California farms and pasture lands are being rid of ground squirrels, moles and gophers by the use of fumigants and poisoned bait, under the direction of Department experts.

Proven New Way Keeps Chickens Free From Lice

Amazing Discovery Revolutionizes All Lice Killing Methods. Mineralized Water Keeps Birds' Lice Free. No More Dusting or Spraying.

Permanent freedom from lice and mites is now assured every poultry raiser. Thousands of poultry raisers, for the first time, are keeping their flocks permanently free from these pests without dusting, spraying, greasing, or doing any work themselves. The use of a scientific discovery perfected last year has revolutionized all commonly accepted methods for keeping poultry free from lice and mites. No other method as sure, easy and quick has ever been found.

Wipe Out The Death Causing, Profit Taking Louse.

These blood sucking, profit stealing pests every year actually kill millions of chicks and almost wipe out egg production in many flocks. Thousands of satisfied users quickly proved the amazing power of this discovery and now refuse to be without it.

Fails to Find Louse in Six Months

J. Franklin Briggs, Lynn Haven, Fla., says: "Ever since I started using Lice-Go six months ago, I haven't found a louse in my flock. It's easy now to keep my birds clean—and I get more eggs and better chickens."

Saves Baby Chicks

"Every year until now I have lost many baby chicks from lice. Since using Lice-Go, I have never lost a single chick. It's results are amazing."—M. Johnson, Milwaukee, Wis.

Doubles Egg Yield

"One package of Lice-Go got rid of all the lice in my flock, so I gave the second package to my neighbor to use on his badly lice-infested chickens. Not only did it drive away all the lice, but his egg yield jumped from 17 eggs a day to 46. Weak, sick birds were quickly toned up and began to lay for the first time in months."—J. Fairholme, Cedar Rapids, Iowa.

RESULTS GUARANTEED

Hundreds of thousands of satisfied Lice-Go users are now reordering in larger quantities than ever. They refuse to be without it. It's easy to give. Simply drop a Lice-Go tablet in the birds' drinking water. The minerals taken into the bird's system come out thru the oil glands of the skin and every louse and mite quickly leaves the body. It is guaranteed to help the hatchability of the eggs, and cannot injure flavor of eggs or meat; is harmless to chicks and does not affect the plumage. A few days' treatment at the start and then a little added to the drinking water each month is all that is necessary.

So confident is Mr. Hick that Lice-Go will rid your flock of every louse or mite that he offers to let any reader of this paper try Lice-Go without risking a penny.

SEND NO MONEY

Send no money—just your name and address to Chas. M. Hick, Dept. 643, 1018 S. Wabash Ave., Chicago, Ill. A card will do. He will send you two large double strength $1.00 packages. When they arrive, deposit only $1.00 and postage with the postman. If you are not absolutely satisfied after thirty days' trial your money will be refunded immediately.

Don't hesitate to accept this offer as it is fully guaranteed. Two Big Chicago banks say that Mr. Hick will do exactly as he agrees without question or argument.

You Haven't Read the Paper Until You've Read the Ads

Shippers Co-operate

"ONE who lives in the East cannot help but realize the imperative need for the co-operative marketing of deciduous fruits," declares C. I. Lewis of Chicago. "Fruit is simply dumped indiscriminately in cities like Chicago, New York and Boston. The consuming public does not known that the fruit is coming. It arrives here and is greatly sacrificed.

"There is altogether too much concentration of fruit in these big centers and not enough f. o. b. sales and small carload market sales. That seems to be a class of work which only a co-operative will develop thoroughly; in fact, some of the biggest distributors of the United States sell most of their fruit in three or four of these big markets and are doing little to develop carload markets in various parts of the country.

"There are distributors, of course, who are developing some carload markets, but many of them are not doing it and they are following the lines of least resistance.

"It may not be possible to get the deciduous fruits in relatively few hands, but I believe a great deal can be done to bring the growers of deciduous fruits together under some form of organization."

RAISIN MEN SELL BONDS

The Sun-Maid Raisin Growers are preparing to float a $3,000,000 bond issue to take care of a loan of similar size and to issue $2,000,000 in preferred stock. "Our organization has been like an inverted pyramid," explains Ralph Merritt, managing director. "It has $4,000,000 worth of property, but is capitalized at only $3,000,000. Through the stock issuance contemplated, the strength of the pyramid will be put at the bottom and the peak at the top."

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both as to layers and good standard type as well.

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For here in Southwestern Arizona are choice farming lands of exceptional fertility irrigated by the great Roosevelt Dam.

Controlled irrigation enables each farmer to receive all the water he needs at regular intervals. The perfect growing of a large variety of crops is thus assured—no droughts—crops all year 'round. Thousands of acres of rich farming land has resulted—a veritable luxuriance of all growing things—it is the fulfullment of Roosevelt's dream.

Prosperous Cities

In the heart of this valley is the capital of the State, Phoenix, a thriving city of 35,000 progressive people, easily reached by the Southern Pacific and the Santa Fe Railroads. And within the Valley are other prosperous cities connected by the finest of paved roads.

The best of schools, churches and civic organizations are to be found in every city. So the newcomer will be sure to find congenial surroundings in this friendly community where the warm, dry, invigorating air makes for strong bodies and clear minds. Unsurpassed mountain scenery along the famous Apache Trail Highway permits an endless variety of pleasant diversions during leisure hours.

Better Opportunities Here

Exceptionally good farming land and cozy country homes are available at moderate prices and on easy terms. It will pay you to investigate thoroughly the better opportunities of this fertile valley. Roosevelt visualized these opportunities—the dam built by the government has brought them to you. For here you can make more money and reap the year around. *Just fill in the coupon or address a letter to our organization for full details about these better farming opportunities in this prosperous valley.*

Principal Crops Grown in the Valley

Alfalfa	Oats
Cotton	Corn
Wheat	Grain Sorghum
Barley	

Principal Fruits

Grapefruit	Dates
Oranges	Olives
Grapes	Melons

Salt River Valley Arizona Club, Dept. A-408,
Chamber of Commerce Bldg., Phoenix, Arizona.

Please send me detailed information about the fertile farming lands in the Salt River Valley and the opportunities which are open to newcomers. It is understood this incurs no obligation on my part whatsoever.

Name .....

Street, or R. F. D. .....

City ..... State .....

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Purchasers of the 2-Ton "Caterpillar" Tractor (Model T35) are *especially* appreciative of these qualities. Many of them have had previous experience with other tractors. They find that the increase in their original investment necessary to secure *quality*, brings liberal returns in greater endurance, absolute dependability, minimum upkeep costs.

Among the *seen* values in the 2-Ton are the overhead valve and camshaft motor, 3-speed transmission, accurately controlling governor, special heat-treated steels, complete enclosure from dust and dirt, force feed motor lubrication, anti-friction bearings throughout. The *unseen* value of these features is summed up in the 2-Ton's ability to do work at lowest cost per horsepower hour—to give field performance of a quality that insures success and satisfaction.

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Swain Loves Bees

MILTON J. SWAIN, the Hanford apiarist, can't explain why, but admits that he just naturally loves bees and would rather work with them than anything else. He has been in the bee business 30 years, having set sail on the sweet sea of honey production at the tender age of 12 years.

"When I was about half-past 11, father gave me three calves for doing chores," related Swain. "The way I foraged those calves was a caution. Nothing—in my youthful mind—was too good for them. The result was that when they were a year old they were splendid specimens. I traded them to father for 12 stands of bees, which I had long coveted, and imagined that I would soon make a fortune in honey. I had heard about dividing swarms, so proceeded to turn that trick as soon as the bees were my property. The swarms were so weakened by the operation, however, that all but five died.

"Honey Hart, Hanford bee wizard, then taught me some of the secrets of bee keeping, after which I had better success. A successful apiarist must first of all be a bee doctor, for unless the stock is kept healthy it will not product profitably. Of course it is necessary to have plenty of supers on hand when there is a big flow of honey—but that means nothing more than exercising common prudence and foresight, which is needed in all lines of business."

SECURES BIG YIELD

Swain takes his bees wherever there is good pasture for them. His luck has been good, bad and indifferent. One year 28 swarms in Cottonwood Canyon made 18 tons of sage, buckwheat and blue curl honey, about equal quantities of each. But as the number of apiaries increased, bee pasture became scarce and the problem of finding feed for them increasingly difficult.

Mr. Swain now has 400 hives of bees, which are divided into a half-dozen apiaries, all kept in different places, which greatly increases the expense of caring for them. The bees and their hives cost $4800, having been purchased at peak prices.

Orange, sage and alfalfa are the three kinds of honey produced and sold by Mr. Moore. The prices to consumers are $7, $6 and $4.50 for the three grades, in the order named, for 60-pound cans. "Good alfalfa honey at 7½ cents a pound is about the cheapest sweet stuff on the market, quality considered," declares Mr. Moore. "It is more wholesome than sugar, candy or any other manufactured sweet and certainly tastes better."

MARKETING PROBLEMS

Dealers pay 7 to 12 cents a pound for honey and sell it at 60, 50 and 40 cents a quart, which weighs nearly three pounds, Swain points out.

Giving expert testimony in a lawsuit involving bees, Mr. Swain counts as one of the most interesting experiences of his career. The owner of the industrious little insects had gone East, leaving her place in charge of tenants, who were accused of trying to gain possession of the property by poisoning the owner, who was removed from the train in a dying condition before she had reached her destination. Moore was called upon to testify as to the value of the bees, which were housed in very cheap hives. This latter fact, testified the expert witness, did not impair the value of the insects themselves.

Olives, $10,000 a Car

THE first five carloads of Sevillano olives shipped from Corning the past season brought $50,591, an average of $10,000 per car. Two cars went San Francisco, one to Los Angeles and one each to Chicago and New York.

Growers received 5 to 14 cents a pound for this fine fruit, which is noted for exceptionally large size. In addition to this splendid income, the local plant which put up the olives paid out $95 for labor on each ton prepared for market.

GARDENA PLANTS STRAWBERRIES

Gardena (Los Angeles County) gardeners set out more than 3,000,000 strawberry plants this spring.

England's Method of Breeding Better Biddies

By PROF. JAMES DRYDEN

THE story of George C. England's poultry venture and its subsequent success is about as interesting as any of the present day "best sellers." It starts with some china eggs which George, when a small boy, wished to hatch, begging his grandmother for a hen to do the job.

As the tale develops, it tells how young England abandoned a good salaried position as a brokerage clerk and started in the chicken business with $297 of borrowed capital. That was only twelve years ago. England now owns a ten-acre place at Inglewood, a Los Angeles suburb, where real estate is valued at several thousand dollars an acre. He has about $50,000 invested in stock and equipment alone, while in a single year his sales exceed $30,000.

There were times when the poultry novice hadn't a nickel to buy a loaf of bread and when he was so busy learning the chicken business that he didn't take time to remove his clothes at night. Pluck, backed by hard work and common sense, won out, and now England is the owner of one of the best poultry breeding plants in the United States.

RAISED IN "SHOW ME" STATE

Like two other successful and famous Pacific poultrymen—Tumbach of Pasadena and Hanson of Corvallis—Mr. England was brought up in Missouri, the "show me" State. He moved to Colorado when eight years of age and ten years later was head cashier of a street railway company. Removing afterwards to Los Angeles he purchased an acre and a half of land at Inglewood for $10 down and $10 a month.

"In 1911 I started in the chicken business," relates Mr. England. "If it had not been for my wife, whom I had married the year before, I would not be where I am today. She took an interest in the work and together we labored for the success of our poultry project.

"The first year we lost 80 per cent of our chicks. I used to sit up, night after night, trying fireless brooders, hot water bottles and other devices—but the chicks died like flies. We raised about 450 and had all the best ones stolen one night. Then I took a hammer and saw and worked at carpentering to make a living.

BUYS THOUSAND HENS

"The next year I bought 1000 hens and put a mortgage on my place, taking in a partner who helped me get on my feet. Then my father came to the rescue and volunteered to buy 300 hens—just hens—at 65 cents each. They were all just chickens, for I was not in the breeding business then.

"The second year I made a good living. From the third year on I gradually gained, building house after house.

"I started trapnesting in 1912, trying it on only six hens. One of them laid 242 eggs and another 189, but the others proved to be very poor producers. A friend gave me $50 with which to buy an exhibition breeder to mate to the best hen. The pullets did not prove very good, but foolishly I kept breeding from the offspring of that old hen. They were spotted in color and kept getting worse and worse every day in every way. I hadn't at that time money to buy new stock, but finally was forced to do so."

Mr. England and his $1000 cockerel, "Sixteen to One," the product of heavy-laying hens.

AVERAGE OVER 200 EGGS

Mr. England may not have been the first to start trapnesting in California, but I believe he has been at it longer than any other breeder. When he started trapnesting, his flock averaged less than 144 eggs a hen. He disposed of all hens laying less than 144. He believes money can be made with hens laying 144 eggs, but his hens now lay an average of more than 200 eggs. Last year a flock of 845 pullets averaged 228 eggs.

For six years England has never hatched any eggs for his own use except from hens that laid 200 eggs or more. Every chick on the place, he says, has six generations of 200-egg hens behind it. He keeps about 5000 hens and pullets.

Mr. England has built up a most modern breeding plant. There are six laying houses 210 feet long and 18 feet wide, with a 10-foot feed room at the end of each house. The houses are divided into five pens, each 18 by 40 feet, with 200 hens in each pen, or 1000 to the house.

A special breeding house, same size as laying houses, accommodates forty-two special pens of breeders in pens 5 by 18 feet. These are for individual matings with one male and makes possible the keeping of a clear pedigree from both dam and sire for the chick.

The wire netting above this feeding trough keeps the hens from roosting there.

Part of the 3500 trapnests which played an important part in building up a flock of 5000 high-producing hens. A flock of 845 pullets laid an average of 228 eggs in one year.

The brooder house is 210 by 18 feet and is divided into eight pens 14 by 18 feet, with a cooling room of the same dimensions for each. The house is heated by gas and electricity.

BUILDINGS WELL ARRANGED

The walls of all the houses are seven feet high, front and back, and eleven feet to peak, with shingle roof. The front of the laying houses are four feet open, covered with wire netting and boarded up three feet from the bottom. The houses were located with a view to economical management. There is a driveway between the houses and around the ends and a truck can (Continued on Page 15)

General view of the England poultry breeding plant, which cost $50,000 to equip

More Than One Thousand Guernseys

Pure Milk From Pure Bred Cows Is Produced Here in Wholesale Quantities

This is a view of the Adhor Farms as seen from the highway. No expense has been spared in the construction of buildings, which are among the finest of their kind in the West. In all buildings, from the superintendent's home to the great barns, permanence and beauty are combined.

Above and to right are shown typical bulls and females from the Guernsey herd of Adhor Stock Farms, located on Ventura Boulevard, in the Los Angeles Valley (Photos by Blackmore). The first purchase of cattle was in 1917 ,and the herd has been enlarged steadily, in keeping with the increasing demand for certified milk. The Adamson Corporation now own and operate this splendid plant.

A ter, b laund are w low i

re Kept on This Certified Dairy Farm

The Largest Herd of Registerd Guernsey Cows in the World Are Found on This Fine Farm in Southern California

lkers are not only picked for their health and charac- iven frequent medical examinations as well. Freshly- hite uniforms are donned for each milking. The cows efore milking and only small-top pails are used. Be- oramtic view of the cow-corrals, silos, milking barn and other buildings.

Human hands do not touch the milk. It is bottled by machinery in this immaculate room. The farm also has its own ice plant and laundry.

"Experting" Citrus Groves—How Poor Trees Are Located and Made Productive

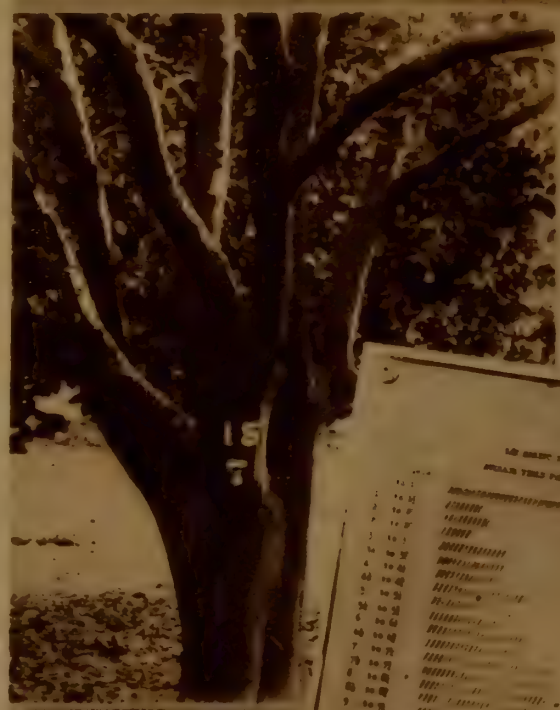
By ROBT. W. HODGSON
Agricultural Extension Service, University of California

LEADERS in the citrus industry are today generally agreed that the greatest need confronting the industry is greater efficiency of trees as well as management. Not more than 75 per cent of the trees in the average grove are efficient producers. This means that one tree in every four is carried at a loss. This 25 per cent loss should, if possible, be eliminated.

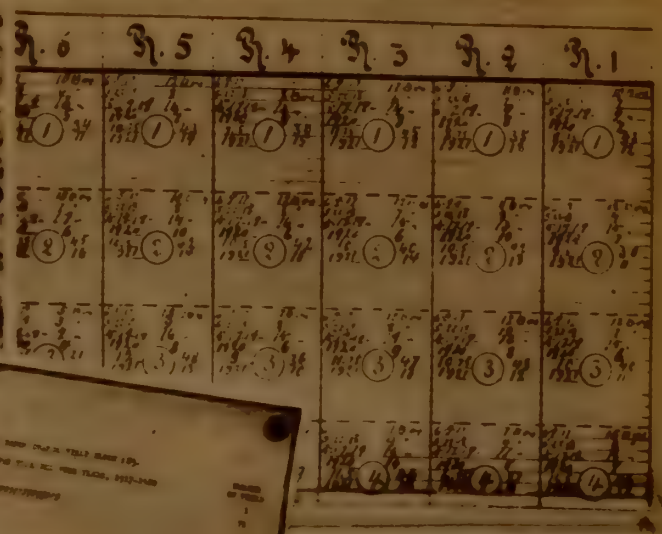
The first step necessary to accomplish this is to change from acre unit to the tree as the unit of citrus industry. Livestock producers long since have abandoned the herd or flock as the unit in favor of the individual.

"How much is a tree worth?" is a question which comes up for discussion frequently. Oil companies have perhaps arrived at as satisfactory an estimate as any in arbitrarily fixing the value of $100 per tree for full bearing orange and lemon orchards. If groves could be established with every tree as good as the best ones here and there, such a grove could return 10 per cent on a valuation of $10,000 per acre. In fact, at the present time orchards may be found where—taking all the trees good and bad together—returns of 10 per cent on $6000 or $7000 an acre valuations are being received.

There is no branch of fruit raising where the capital invested and the operating capital are so high as in the citrus business. With the limits of domestic consumption practically reached; with heavy outside competition inevitable; with unusual high capital investments and heavy costs of production, it is certain that the time is near when every citrus grower who remains in the business and expects to receive a profit will find it advisable to analyze his orchard with a view to increasing the efficiency of his trees.



To mark this tree cost only two cents—less than the expense of ear-marking an animal. Chart shows yield of trees by classes. Figures at left give number of boxes.



Leaf from tree record, showing production and average of individual trees each year for five years.

The large, fine looking tree at the left bore an average of only four and a half boxes per year for ten years, while the scraggly tree at the right made a record of five boxes "Trap-nesting" told the tale, showing that appearances often deceive.

ESTABLISHING TREE IDENTITY

Each tree must be known by a given symbol or number. The usual system used is that of giving each tree two numbers, one designating the row, the other the individual tree. It is customary to paint letters from two to three inches in height on the trunks of the trees. Other systems which have been used include tags or labels attached to the branches or to the trunk.

The next step is to establish some system of production records. Five years of production are usually considered as the minimum necessary for a satisfactory analysis. A good plan is to make a map of the orchard with a one-inch square for each tree. This square is divided into five parts, each of which is used for recording one year's production.

It is unnecessary to pick the fruit from each tree separately and to count the boxes and fractional parts. The grower can carry in mind what is a full crop and when the trees are carrying this amount of fruit he can indicate this by an appropriate symbol. The simplest system is that in which the variation in yield is recorded in figures from 1 to 5: the latter meaning a heavy crop; four, a good one; three, medium; two, poor; one, very poor.

ESTIMATE TREE PRODUCTION

With his chart in hand the grower should go through the orchard before any fruit has been picked, filling in the blanks with his estimate of production. It is desirable to use three colors of ink: one for very poor and poor; another for medium and another for good and heavy. When four or five years' production records are available, the grower is in a position to analyze his grove and to classify the trees according to production.

The trees should then be arranged in classes according to production. Trees with a poor production are clearly unprofitable; those with medium production probably are barely paying expenses. The profits, if any, from the grove will be returned by the trees with good production.

Analyses recently made of several citrus groves according to this method have shown that in one case an orchard of 100 acres, considered to be one of the best paying orchards in the section and actually netting $400 to the acre and better during the past five years, contained 32 per cent of trees which were either unprofitable or merely paying expenses; 68 per cent of the trees were profitable and had to make up for the loss on the poor trees as well as to return a profit for the entire acreage.

FINDING UNPROFITABLE TREES

Another orchard of seventeen acres showed 74 per cent of the trees either unprofitable or only self-supporting, with but 26 per cent of the trees actually returning a profit.

The causes for failure to bear full crops may be grouped roughly into two divisions: inherent and environmental. In order to determine which of these causes are of importance it is necessary to determine the distribution of the good and poor trees in the orchard. If the poor producing trees are not found grouped together in zones or areas, but occur here and there, in all probability the causes are inherent. *(Continued on Page 13)*

This poor producer was topworked with cions from a heavy bearing tree. The nurse limb at the right was left to assist in getting the new growth started.

Training Trees

(Continued from Page 3)

framework of my trees, building up two to three feet each season.

"The work is simple, does not take long to perform and I save all of the growth the trees have made. Furthermore, I get better results in strengthening the scaffold limbs and in the spread and distribution of the branches to light and air. I get early and heavy fruiting and have not loss of tree growth by pruning."

"Yes, my Bartlett pear trees do look something like orange trees, but what of that? I have produced an average of two and a half packed boxes of fruit on five-year-old trees and three boxes on six-year-old trees. I found it necessary to use very few props, and I believe that this is only the beginning of what can and will be done with this system.

"Howard Reed of Marysville told me that he harvested an average of one packed box per tree on 5000 two-year-old trees tied by this method."

HEAVY PRODUCTION RESULTS

"My trees look different from most pear trees, but I should worry! It is strength of tree and early and heavy production of first class fruit that counts with me—and you will have to admit that I get it."

"I see your point, Caldwell," I admitted. "You develop the arch used by the ancient Romans into the structure of your trees. You force out buds at the top of the arch and have for fruit production that part of the branch which by prouning would have been removed."

"Look here, Caldwell," said Smith, "I believe in long pruning, but what you say sounds reasonable. Suppose you come over the fence and hog-tie one row of my pear trees? I'll keep a record of that row and the row next to it. Then in a few years we shall know definitely which is the best method."

The Improved Binder of Today

Soon Pays for Itself by What It Serves

Every year the old binder falls off a bit more in efficiency. The owner hardly realizes the gradual decline. Finally comes a time when the risk is too great. Poor cutting, faulty binding, clogged elevators, heavy draft, delays, emergency repairs, lost bushels and loss of temper—these are incidents of the harvest with a worn-out binder.

In the meantime the new McCormick, Deering or Milwaukee binder goes into neighboring fields and surprises and pleases its owners in a hundred different details. If you haven't seen the perfected binder of 1923 you can't realize what a vastly improved harvester it is. You will find it a marvel of skill and good workmanship, simpler, better made, easier to handle and ready for many years of good service.

Harvest is the critical time when all your plans and labors come to a head; go at it with trustworthy equipment. Will your binder stand the test this season? If any doubt is in your mind, invest in the crop-saving machine sold by your McCormick-Deering dealer. Look the binder over in detail at his store.

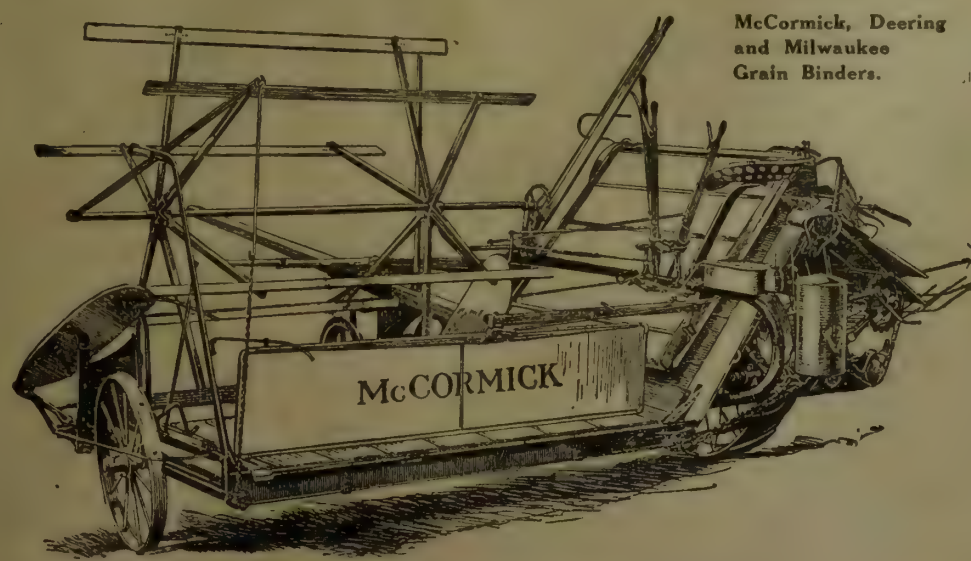
INTERNATIONAL HARVESTER COMPANY
of America
(Incorporated)

734 Lawrence Street, Los Angeles, Calif.

201 Potrero Avenue, San Francisco, Calif.

These are a few of the strong points in the construction of the present McCormick, Deering and Milwaukee Grain Binders:

Better construction—improved bearings—lighter draft. Outside reel support—grain-saving floating elevator. Durable woven straps for canvasses—improved bundle carrier. Tongue truck for steadying and carrying loads.



McCormick, Deering and Milwaukee Grain Binders.

Colder Than Ice

Kelvinator

Electric Home Refrigeration

keeps food longer and better than ice; does away with the muss and bother of ice; and still furnishes all the ice cubes you need for drinking purposes.

Operates automatically.

Fits any refrigerator. Soon pays for itself in the ice it saves.

It will pay you to write for particulars.

Waterhouse-Wilcox Co.

523 Market St.,
San Francisco, Cal.

Headquarters for
"Caloric" Pipeless Heating
"Hills" Lawn Clothes Dryer
"Swartwout" Roof Ventilators
"Wearite" House and Roof Paint

Order
Husky Baby Chix Now
—for winter laying

STRONG, vigorous little White Leghorn chix, having the ideal combination of pedigree and vitality, *chix that will grow, thrive and produce*—can be ordered here now!

These little huskies are produced, without forcing, from accredited hatchery flocks that have unlimited range 365 days in the year. Males are pedigreed, with a record by sire's dam of from 240 to 297 eggs per year.

Privilege of inspection, guarantee of live delivery full count. Prices per 100—April, $12.50—May and June $12.

Let us tell you WHY May and June are ideal months to start raising chix. You'll be interested. Write today!

THE
Pioneer Hatchery
450 Sixth Street, Petaluma, California
ACCREDITED BY SONOMA CO. FARM BUREAU

YOU CAN'T AFFORD TO HAVE SICK OR BACKWARD COWS

Kow-Kare Insures Profitable Dairying for Thousands All Over the Country

Cut out the constant leaks of dairying that result from sick cows and disappointing milk-yield, and you will begin to reap the real profits. Stop looking upon cow diseases as inevitable; they CAN be prevented.

The cow's winter diet is hard on her digestive and genital organs—runs them down. Overfeeding of rich concentrates only aggravates the condition. What is needed is to keep the milk-making and digestive organs healthy enough to maintain top-notch production and at the same time throw off disease.

Kow-Kare has the medicinal properties to accomplish just that. It acts directly on the vital organs of the milch cow, toning up and giving strength. It is this marvelous rebuilding action that has made Kow-Kare famous in the treatment of cow diseases, such as Barrenness, Retained Afterbirth, Abortion, Bunches, Scours, Milk Fever.

We get thousands of letters each year, like the one from Jacob Germann, Farmingdale, Ill.:

"I had three cows this spring, one had garget, and one had milk fever, and one was done up completely from calving and could not get up or walk and I had a veterinarian with no good results. I began feeding Kow-Kare and she is able to go to pasture with the other cows now. I just know I would have lost the three if I had not had your medicine."

Remarkable increases in winter milk yield can be attained by feeding just a tablespoonful of Kow-Kare twice a day for one week in each month. Try it, and you will never go through a winter without Kow-Kare.

Our 32-page book on cow disease, free. Kow-Kare is sold by feed dealers, general stores and druggists. If your dealer is not supplied, we mail the remedy postpaid on receipt of price.

DAIRY ASSOCIATION CO., Inc.
LYNDONVILLE
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Wholesale Distributors of Kow-Kare and Bag Balm for California

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CLASSIFIED RATES

60 cents a line (average 7 words). For white space, cuts or display type, most is computed according to total space occupied by advertisements.

Advertisement must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

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PROFITABLE POULTRY AND CO-OPERATIVE ELECTRIC HATCHERIES. Thousands vigorous chicks, turks, ducklings every week from unforced, high winter egg-producing 180-290 egg White, Brown, Buff Leghorns; Barred, W. Rocks; Reds; Anconas; Minorcas; Brahmas; Wyandottes; Andalusians. They clear money laying abundant high-priced winter eggs. Customers after trial say: "Rather pay $15 your trapnested Brown Legs. than $12 some others"; "After 4 years with 5700 your chicks (Legs., B Min.) want 1500 again"; "Raised 94 Reds out of 100, on road 74 hours." Price, quality, profit right; chicks, turks ready. Write Box O, 13 N. Fair Oaks, Pasadena, Calif.

BABY CHICKS

The kind that live and thrive, lay and pay. We hatch from purebred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 12½c; Reds, 16½c. Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELEC-CHICK HATCHERIES Dept. "L," Burbank, Calif. References: State Bank of Burbank.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 245, King Road, San Jose, Calif.

HUSKY CHICKS from our 200 egg S. C. White Leghorn 2-year-old hens, mated to cocks of famous egg strains, $15 per 100. HATCHING EGGS, $7.50 per 100. Customers write they lose only 1 to 3 per cent. Also White Plymouth Rocks, Black Minorcas, Anconas. Laying hens, pullets and cockerels. PURE BREED HATCHERY, Route 1, San Mateo, Cal.

WHITE LEGHORN BABY CHICKS from selected flocks mated with males having pedigreed record by sire's dam of 240-297 eggs per year. Price per 100: February, $16; March, $14; April, $12.50; May and June, $12. Safe arrival of full count live, strong chix guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 418 Sixth St., Petaluma, Calif.

BABY CHICKS every week. White Leghorns, R. I. Reds, Barred Rocks. Some open dates for April, May and June. Only selected breeders used. Safe arrival of full count guaranteed. Send for circular now. Also limited number of White Leg. pullets, 8 weeks old. The J. H. STUBBE POULTRY RANCH AND HATCHERY, P. O. Box 67-C, Palo Alto, Calif.

WHITE LEGHORNS—Chicks and hatching eggs from individually selected, orchard range birds. An unusually alert, vigorous egg-laying strain of real merit. Progressive poultrymen demand the best. Surprisingly low prices; ask for them. CURTIS WHITE LEGHORN RANCH, Route 2, Box 29, Gardena, Calif.

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BABY CHICKS, $16 per hundred. Don't buy chicks until you get my free circular. MRS. W. T. WHEELER, Berkeley, Calif., Rt. 1, Box 496-E.

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BROWN LEGHORN PRIZE STOCK BABY CHICKS & EGGS. GREAT OPPORTUNITY TO QUALITY BREEDERS. WE OWN CREATOR, INGOMAR, FIREFLY—BEST ON COAST. CASA DE ROSAS, CARMEL, CAL.

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BABY CHICKS—Leading varieties, standard bred, vigorous, heavy-laying stock. Lowest prices. Best quality. Post. paid. Illus. catalog free. Superior Poultry Co., Windsor, Mo.

BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FARMERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

WHITE LEGHORN BABY CHICKS—Tancred strain. Price reasonable. Tenth year. HENRY TARRATT, Corning, Calif.

BROWN LEGHORN baby chicks, $16 per 100. Poultry Equipment Co., Burbank, Cal.

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Turkeys, Ducklings

If you want any, don't just buy anywhere, but get them direct from the incubators of a hatchery where "Quality" is the watchword. Our "Quality" chicks are electrically hatched, strong and sturdy, and from good stock. All leading varieties. We specialize in very choice S. C. White Leghorns from hens of very heavy egg-yielding reputation. Hatching eggs and electric brooders. Write for prices.

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WOOL SCOURED AND CARDED
Have your own wool made into Batts, Comforters and Mattresses. Old wool bedding made new. Write for prices and shipping tags. CRESCENT BATT AND BEDDING CO., Stayton, Oregon.

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Have your Kodak finishing done by experts.

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"We put the snap in snapshots."
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USED FARM IMPLEMENTS—Harrows, Cultivators, Plows, Tractors, Tractor Tools. Save half price. ARNOTT & CO., Inc., 112-118 S. Los Angeles St., Los Angeles. Between First and Second Sts.

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WANTED—Women, girls. Learn dress designing, making; $35 week. Learn while earning. Sewing experience unnecessary. Sample lessons free. Write immediately. FRANKLIN INSTITUTE, Dept. R-589, Rochester, N. Y.

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BEES AND HONEY—Beekeepers' price list free or instruction booklet explaining fully for dime. Spencer Apiaries, Sawtelle, Calif.

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State Inspected and Approved California Irrigated Lands

NOW OPEN FOR SETTLEMENT to experienced farmers only. In tracts of 40 acres or less. Located in the heart of Fresno County, with a population of 125,000.

If you are a REAL farmer, with $5000 capital or credit, or have dairy stock or farm equipment for development, we can locate you on 40 acres of this land on a cash payment of only $1000. Balance 12 years at 6%. Applications for these tracts of 40 acres or less WILL BE ENTERED IN THE ORDER RECEIVED.

These rich, irrigated lands are suitable for deciduous fruits, grapes, vegetables, alfalfa, hogs and poultry. Especial opportunity now for dairymen. Good roads, modern schools, churches, railroad and auto bus transportation. Creamery being built now.

SECOND WEALTHIEST AGRICULTURAL county in the United States. Home of the famous Sun-Maid Raisins, where improved farms sell up to $2500 an acre. Center of successful CO-OPERATIVE MARKETING.

Write for free descriptive literature to W. E. JONES, First National Bank, San Joaquin, Fresno County, Calif.

MR. AND MRS. POULTRY FARMER—
The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than those we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been Hoganized. Prices for April are as follows:

	50	100
White Leghorns	$6.00	$11.50
Rhode Island Reds	9.00	18.00
Barred Plymouth Rocks	9.50	18.50
Anconas	9.00	18.00
Brown Leghorns	8.00	15.00
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May we not have your order again this year? Conkey's Buttermilk Starting Food will raise healthy chicks.

ANSEL W. ROBISON,
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P. S.—WE ARE THE PACIFIC COAST AGENTS FOR BUCKEYE INCUBATORS AND BROODERS. SEND FOR CATALOG.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

FARM LAND FOR SALE

THE CHARLES WEEKS SYSTEM OF INTENSIVE POULTRY AND BERRY FARMS
ONE ACRE AND INDEPENDENCE;
or
The Fine Art of Earning a Comfortable Living on One Acre in California. For those who desire to dwell in sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 3 is now being established at Owensmouth, California, 26 miles from Los Angeles. Write for literature.
CHARLES WEEKS, Owensmouth, Calif.

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Wire Netting For Gophers

A SUCCESSFUL plan for protecting the young orchard from gophers is described by Lorne S. Neville, Deputy Horticultural Commissioner of Los Angeles County. He advises placing one inch mesh, galvanized wire in the shape of a cylinder one foot or 18 inches in diameter, about the tree at the time of planting, allowing the wire to extend 18 inches or more under the ground.

Mr. Neville states also, that he believes this method would prove equally effective in the protection of larger areas. His advice is, to place the wire so that six inches would be above the ground. As he states, the gopher migrates to a greater or less extent on the surface. "But let us not relax our warfare with poison, traps and other weapons," adds the county officer.

Mushrooms Ripen Cheese

THE importation into the United States of more than 300 tons of Roquefort cheese in a single month last year indicates the imporance of his dairy product. Most Roquefort cheese comes from a city in France by that name.

Fresh ewes' milk is filtered and allowed to turn, then pressed into molds and sown with the spores of a tiny mushroom, which causes the cheese to ripen and acquire a peculiar, distinctive flavor.

After draining, the fresh cheese is brought to Roquefort and placed in rocky hillside caves, where it remains from one to three months before considered ready for market.

SLASHING ALMOND PRICES

The slashing of almond prices by independent shippers is the chief cause of the difficulties which are being experienced by the California Almond Growers' Exchange, declares Manager T. C. Tucker, who sees no legitimate reason for such action by outsiders. A large supply of low-priced Brazil nuts is said to be another unfortunate factor in the situation.

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DEPARTMENT O

WEEKS POULTRY RANCH,
Palo Alto, California.

"Experting" Citrus Groves

(Continued from Page 10)

If the poor trees are found in zones or areas, the chances are that the causes for failure to bear full crops are of an environmental character.

Inherent causes for failure on the part of trees to bear profitable crops may be due to stock or cion. A certain percentage of citrus trees are budded on improper stocks and are either permanently stunted or fail to set crops. A poor bud union is frequently an indicator of such a condition. The size of the trees is another indication of lack of congeniality between stock and cion.

TREE IMPROVEMENT METHODS

It may be possible to bring these trees into bearing by inarching, but at the present time the best recommendation is to pull the trees out and replant. Failure to bear satisfactory crops may be due to the trees having been budded from "off" types or low-yielding strains. Where individual trees have satisfactory bud unions and sound, healthy root systems and still fail to bear good crops, the best remedy to apply is usually that of top-working.

The most common causes of an environmental character for failure to bear are connected with soil differences which render irrigation practice inadequate to meet the needs of the trees, or fertilization insufficient properly to care for their needs. A careful examination of the soil should be made to determine these points. A change in irrigation practice may be what is necessary to bring the trees into good bearing. Quite frequently extra fertilization will be found to be the secret.

In some cases zones of poor yielding trees have been found to coincide with areas from which the top soil was scraped at the time the orchard was planted. Resurfacing has been found in such cases to materially increase the yields. Other causes which may contribute to failure to bear satisfactory crops are trunk and root diseases, including gum disease, scaly bark, shell bark and pests, such as gophers.

KEEPING TREE RECORDS

The keeping of tree history records will prove to be almost invaluable. Semi-annual individual tree inspection should be made, using a simple form of record on which notes are made with reference to each tree's condition.

Every new tree planted should have the date of planting set down. Trees affected with any special condition in the way of disease or pest infestation should have this fact noted together with the dates of treatment and a simple record of treatments used. The longer such a system is carried on the more valuable it becomes.

Peaches Pay for Butte Farm

(Continued from Page 2)

One would think that if Metzler and Waterbury could raise such big crops of peaches they would put more of their land into this kind of fruit. That is just what they are doing. Last year they set out four and one-half acres to Tuscan clings and this year they planted the same acreage of Sims.

The nine-acre orchard is interplanted with walnuts, which are not considered profitable, because the trees do not bear heavy crops of nuts.

Land which will produce enormous crops of fruit ought to raise good crops of hay and grain. Ten or twelve tons of corn silage per acre is considered a fair crop, but these Gridley ranchers cut as high as twenty-four tons from that amount of ground.

The silage is used to supplement alfalfa for feeding dairy cows. Seven crops of alfalfa are cut in one year and such heavy yields are obtained that Mr. Metzler won a prize in a national alfalfa growing contest. Mr. Metzler also is an expert amateur photographer, having made all the pictures which are used to illustrate this story—except the one at the top.

In addition to raising record crops of fruit, hay and grain, Metzler and Waterbury have accomplished something else usually fine, for with their wives—who are sisters—they live and work together in perfect peace and harmony.

Pruning Shrubbery

IN ORDER to prune a shrub correctly, knowledge of its habits of growth and the conditions under which it is being grown are necessary. Take the coprosma, for example. This is a waxy-leafed shrub which can be made to grow a dense, compact top close to the ground, or to form a tall, open top.

If the former result is desired, keep the terminal shoots nipped back, cutting off those which grow where not wanted. If the opposite effect is desired, an upright, tall growth should be encouraged by a modification of the long pruning method.

Not long ago a coprosma hedge was planted in front of a row of tall, tree-like shrubs for the purpose of hiding the bare, lower portions of the latter. The Jap gardener, who was hired at a low monthly salary, made himself very pleasant and accommodating, but neglected to keep the coprosma shrubs properly pruned. The result was that they grew tall and "sprangly," in competition with the tall bushes in the rear. They failed to hide the foundation of the house behind and also left exposed a quantity of dead brush and bare trunks.

—E. S. CALLOWAY.

PRUNE "WELCHERS" PAY

Two suits in Chicago, which were instituted by the California Prune and Apricot Growers' Association against firms for amounts due on 1920 prune contracts recently, due on 1920 prune vor of the plaintiff. Following the break in the market, the defendants are said to have sought to repudiate their contracts.

RAISING RHODES GRASS

Encouraged by favorable reports from the Imperial Valley and Arizona, Tulare County farmers are planting Rhodes grass on alkali land. This plant is said to thrive on such land and to afford a solution of the alkali problem.—FLOYD BYRNES

DEMAND WEED CONTROL

The Farm Bureau of the San Fernando Valley, which is a part of the city of Los Angeles, is asking for an appropriation to destroy noxious weeds along the streets and roads of that locality, to prevent the spread of Johnson grass, puncture vine and other noxious weeds to farm lands.

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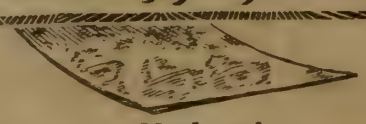

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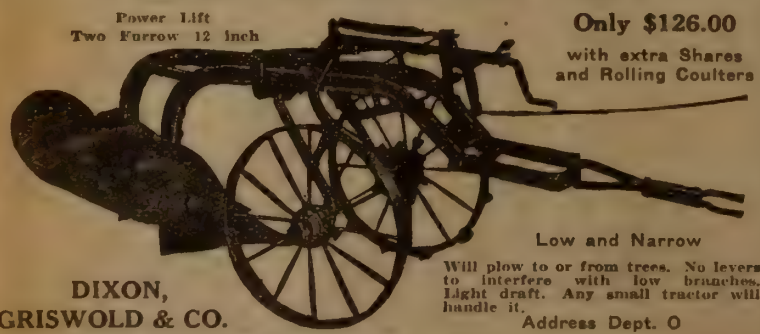

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England's Poultry

(Continued from Page 7)

be driven up to the doors of the feed rooms and the feed easily unloaded.

A $6000 electric pumping plant furnishes running water to every house and pen on the place.

There are few, if any, poultry farms in the United States established for the specific purpose of filling the demand for high producing breeding stock that are equipped as completely as the England farm. Mr. England believes firmly that what poultry keepers need more than anything else is better stock—hens that will lay better—and he soon learned that it was possible by trapnesting to produce such stock.

BREEDING PLANT PLANNED

The England stock farm is laid out and equipped for the one specific purpose of making it a breeding plant—not an egg farm—on which stock will be grown for and sold to the man who produces eggs for market purposes.

What a trapnest pedigree is worth may be judged by the fact that seven years ago Mr. England sold to hucksters young cockerels or broilers for ten cents apiece and some as low as eight cents. Now, with the pedigree or breeding, he sells them for $4.00 apiece at ten weeks old! That is his lowest price; the highest runs up to $100 and more for special males.

"I could sell all the eggs from 1000 200-egg hens, mated to males from high record stock, at from $25 to $50 a hundred. I sell my best eggs for $30 a setting of 15 eggs. I think that reasonable enough. I charge $50 for a breeding male that has three consecutive generations of 250 eggs or better on the dam's side and on the sire's side not less than 273, the minimum I have used. I have sold birds for much more than $50, but I do not believe in charging fancy prices," says England.

TRAPNESTING BY WHOLESALE

Mr. England trapnested some 2000 pullets and 700 hens last year. He expected to trap a total of 3500 the present year. The trap nests are placed in a row under the dropping platform. The method of trapnesting is as follows:

Each hen has a special leg band on which the number is large and plain enough to be read at a distance of several feet. Two men work together. One takes the hen off the nest, removes the egg, reads the band number and calls it to the other man, who repeats the number and marks the record.

The record sheet is carried on a carrier which runs on an overhead track, one sheet for each pen of 200 hens. This card gives the daily record of eggs laid for the month. The egg basket also is carried on the carrier. The work is done very quickly and accurately in this way.

Two experienced men can go through the houses of 2000 pullets several times a day when the nests are full and release the hens and mark the egg record. The same men can also feed the flock. Should the flock average 200 eggs a hen in the year it would mean that the men would release each hen 400 times a year, putting 400,000 marks on the record sheets and as many eggs in the basket.

MUCH OFFICE WORK

The monthly record sheets have to be taken to the office and transferred to a permanent record. This means opening a book account for each hen and keeping the thousands of accounts or records indexed and cross-indexed so that a particular hen's record may be looked up without loss of time.

The pedigreeing of the chicks requires a great deal of painstaking record work. Each hen's eggs must be hatched separately and another record book must show the pedigree of the chick, the number of eggs the dam and the sire's dam laid as far back as the record extends.

When a bird is sold, a pedigree blank is made out which gives the record of the fowl's ancestors as far back as records are available.

It will thus be seen that trapnesting and pedigree breeding mean steady work, accuracy, persistency and expense.

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Killing Weeds With Chemicals

Large Areas of Noxious Weeds Being Sprayed With Poisonous Compounds

By O. H. BARNHILL

FOR twenty years J. W. Singleton, Missouri farmer, tried in vain to find some chemical compound which would kill the worst kinds of noxious weeds. In his experimental work he is said to have used up the supplies of three drug stores. It was comparatively easy, he found, to prepare a solution which would kill the tops of the weeds, but the withered plant would send up new growth from the unharmed roots.

The class of weeds which is hardest to destroy are those which spread by sending up new plants from lateral roots, which sometimes extend several feet underground, beyond the reach of ordinary implements. Unlike annuals and biennials, the roots of these weeds do not die when the plant is cut off below the crown, but live and grow independent of leaves and stalks.

Such roots sometimes grow a rod long and a single plant will throw out a large number of them. If a piece of one of these roots even an inch or so long be left in the ground it will grow and make a new plant.

ORDINARY METHODS FAIL

It will thus be seen that it is almost impossible to eradicate such weeds by ordinary methods. Every root joint is a potential plant and every plant is capable of increasing itself several hundredfold. It is true that such weeds can be exterminated by keeping the aerial growth cut off for several years, but this entails such an enormous amount of labor as to make the method impracticable.

Wild morning glories, Johnson grass and Canadian thistle are three of the commonest kinds of weeds belonging to the class described. The first named makes such a rank growth as to strangle cultivated crops, while the second has overrun and destroyed many meadows. Canadian thistles have ruined many meadows, forming thicket of thorny plants, which livestock cannot penetrate. This weed also spreads by the seeds, which are blown long distances by the wind.

"After experimenting a score of years success finally crowned my efforts," relates Mr. Singleton, who now lives at Hyde Park, a suburb of Los Angeles. "I found that by adding to a large quantity of stock solution a small amount of another compound which I have named 'false sap,' the liquid will be absorbed into the tissues of the plant, mingling with the natural juices and by them being carried down into the roots, which are thereby killed."

Mr. Singleton came to California seven years ago and has since been engaged in making and introducing his invention. "I come from the 'show me' State," says he, "and, therefore, am ever ready and willing to demonstate the effectiveness of my invention. My plan is to go into a community and treat an especially bad patch of weeds. After the chemicals have had time to penetrate to the ends of the roots I invite the people to inspect the job, digging down as far as they like to see the dead roots."

The best time to apply the chemical is said to be in the morning, when leaf pores are open. Any kind of a spray outfit may be used, but those which make a fine fog are considered best for this purpose. A hand atomizer is used to kill small, scattering weeds on all the golf links in Los Angeles County. A larger hand sprayer is used for keeping down the worst weeds in Griffith Park, Los Angeles, while for field work power sprayers drawn by horses or tractors is employed.

SPRAYING METHOD EXPLAINED

"In order to keep from missing any weeds, it is best to lay off the field in strips 20 to 40 feet wide, depending upon the size of the spray outfit," advises Mr. Singleton. "A check line or binder twine may be used to indicate the edge of the strip covered. Tops and small roots are killed in about ten days, while it sometimes takes two months for the largest roots to succumb to the treatment."

The solution is quite expensive, but only a small quantity is needed to kill an acre of weeds. About 500 barrels were used last year, mostly in California. Thirty-nine barrels were used on the Campbell ranch to kill morning glories and other noxious weeds.

R. S. Carberry, superintendent of the Imperial Water Company, uses this compound by the barrel for killing weeds and says the results are "marvelous." W. C. McCully, manager of the Oxnard Citrus Association, tested the invention on morning glories at Montalvo. Two days were consumed in digging out dead roots, some of which were found at a depth of four feet and six inches. "Through the use of this compound I can see the end of morning glories and other similar weed pests in Ventura County," says Mr. McCully.

Frank Owen, horticultural commissioner of Solano County, recommends this compound for Johnson grass and similar weeds, also for mock orange, locust and ailanthus. It is said to kill poison oak, shubs and trees as well as weeds.

H. C. Debes of Chino says that he killed 100 per cent of the tules and cattails in three miles of irrigation ditches by the use of Singleton's solution. The weeds stood six inches to two feet under water.

Nathan Bassett, horticultural inspector of Imperial County, claims that he killed twenty acres of Johnson grass with this chemical compound and that after eight months' experience with it he has found "it will kill many kinds of the worst weeds, root and branch." J. D. Drake of Silverton, Oregon, writes that with this solution he has killed Canadian thistles, fern, morning glories and plantain.

Building a Storage and Feeder Barn

THE barn here shown may be filled by blowing the straw into it at threshing time, or it may be filled by wagon and horse fork. There are no sizes given, because it should be made to fit the farm and the number of cattle and other stock for which it is wanted.

The size of the timbers must be proportioned to the width and height of the building. The distance between the hay supporting joists should fit the animals to be sheltered and fed. If both large and small animals are kept in and around it the feed may be protected with additional slats, or a manger built on the concrete slab through the center of the building.

Shelter, feed and bedding may be provided and manure manufactured at a profit on any farm in this way and the animals will feed themselves with just a little attention once a day—H. A. SHEAHER.

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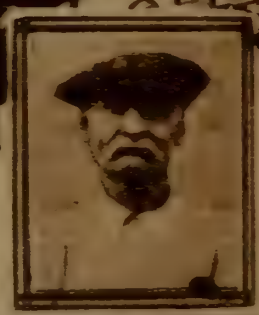

Sam Garvin, who learned automobile work when 73 years old.

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

APRIL 15, 1923

Photo by Goodmanson

Do You Believe In Signs?

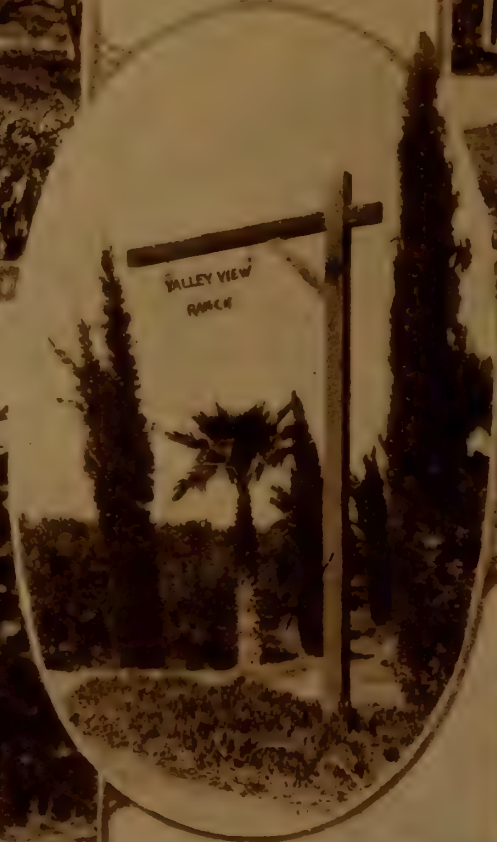
The quality of walnuts grown in this orchard and the way they are marketed are indicated by this sign.

Farm Signs Indicate Pride and Prosperity

California farmers, as a class, are not superstitious, but they certainly believe in signs, as the interesting pictures on this page plainly indicate. The farmer's front gate is his show window, which city merchants consider a very valuable asset.

A beautiful pepper tree serves as a support for this businesslike poultry sign, which advertises selected eggs and advises passersby of the daily market price, in letters impressively large.

This sign suggests a lovely country home surrounded by beautiful flowers. The rock wall and palm tree in the background indicate a location in the citrus belt of Southern California



Simplicity and good taste are featured in this inexpensive ranch sign. The choosing of an appropriate name for the farm home is an interesting task and one which will repay a good deal of careful thought.

The owner of this vineyard evidently has plenty of sand and belongs to one of the largest and most successful co-operative marketing organizations in the world, the Sun Maid Raisin Growers.

This pergola poultry sign frames an enticing orchard view, with a roadway leading to feathered flocks beyond. Chickens and trees form a profitable combination, the latter affording needed shade, while the former destroy insect pests.

This enterprising poultryman uses a blackboard to advertise his products, a cheap and effective method of attracting buyers.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
APRIL 15, 1923

China's Contribution to Our Poultry Prestige

Pekin Ducks Make Money for Many Producers—Eastern Specialty Farms Raise Tens of Thousands—Only Purebreds Should Be Maintained

By PROF. F. H. STONEBURN

Famous poultry authority, formerly lecturer at Universities of Maine, Cornell, Columbia, Vermont and Missouri, and at State Agricultural Colleges of Massachusetts, Connecticut, Pennsylvania, Rhode Island and Maryland. By arrangement with the New York American.

THE Pekin duck, brought to this country from China by an American business man fifty years ago, has become America's most popular and profitable commercial breed.

Few persons have any conception of the extent to which market ducks are grown by specialists. There are very few chicken farms in America which produce as many birds each season as do a considerable number of duck farms. Many of the latter grow and market 50,000 ducklings a year, and in certain cases from 100,000 to 150,000 head are marketed annually by single farms.

As these quickly-grown ducklings weigh from four to seven pounds each, one can form some idea of the magnitude of the operations of these specialists.

Five thousand dollars cash income per year from a chicken farm isn't at all bad. Yet I recently visited one duck grower who had just sold his season's crop of duck feathers alone for that amount.

DEMAND INCREASING

Well grown young ducks—or "green ducks"—are mighty good eating. The consuming public appreciates this and the demand seems to be increasing steadily.

Certain duck farms have been operated on a relatively large scale for many years and their owners seem to have made very satisfactory profits. Professionals in this field use Pekin ducks almost exclusively; in fact, the industry is founded on this great breed.

The Pekin is preferred because of its large size, white plumage, hardiness, general freedom from disease, rapid growth and superior table quality.

Further, the two sexes are much alike in weight, which makes possible the marketing of the entire brood at one time. In certain breeds the ducks are much smaller than the drakes and consequently do not sell to advantage.

According to available records, these big white ducks were discovered in China in 1872 by a Mr. McGrath, then traveling for a New York firm which imported Chinese products. He saw them at Pekin where it was said these big white birds were not commonly bred but came from stock found only on the area set aside for the use of the Imperial family.

BROUGHT TO AMERICA

Mr. McGrath secured some eggs which he carried to Shanghai, where he had them incubated. Fifteen young ducks were reared from these eggs. During the same season an Englishman, Major Ashley, stationed at Shanghai, also secured some eggs from Pekin and reared a number of birds.

It seems that Major Ashley enjoyed a great reputation as a fancier and breeder of feathered stock and his birds were always inspected by interested travelers who visited Shanghai. Late in 1872, a New England poultry breeder, Mr. James E. Palmer, of Connecticut, called on Major Ashley and became interested in the huge ducks which were so unlike any bred in America.

Learning there of similar ducks in the possession of Mr. McGrath, he became acquainted with the latter and arranged with him to transport to America the 15 young ducks then in his possession.

In those days, transportation was slow and it took four months to make the trip from Shanghai to New York. Six birds were lost during the trip and the remaining nine reached our shores in March, 1873. Five of these were shipped to one of Mr. McGrath's friends and were lost in transit.

INDUSTRY ESTABLISHED

Mr. Palmer took the remaining four, one drake and three ducks, to his home in Stonington. Upon these four much-traveled birds the duck industry, as we now know it, was established.

From the limited stock in the yards of Mr. Palmer, fanciers secured hatching eggs and breeding birds, and as the numbers increased, some of the young birds, probably the surplus males, were dressed and marketed. Then the poultry dealers and commercial duck growers had an opportunity to learn how superior were these foreign birds to those commonly bred, and the Pekin boom started. This boom never has collapsed. The Pekin is yet the leader in this field. In fact, there isn't a second choice among growers who operate on a commercial scale.

DUCKS FOR HOME USE

I sometimes wonder why every poultryman who rears birds for his own table does not grow a small brood of ducks each season.

Hatching eggs are not expensive, and ready-hatched ducklings usually may be secured from hatcheries. The youngsters are very easy to manage, and grow at an amazing rate. Since they do not require space for range, and may be raised in very small yards, they are well *(Continued on Page 14)*

Commercial Duck Raising in California Involves Peculiar Conditions

ALTHOUGH California has one duck farm with a capacity of more than 50,000 fowls (the Reichert ranch, Colma, San Mateo County) and one at Petaluma (the Pacific Duck Farm) which maintains several thousand, the industry has not approached the proportions attained in the East.

Nor has Southern California kept pace with the central part of the State. With the exception of Harry Halford of Inglewood (Los Angeles County), it is said there are no southern breeders who maintain more than 1000 ducks.

The limiting factor in this State is the market demand, which comes principally from the Chinese and the Jews. As the latter increase in numbers, it is believed more ducks can be raised with profit. The Chinese demand, however, appears to be almost constant. These races demand "green," or freshly killed, ducks, and will not eat the stored product, nor even the older birds shipped alive from the Middle West. Many of the latter reach the Coast before and during the holidays, and are sold along with turkeys, geese and other seasonable meats.

The "green" duck of the local markets is killed at 10 to 12 weeks of age, and the secret of success in producing market birds lies in quick development on comparatively cheap feeds.

As for the eggs, limited quantities find *(Continued on Page 14)*

Why Are Not More Farmers Buying California Land?

Let Us Face Facts—There's a Reason—An Interview with George Kreutzer

By O. H. BARNHILL

WHERE can the men and money be found to develop the 2,000,000 acres of idle, irrigable land in California? What chance of success have the numerous irrigation districts which are being formed? What is the next move contemplated by the Land Settlement Board, following the recent defeat of its proposed bond issue? Why aren't the remaining allotments in the Delhi colony being taken more rapidly? On your recent Eastern trip did you find many farmers ready to move to California?

GEORGE KREUTZER, SUPERINTENDENT DURHAM STATE LAND COLONY

"One at a time, please," smilingly parried George Kreutzer, superintendent of the State Land Colony at Durham, somewhat staggered by this barrage of questions. "Men of small means, who are either farmers or who have been raised on a farm and who live here in California or in the Middle West, will probably constitute the bulk of those who will perform the real work of developing California's idle acres.

"The people who are forming irrigation districts are tackling a hard proposition, because they have not laid adequate plans for making the land pay the cost of its development.

"The slowness with which the last unit of the Delhi State Land Colony is being settled is due to the same causes which are keeping people from buying and developing other California lands—lack of cash capital.

"In the corn belt I found a great many farmers and others wanting to come to California, but most of them are 'land poor,' unable to convert their property into cash.

"The best prospects for settlers were found in Minnesota," related Mr. Kreutzer. "This was probably due to the prominent part which dairying plays in the agriculture of that region, for dairymen weathered the recent financial storm in the Middle West better than any other class of farmers.

"An Iowa farmer who related to me his business experiences for the past few years is a good example of the present predicament of thousands of corn belt ranchers. This man got into the farming game during war times and cleaned up $26,000 in a single year He then moved to town, rented a fine house, bought a costly automobile and several silk shirts and for awhile lived on the fat of the land.

"When the crash came, however, he was found holding a sack in the shape of a 480-acre farm and a $98,000 mortgage. He traded for a smaller place and has been liquidating his assets as rapidly as possible. He started operating with $16,000 and will come out with about $6000.

"The people of California voted against the issuing of bonds to finance additional land development because they were under the mistaken impression that it would add to their taxes. The water power act carried down with it all similar measures, for the voters, burdened with high taxes, did not stop to discriminate between worthy and unworthy projects. It will be different when the State again asks for a bonding act to make idle acres productive.

"Many irrigation districts are being formed by big stock and grain farmers, who are taking this step to prevent their water supply being taken by power companies and conducted through penstocks to points where it will be unavailable for irrigating the district lands.

"An irrigation project costing $40 an acre means an annual irrigation tax of from $3 to $6 per acre, because the bonds will draw 6 per cent interest, which will be increased to 8 per cent by bonding expenses. An additional $60 per acre will be required to level the land and provide buildings and farming equipment.

"This will make a total expense so great that it cannot be met by the kind of farming contemplated—raising grain and livestock on a large scale. Thus there is danger that payments of interest and principal of bonds will not be met, which will make future sales of irrigation bonds difficult.

"Only by intensive cultivation of small units such as the production of pork, poultry and dairy products, fruits and vegetables on ten to forty-acre farms, with 5 per cent interest and long-term payments—say, twenty years—can the average development of irrigated land be made to succeed.

"This is the plan which State land settlement offers. It is succeeding at Durham and Delhi, in spite of the fact that these projects have been developed during an area of falling prices and demoralized markets. Many instances can be given of men who came to these places with from $3000 to $6000 worth of assets and have made a living and accumulated from $500 to $2000 worth of property each year, on an average, since their arrival.

"Out of 170 people who have recently visited the Durham Land Colony, only two had as much as $10,000. The average California homeseeker has from $1000 to $3000 in available cash assets and land development plans therefore must be made to fit the circumstances of this class of settlers."

ORCHARD and FARM

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O. H. BARNHILL, Assistant Editor.

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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED.

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

LET THE BOY CHOOSE HIS CROP.

Parents are prone to push their sons into work which seems most desirable to them, regardless of the kind of employment which is best suited to their offspring.

This is as true of farmers as townspeople. The boy who has a "bent" for bees or poultry may be forced to grow grapes or garden truck, while a natural-born stockman perhaps is made to prune pears and irrigate oranges.

The fact that a boy likes farming and is content to live and labor in the country does not mean that he can raise any kind of crop or animal successfully. Let him choose that branch of agriculture to which he is best suited, even though it entail temporary expense and inconvenience.

NOT LIVING UP TO OPPORTUNITIES.

The Pacific West farmer who has not a plentiful supply of fruits and vegetabes in great variety is not living up to his opportunities, because these things are here so easily grown.

"Easy!" Yes, we know just what it takes in grit and elbow grease to work in the vegetable garden and berry patch at odd times, often when one is dead tired and other work is pressing. We also are aware that the time-worn excuse—"cheaper to buy than raise"—is often founded on fact.

The trouble, however, with buying is that not always will it be done when needed. The only way to insure a supply of fresh fruits and garden "sass" is to grow it on the farm. If the work be carefully planned, it is surprising how many things will grow almost spontaneously, requiring little attention from year to year. And the returns in health are worthy of careful consideration.

A few blackberry vines and gooseberry or currant bushes planted along the fence; a bed of rhubarb and asparagus; a grapevine here and there, will furnish great quantities of palatable food. Everbearing strawberries are an everlasting joy, as are nut trees by houseyard and stockyard.

FARM BUREAU PERMANENT INSTITUTION.

When the writer was assisting in a Farm Bureau membership campaign, many who were approached gave the following objection to joining:

"Your arguments are good, but we were told similar things about the Farmers' Alliance, the Patrons of Husbandry, Farmers' Union, Society of Equity and other agricultural organizations. But they all failed to make good; how do we know but that the Farm Bureau also will fail to fulfill the promises made for it?"

While all the associations named accomplished more or less for the farming industry and paved the way for the Farm Bureau, it cannot be denied that none of them ever became a great, strong, national, permanent organization. This fact proved to be the greatest stumbling block in organizing the Farm Bureau.

The latter, however, is now acknowledged to be an exception to the rule of rural societies and is almost as firmly established as the U. S. Department of Agriculture. In fact, it is—in a way—a part of the department, since its work is so largely guided and directed by the Extension Service, which in turn is closely affiliated with the State agricultural colleges. No farmer can make a mistake in joining his local farm bureau. No matter what may happen to the National Federation, the local unit is invaluable.

"What's New?"—Keeping Abreast of Agricultural Progress

Rise of Farm Land Taxes

CALIFORNIA farm land taxes have risen from 42 cents per acre in 1914 to 78 cents in 1922, an increase of 187 per cent. Average taxes on U. S. farm lands increased from 31 cents to 71 cents in the same period, a rise of 226 per cent.

Tri-County Fruit Contest

FRUIT GROWERS of Shasta, Tehama and Butte Counties are participating in a contest to see which can grow the best fruit and the most of it. At the end of the season sweepstakes prizes will be awarded for the highest production of perfect fruit, also special prizes for each county.—M. T. RICE.

Alfalfa Replaces Cotton

DURING the past year the acreage of alfalfa in Imperial County has increased 6000 acres, while the area planted to cotton was 7000 acres less than the preceding year. The cantaloupe acreage decreased, while more lettuce, asparagus, watermelons, peas, strawberries, grapes and grapefruit were planted.

First Accredited Herd

THE first herd of dairy cattle to be accredited by the California State Department of Agriculture as free from tuberculosis is the one belonging to Dr. J. J. Summerfield of Santa Rosa. About sixty additional herds are being tested officially, and those which pass successfully two annual or three semi-annual tests will be accredited. J. P. Iverson, chief of the Division of Animal Industry, commends Dr. Summerfield for his "strict observance of all precautionary measures and co-operation with Department officials."

Too Cold for Lichee Nuts

"SO far as I have been able to ascertain, the Chinese lichee nut has never been a very great success in California," writes J. E. Morrow, superintendent of the U. S. Department of Agriculture plant introduction garden at Chico, in answer to a reader's inquiry.

"While I was in Florida Mr. Reasoner told me he had some lichee nuts growing at Oneco, where he has a nursery. Oneco is located on the Gulf of Mexico, away down on the west coast of Florida, where frost is almost unknown.

"We had a few lichee plants at the Chico station, but they had to be kept in a lath house and never seemed to thrive, as the climate appeared to be too severe for them. I am quite sure this would be the case in the San Joaquin Valley also."

Silk Worm Eats Willow Leaves?

A SAMPLE of raw silk has been received from George Seaman of Granger, Wash., who says the fiber was produced by a worm which feeds on a certain species of willow growing plentifully in that region. The silk is claimed to be as good as that produced in China and the amount two or three times as great, in proportion to the number of worms.

Mr. Seaman formerly taught in an academy in Germany and is familiar with the industry in France and Italy. He says the worm which he is breeding is the China silk worm, bombyx mori, and that it is very prolific, fifty fertile eggs being theoretically capable of producing in one season 150,000 to 200,000 cocoons, worth $500 to $1000.

All the equipment necessary for silk production, says Mr. Seaman, is a well lighted, well ventilated room with shelves for the support of the worms and their cocoons. The willow tree on which they feed is said to be easily and quickly grown.

Spraying to Destroy Tules

EXPERIMENTS to determine the effectiveness of spraying with distillate or other oil products for the control of tules in drainage ditches are being conducted in Butte County. Tentative trials with distillate seem to indicate the possibility of killing cat tails with this material.

Inspection of a small area so sprayed on the Burleson place, near Gridley, shows the cat tails to be turning and apparently dying, while those not sprayed are growing vigorously. However, the experiment as yet has not been carried far enough to justify any claims for practical effectiveness.

So far as the tests have been carried out it seems that to spray a mile of ditch twelve feet wide, will require 200 to 400 gallons of distillate, depending on the thickness of the growth. Engineer Rief of Reclamation District No. 833, is conducting some experiments on the ditches of the system, and if a method of spraying is found effective in keeping down the growth of tules and cat tails a big problem will have been solved, as drainage ditches have to be cleaned of the growth every year at heavy expense.

Purebred Horses in Demand

SECRETARY BASSETT of the California Horse Breeders' Association has been searching in vain—according to the State Department of Agriculture—for the following: Two Shire stallion colts, long yearlings or two-year-olds; three Clydesdale stallion colts, same age; two Percheron colts, three-year-olds; 10 Kentucky saddle stallions.

Bamboos Hold Levees

SIX HUNDRED sacks of bamboo rootings were planted this spring on the Lewis levee, which borders a portion of the former Tulare lake bed. The bamboo is expected to be of material assistance in keeping the levee from breaking, in case high water occurs. The lake bed has been planted to grain.—FLOYD BYRNES.

Goat's Milk Saves Babies

"GOAT'S milk has saved 90 per cent of the sick babies in Los Angeles that were gradually dying because other food disagreed with them and medicines failed to help," declares Burton C. Platt of the city named. "These children are now the pride of the community. In the schools they are outstanding pupils. A look at them, full of buoyant spirits, impresses one with the fact that goat's milk is superior to anything else as a food for children."

Develop Silk Industry

SAN FRANCISCO capitalists are raising $50,000 to develop the silk industry in Butte County, according to Irvin Engler of the Sacramento Chamber of Commerce. Basing his belief upon the success of the silk farm near Oroville, he considers conditions ideal for the industry. Mr. Engler asserts there is no good reason why California should not in time produce the $200,000,000 worth of silk now imported into the United States from Japan.—M. T. RICE.

Cow Makes World Record

MELBA XV, an Australian Shorthorn cow, recently eclipsed the world's butter production record, giving in 365 days, milk which contained 1317 pounds of buttetrfat, enough to make 1640 pounds of butter, according to the U. S. Department of Commerce. The cow was seven years and four months old when the test commenced. The world's record previously was held by Bella Pontiac, a Holstein cow, of Ontario, Canada, credited with 1270 pounds of butterfat, the report says.

Improving Farm Homes

CALIFORNIA extension workers in eleven counties report the known installation last year of the following labor saving equipment in farm homes: Thirty water systems, 60 lighting systems, 3 heating systems, 5 solar heaters, 26 sinks, 46 washing machines, 36 pressure cookers, 77 thermometers and 45 pieces of electrical equipment. Fifty-nine fireless cookers were made and 27 were purchased. It is assumed, of course, that great numbers of household appliances were purchased privately by home owners and housewives.

A Ton of Pork in Six Months

THE California Swine Breeders' Association is offering five prizes ranging from $50 to $10 for the heaviest litter of pigs produced in the State in six months of the present year. No prizes will be awarded for litters having an aggregate weight of less than one ton.

"We believe that California pork producers can do as well as or better than the growers of Indiana and other Eastern States which are putting on ton-litter contests," asserts E. H. Hughes, secretary of the association, with whom all entrants must register. His address is University Farm, Davis.

Pests Injure Almond Trees

BROWN rot and red spider, in connection with poor cultural methods, threaten the extinction of the almond industry in Butte County, especially in the Durham district, declares W. T. Clarke of the University of California.

Professor Clarke recommends Bordeaux spraying for brown rot, subsoiling to break up plow sole and cultivation to conserve moisture. It is not possible, he said, to save soil moisture by maintaining a dust mulch—as has been thought—but a great deal can be accomplished along this line by keeping the ground free from weed growth.

The addition of humus to the soil and the placing of a hive of bees in each acre of trees during the blossoming period were also advised.—M. T. RICE.

The Black Smoke Fallacy

Timely Instructions on Best Methods of Tractor Carburetor Adjustment

By E. G. McKIBBEN
Division of Agricultural Engineering, University of California

DID your Fordson ever act like the one shown in the accompanying picture? What did you do about it? The chances are that you merely closed the needle valve until the smoke disappeared. Then you wondered why the spark plugs fouled, why the oil in the crank case thinned rapidly, why your engine developed a piston slap very early in life.

It is an almost universal belief that if no black appears at the exhaust and the engine seems to be running all right, all is well with the carburetor. This belief has resulted in what might be termed the "black smoke method" of carburetor adjustment. This very undesirable plan is quite generally used by inexperienced and poorly trained operators, especially after starting an engine on a cold morning. They open the needle valve a couple of extra turns to start, then close it until all signs of smoke at the exhaust have disappeared.

Tests made by the agricultural engineering division of the California College of Agriculture show that with a carburetor adjusted in this manner twice as much fuel will be used for the power developed as with the carburetor properly adjusted. By proper adjustment is meant an adjustment in which the needle valve is closed until the engine begins to slow down, miss or backfire, then opened slightly. This gives a mixture near the lean extreme, rather than the rich extreme. By "mixture" is meant that substance composed of fuel vapor, or spray and air, which enters the cylinder through the intake valve and supplies the explosive mixture. A lean mixture is one in which the proportion of fuel to air is comparatively low and a "rich" mixture one in which the proportion of fuel to air is high.

Don't misjudge the meaning of a smoking exhaust

ADJUSTMENT SAVES FUEL

The test at Davis was on a 20 h. p. tractor engine. With the carburetor adjusted by the black smoke method, giving a mixture as rich as possible without causing the engine to slow down—or the least sign of smoke at the exhaust—it required .38 gallon of fuel to harrow an acre. After the carburetor was properly adjusted, only half as much fuel per acre was used.

At the Iowa Experiment Station in a similar test on an entirely different type of engine—3 h. p. stationary—the results were even more pronounced. Adjusted by the black smoke method, the engine used .296 gallons per horsepower hour. Properly adjusted, it used only .13 gallons for the same amount of work.

As a result of accurate records kept on University Fords of the same model and carburetor equipment, it was found that certain drivers were able by proper carburetor adjustment to obtain an average of 18 miles per gallon. Others on account of ignorance of carburetor adjustment or carelessness in applying their knowledge averaged only eight.

Why are such results possible? The chemistry of the process which takes place within the gas engine cylinder offers a clear explanation. Most of the common fuels used are composed of compounds of carbon (C) and hydrogen (H). When the mixture burns in the engine the carbon and hydrogen of the fuel unite with the oxygen (O) of the air. The hydrogen always unites in the same way with oxygen to form water (H_2O) and may therefore be disregarded here.

The carbon may unite with the oxygen in one of two ways: CO_2, carbon dioxide, or CO, carbon monoxide. If the mixture is lean very little CO will be formed, because CO_2 is the normal product of complete combustion. If the mixture is very rich, a large amount of CO will result; due to the high proportion of carbon to oxygen.

This means that the carbon is doing only half the work it should. In order to have black smoke, which is simply free carbon, there must be enough carbon present so that there will not be enough oxygen to form even CO. Thus before the black smoke appears there must be almost twice as much fuel present as that needed for complete burning to CO_2.

KEEP SPARK PLUGS CLEAN

Fuel economy is not the only consideration. Did you ever have to clean a carbon fouled spark plug? You will continue to do so as long as you burn a rich mixture. Worse yet, there will be carbon deposited on the piston head, cylinder walls and valves of your engine; and if your engine happens to be on a tractor and burns kerosene, you will find fuel dilution of the crank case oils, with all the attending ills of worn pistons and bearings.

Therefore, after you have started your engine on a cold morning by opening the needle valve an extra turn or two, don't stop closing it at the point where black smoke disappears from the exhaust, but continue to close it until the engine begins to slow down, back fire or miss, then open it slightly.

On many carburetors the needle valve must be turned quite slowly, if the best adjustment is to be obtained, for it takes a certain amount of time for the changed needle valve opening to be reflected in the engine's operation.

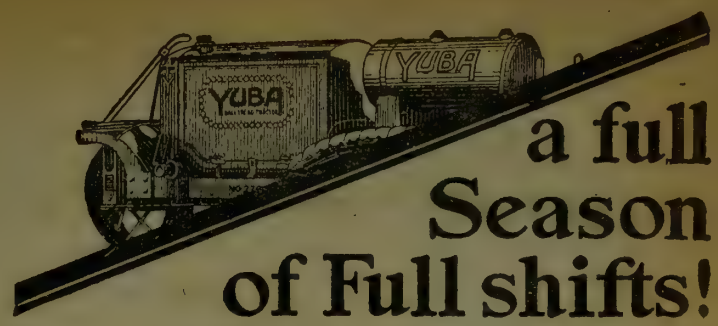
These same principles apply to the use of the choke rod on such cars as the Dodge. The choke on these cars performs the same function as the needle valve. Therefore, having started by pulling out the choke rod, do not forget about it until the mixture gets so rich that the engine refuses to run, but keep it pushed in as far as possible and still have the engine run without a tendency to slow down, back fire or miss.

Vetch Prevents June Drop

PURPLE vetch is recommended by H. E. Drobish, Butte County farm adviser, for preventing the June drop of oranges. It has the advantage over cow peas and beans in that it can be planted earlier than these legumes. The winter cover crop should be turned under sufficiently early to permit of the vetch being planted in time to attain a good growth by June.—M. T.

WILL RAISE PISTACIO NUTS

Pistacio nuts are to be grown on a large scale by B. M. Bagdoyan, an Armenian who has recently purchased 150 acres of land near Redding.



a full Season of Full shifts!

The buyer of a YUBA gets more than a weight of fine steel—more than a time-tried design—more than the famous BALL TREAD and the Front Wheel that means straight furrows.

He buys profit!

And profit that is not a promise—or a prediction—but an actual end-of-the-season balance made up of saved time, saved repair bills and work well done.

The proof?

Ask men who have had their YUBAS for eight years. They aren't hard to find!

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ENGLISH WHITE LEGHORNS

The full capacity of our hatchery is sold for the month of April. We can take orders for 10,000 of our imported English Leghorn stock for delivery between May 1st and May 15th. Our Hatchery closes May 15th for the season.

All of our breeding stock have unlimited range in alfalfa fields and peach orchards, have not been forced by special feeds or with electric lights, with the result that our fertility remains near 100 per cent, and we guarantee our chicks for May to have the same vitality as March chicks.

OUR PRICES:

Hatching Eggs			Baby Chicks		
15...	$ 2.00	500.. $ 55.00	100..	$ 25.00	1000.. $230.00
100...	12.00	1000.. 100.00	500..	120.00	

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Standard and Screw Casing.
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To prove that the Conow Burner is exactly as represented, the manufacturers agree to send the outfit on 30 days trial and let you see how it works before deciding to keep it. Write today for free literature, which explains all. CONOW BURNER CO., 15-A Columbus ave., San Francisco, Calif.

"SHAKE HANDS WITH HEALTH EVERY DAY"

Just because you live in California-the home of the prune-isn't the only reason why you should eat more prunes: The real reason is a selfish reason: the more prunes you eat the better your HEALTH will be!

Every Californian is properly proud of the amount of prunes he eats in the course of the year. At the same time, every Californian should realize that prunes are giving him, in return, a *real health-service*. Prunes supply something your body needs—and needs every day. That's why we say—see that this fine fruit-food shows up on your menus, in one delicious form or other, every day. The Sunsweet Recipe Packet—"60 ways to shake hands with health every day"—shows how. And it's free—send for it today. California Prune and Apricot Growers' Association, 35 Market St., San Jose, Cal. 11,000 grower-members.

California
PRUNE & APRICOT GROWERS ASSN.
PACKERS OF SUNSWEET & GROWERS BRANDS
Prunes

In the new
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cultivator are ideas that will interest you. Write for descriptive folder.

THE KILLEFER MANUFACTURING CO. Box 179, Huntington Park Los Angeles

A Practical Land 'Plane'

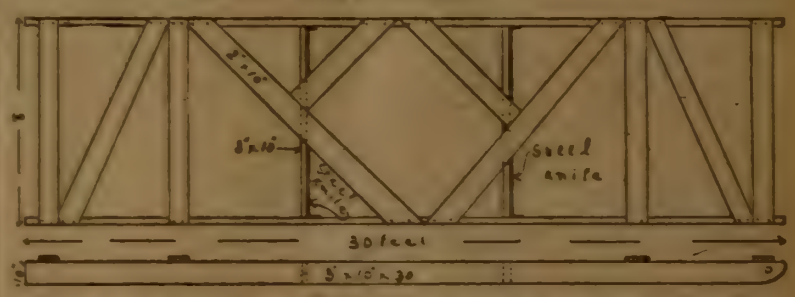
NEW farm implements are needed to meet the requirements of power farming; the land plane is one of them.

Our best seed drills may be set to plant seeds at the same depth where the ground is smooth and even, but the work is miserably done if the ground is cloddy or dotted with potholes.

A good land plane will make even the surface of the ground on the same principle that a carpenter's jointer makes a straight edge. There is one difference in operation, however. The carpenter's plane shaves off the bumps and throws the shavings away. The land plane cuts the ground from the high places and pushes the loose earth along until it drops into the holes.

Once over will improve the seed bed, but a rough field should be planed both lengthwise and crosswise. Irrigation by corrugation may necessitate going over several times in different directions.

HEAVY LAND PLANE.



The illustration shows a land plane thirty feet long and eight feet wide. Two steel-faced cross pieces bear the center for the cutting and grading. The steel cutters are straight and are made level with the runners at the bottom. All other cross pieces and braces are attached several inches up from the ground level to prevent or avoid interference with the proper working of the cutters.

—HERBERT A. SHEARER.

How to Dehorn Cattle and Calves

DEHORNING cattle intended for the feed lot is almost a universal practice in some sections and is almost unknown in others. Where the advantages are known stock raisers "sing up" for it. Sometimes two or three neighbors club together and build a corral and dehorning chute and buy the necessary tools and disinfectants.

The illustration shows a good dehorning chute that is easily made. There are no special sizes or dimensions except to make it long enough and wide enough to hold the animals.

There should be a yard to hold the

FIG. 1 DEHORNING CHUTE

waiting cattle and a lane to lead to the chute. When the horns are removed and the antiseptic applied, the stanchions are raised by pulling the lever cord and the animal walks out the front way.

The saw used for cutting the horns is light, has fine teeth and is a good design. Two styles of nippers are illustrated. Some prefer this type of cutting instrument.

The horns should be cut short to prevent their growing. It is best to

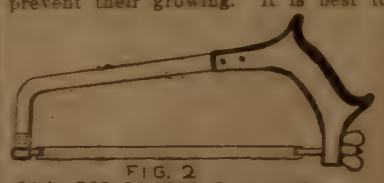
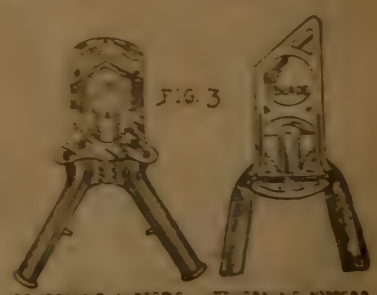


FIG. 2
SAW FOR REMOVING HORNS

cut just below where the skin joins or encircles the horn. Some stockmen cut about an eighth of an inch of the skin; others press the skin down and cut as close as they can. Removing the skin is a sure way of destroying the horn cells so that it is impossible for the horn to grow again.

The after-treatment consists of disinfecting the wound and covering with coal tar or some similar material that will stick tight in order to protect it from blowflies. Pine tar is considered best by some stockmen.



In treating calves the horn may be "killed" by freezing when "in the bud." The horn button then is pushing up the skin and is in its tenderest stage. A thorough coating of caustic will kill the horn cells. But there are some failures and crooked horns may result.

To be successful, this must be done when the calf is between four and eight days old. The application must be made thick enough to penetrate the skin and cause a sore the size of the embryo horn button. But it should not be any larger than necessary. The scab that forms will fall off in time if the operation is successful and the animal will be the better for it.

Caustic potash or caustic soda will do the work. Vaseline spread around the horn button will prevent the caustic from spreading where it is not

FIG. 4
USING THE CAUSTIC PENCIL

wanted. After the operation the calves must not be turned out in the wet grass or in the rain, for the moisture might wash the caustic into their eyes.—HERBERT A. SHEARER.

Farm Bureau Brings Agents

A STRONG Farm Bureau is one of the main things which makes possible the securing of extension service agents. This reason alone would justify joining this very useful organization, believes R. W. Hodgson, Los Angeles County farm adviser. Smith-Lever workers cannot be secured by a county where less than 20 per cent of the farmers belong to the Farm Bureau. It is, therefore, to the interest of the entire community, Mr. Hodgson points out, to boost the Farm Bureau.

Imperial Soils Need Nitrogen and Humus

Agricultural Missionaries Preach Gospel of Legume

IN order to sustain the reputation of the Imperial Valley as a heavy producer of cotton, grain and vegetables, it has been found necessary to grow leguminous crops and conserve the supply of barnyard fertilizer. The exporting of manure has been discontinued and large areas are being seeded to clover, alfalfa and cowpeas.

REALIZING that something must be done to prevent Imperial Valley agriculture from being wrecked upon the rocks of soil exhaustion, a number of public-spirited citizens, headed by Clark Adair, formed a soil fertility committee and held meetings in various parts of the valley, preaching the gospel of the legume.

Agricultural scientists and practical farmers agree that the soil lacks nitrogen and humus and that these essential elements can best be supplied by growing legumes, such as peas, beans, clovers, vetches and alfalfa.

But in spite of the sick condition of many alfalfa fields, this crop still holds its place as the standard soil builder and basic product of the Imperial Valley. All that is needed to restore its primal productiveness is proper care. The subsoil needs loosening, thin spots reseeding, surface soil cultivating, and overpasturing must be avoided. But even then yields will drop. Why?

"Plants need potash and phosphorus as well as nitrogen," explains E. L. Garthwaite, county adviser. "Phosphorus is obtained by nitric acid dissolving the iron and aluminum in Imperial Valley soils. Nitric acid is one of the products of the bacteria which are found on the roots of leguminous plants, where they store up nitrogen taken from the air through the leaves.

"After alfalfa has been grown continuously for a number of years in the same place the soil becomes so rich in nitrogen that nitric acid no longer is produced and, therefore, is not available for producing phosphorus. It will thus be seen that after a few years it is best to plow up alfalfa and plant non-leguminous crops for a while, to use up the surplus nitrogen which has been stored in the soil."

"The Imperial Valley is one of the easiest places in the world to maintain soil fertility," declares L. G. Gore, director of the branch experiment station between El Centro and Holtville. "The soil is deep and easily worked and contains no rocks or hardpan, and when it is properly drained there is no trouble with alkali. When rightly used, water for irrigation is ample, while the climate is unequaled for heavy production, being practically frostless and so warm that crops grow every month in the year.

"In most parts of the United States it is necessary to grow an annual or biennial legume, to which the land must be completely given up for a year or so. Here we can grow both a money crop and a soil-enriching legume the same year. Furthermore, we can grow the money crop either in summer or winter and the legume the opposite season, whichever way proves most profitable.

FERTILITY EASILY RESTORED

"For example, lettuce, peas or other winter vegetables may be followed by cow peas or soy beans in the summer, which are turned under in time to grow another crop of vegetables the following winter. Or sour clover, vetch or field peas may be grown in the winter, and grain, sorghum or other money crop in the summer. The two crops often can be made to overlap with advantage, giving the legume a chance to get started before the money crop is removed. There is no such thing as overworking soil if it is properly handled.

"A peculiar property of legumes when they are turned under—as they should be—is that the humus which is produced by the decaying vegetable matter improves the mechanical condition of both light and heavy soils. The latter are rendered more friable, more easily worked and more retentive of moisture, while the particles of light, sandy soils are bound together and made more compact, which also enables such soil to hold water better."

TIDE TURNS AT LAST

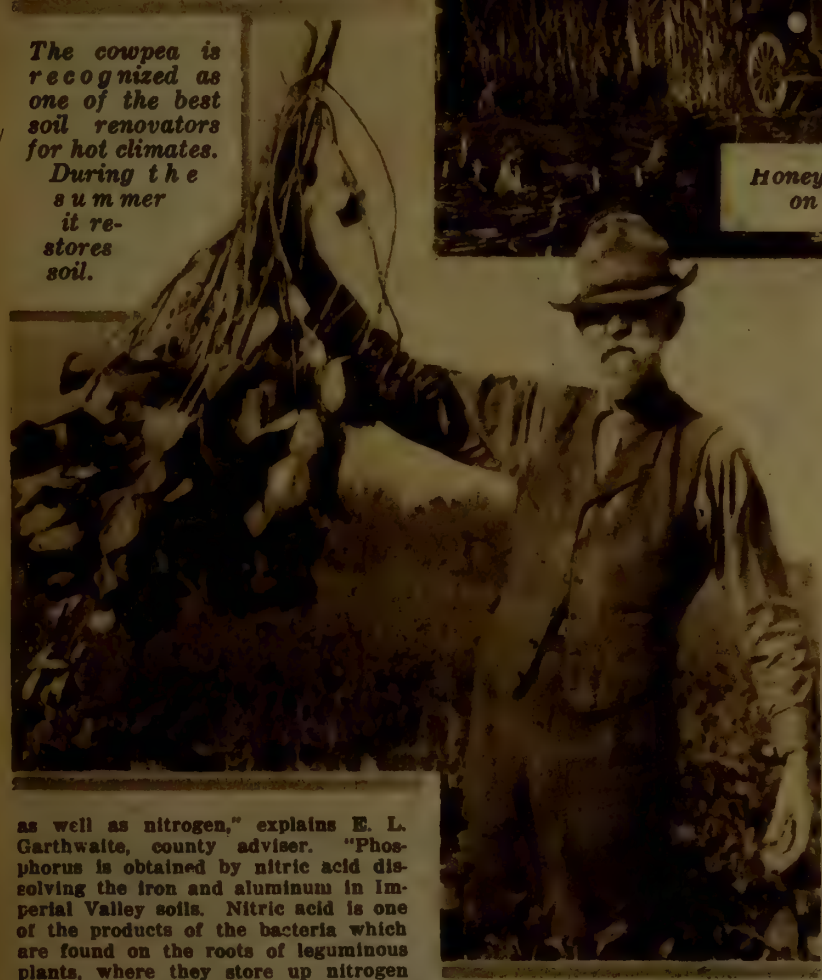
"After twenty-one years of soil robbery such as would make the one-crop pirates of the corn belt blush with shame, the farmers of the Imperial Valley are at last awaking to the gravity of the situation and are taking steps to restore soil fertility," says a prominent member of the County Development Board. "A voluntary embargo has been placed on manure shipments out of the county. No longer can citrus growers look to the Imperial Valley for trainloads of fertility. We need all the plant food we produce and in the future intend to place it where it will do the most good—back onto the soil.

"Never before has there been such widespread interest in legumes, especially that old standby, alfalfa. Forty thousand acres is now being seeded to this crop, and it is the intention to encourage alfalfa planting until the acreage amounts to 200,000 acres. Big money can be made here in gardening, dairying, fruit growing and in other lines of agriculture, but it is necessary to maintain soil fertility by growing alfalfa and other legumes.

"The tide has turned and the Imperial Valley is on the eve of its greatest and most profitable development."

Honey sorghum yields enormous crops on fertile Imperial Valley soil.

Hubam clover makes an immense growth in a few months.



The cowpea is recognized as one of the best soil renovators for hot climates. During the summer it restores soil.

This fine field of oats shows how Imperial Valley soil will produce when properly supplied with humus and nitrogen.

New French Prune Proves Superior Sort

Santa Clara Nurseryman Finds Valuable "Bud Sport"

MOST improved fruits are the result of long-continued, intelligent plant-breeding work. Occasionally, however, nature produces a better variety by means of bud variation. Thus was originated the Coates prune, which is claimed to possess many advantages over the common French kind. It is generally grown and sold by Pacific Coast nurserymen. —*The Editor.*

By W. S. KILLINGSWORTH

ALTHOUGH many of the "horticultural marvels" presented to the world by amateur and professional plant propagators prove to be of little commercial value, frequently a real phenomenon is produced.

Such is the "Coates 1418 French Prune," developed during a period of more than ten years by Leonard Coates, the widely-known nurseryman of Morgan Hill, Santa Clara County.

This prune has an interesting "history." It is a bud sport, definitely known to have come from a single limb of a tree of a typical French variety. The beautiful Santa Clara portion of Santa Clara County contains the orchard wherein was located the tree on which this sport initially appeared.

When this discovery was brought to the attention of Mr. Coates, he made an investigation and found the grower not only was ignorant of the true value characterized by size and superior sugar content of the fruit, but had relegated the tree to the wood pile. However, as luck would have it he had secured cions from what he then termed the "freak tree," and saved the day by planting them in another tree, to be viewed by Mr. Coates.

So, well pleased was the latter with the prune that as an example of his faith in its eventual commercial value he bought the tree on which these cions were placed, subsequently buying an orchard and grafting alternate rows with the "new variety."

INTERESTING COMPARISON MADE

In order that the "sport" prune might have equal showing with some of its amongst competitors, Mr. Coates top-worked the remaining rows to the standard French prune from which the bud sport originated. When the trees had reached the age of eight years a group of scientists, horticulturists, authority and orchardists were invited by Mr. Coates to inspect the orchard.

The "Coates 1418" French prune trees were loaded heavily with fruit, the size of which was far in excess of the fruit on the parent stock in alternate rows. It was also readily seen that the "1418" prune was evenly distributed throughout the trees, from the bearing surface at the base to the tip end of the limbs.

The fruit was fully matured and a goodly portion of it had dropped voluntarily, while the French prunes of the parent trees at this date were in only the primary stage of maturity. This can be considered an advantage of potential value from a harvesting standpoint, a difference of ten days to two weeks in harvesting a crop of prunes can best be appreciated by those who have had experience in attempting to prevent loss from rain damage.

Aside from that one redeeming feature, we learn from Mr. Coates that in 1921, in his ten-acre test orchard, the "Coates 1418 French prune" produced a heavy crop of large fruit, while the crop in alternate rows of Improved French was less than 50 per cent normal, owing to frost damage.

A grower in Mendocino County reported that during a severe attack of sour sap his loss of the ordinary French prune was about 65 per cent, whereas in the "Coates 1418 French prune," of the same age and same root stock, the loss was only 15 per cent.

Regarding Black Knot, a prevalent fungus disease, Mr. Coates states the "Coates 1418 French prune" nursery stock invariably shows a very small percentage of infestation, whereas the ordinary or improved French prune grown in the same nursery on the same variety of root stock showed a potential loss by attack from this disease. We learn from Mr. Coates that there is a heavy demand for his latest contribution to the fruit world and that nursery stock is being shipped to all prune growing sections on the Pacific slope.

The prune, whether it be the "Coates 1418 French," the ordinary French prune, the Improved French prune or any other variety now on the market, is no longer the "old boarding house joke." Excepting the orange the prune stands head and shoulders above any other variety of tree fruit in the number of bearing and non-bearing trees and in acreage.

It may be interesting to note that there are 119,338 bearing acres and 52,294 non-bearing, or a total of 161,632 acres. There are 11,808,504 bearing trees and 5,647,752 non-bearing, a total of 17,456,256 prune trees in California. These figures include the 1922 planting.

In 1922 the bearing trees produced 95,000 tons at a farm value of $140 per ton, or a total valuation of the year's production of $13,300,000. In 1919, on approximately the same bearing acreage there was produced 115,000 tons at a farm valuation of $240 per ton, or a total valuation of the year's production of $32,400,000.

For many years prior to the beginning of the present century, the prune was a drag on the market. During the past few years the prune has taken a new "lease of life" and is now enjoying the same prosperity as the dried apricot, the peach and the raisin.

Showing the comparative size and shape of the Coates French prune and the common variety. The new sort is much larger and somewhat rounder.

Branch of French prune tree of the improved new variety, "Coates 1418," which bore a full crop in 1921, while an adjoining grove of common prunes yielded only a half crop.

The 10-acre Morganhill orchard of Coates prunes, in Santa Clara County. The first crop of dried fruit averaged 45 to the pound. The original tree was destroyed, but a few cions were saved.

Leonard Coates, who discovered and introduced the improved French prune, examining leaves of the new variety.

A LESSON IN GRAFTING

Expert Demonstrates Whip Grafting of Persimmons

THROUGH the courtesy of H. G. Baker, fruit grower and experienced tree propagator of Glendora (Los Angeles County), and Fred Kelsey, widely-known nurseryman, ORCHARD and FARM, is enabled to present this interesting series of "close-ups" on grafting.

This method was applied to persimmon seedlings which did not "take" when bench-grafted to the Hachiya variety, and the work was done in March in the nursery row.

The already rapid growth of the persimmon industry promises to assume amazing proportions within the next few years. This is not surprising, in view of the enormous returns secured by some growers and the apparent hardiness and heavy-yielding qualities of improved varieties.

Perhaps the largest commercial planting of Japanese persimmons in America is that of J. A. Schoonover of Alhambra, which comprises more than 50 acres. A committee of Southern California persimmon growers now is at work on the formation of an association.

The pencil indicates the point at which the young tree is to be cut. A very sharp knife is used and care is taken to make a clean, straight cut at just the proper angle.

Above is shown the stem of the little tree after cut has been made, together with cion, cut to match. It is necessary that the growing layers (just inside the bark) be in contact with one another.

Both stock and cion are split. These two pieces illustrate the method of cutting in order to insure perfect union. Care must be taken to protect the cions from drying.

These two pieces are used to illustrate how the stock and cion are fitted together. The operator is wearing tape on his fingers as protection from the knife and string.

The next step is to tie the joint tightly with twine, as shown at the left. The experienced worker can wrap and tie in a few seconds.

In circle above is shown the next process, an important one. The joint is painted carefully with grafting wax, which soon dries, forming a protective covering.

Finally dirt is shoveled well up around the little tree and it is ready to start upon its new phase of life.

Vaughn's Shorthorns Prefer California

By RAY C. GRUHLKE

BLOOD will tell, whether in cattle, hogs or human beings. When a man is raised on Shorthorn milk, and his father and grandfather likewise, he is apt to have considerable interest in livestock. Howard Vaughn goes further than that. He not only takes an interest in livestock, but spends most of his waking hours with his cattle and hogs.

Vaughn says he has spent twenty years with Shorthorn cattle. When you look at him you think he must have started in early. The quality of stock he raises on his ranch just north of Dixon (Solano County) indicates the kind of man he is, and people are proud to have him for a neighbor.

Vaughn graduated from the Iowa Agricultural College and was a classmate of J. I. Thompson of Davis, well known California livestock judge. The former came to California in 1920, primarily for his little girl's health. Visiting his old college chum, who was then an instructor in the livestock department of the university farm at Davis, the newcomer grew interested in the cattle industry and decided to engage in the production of purebred Shorthorns.

Mr. Vaughn and daughter in front of their beautiful California farm home. Mr. Vaughn's family has been breeding purebred Shorthorn cattle and Chester White hogs for more than fifty years. His business is his hobby, which he pursues with more pleasure and profit in California than in Iowa, his former home

LOCATES IN "SHORTHORN LAND"

Half of all the registered Shorthorns in California are found within fifteen miles of Davis, so it was only natural that Vaughn should locate in that district. He bought a fully equipped eighty-acre dairy farm one mile north of Dixon on the State Highway, and then made three trips back to Iowa for the purpose of obtaining a fine herd of Shorthorn cattle and another of Chester White hogs.

"I consider a farm on the State Highway worth at least $100 per acre more than one located just off the main road," said Vaughn. "The occupants of probably half the automobiles that pass our door read my sign. We often hear them reading the words aloud as they pass: 'Shorthorn Cattle. Chester White Hogs., Howard Vaughn, Dixon.'

"In fact, we hear those words so often in the summer time that we sometimes wonder if passersby have nothing else to say. Strangers often stop and look over our livestock and quite a few sales have resulted from such visits.

BULL MARKET BETTER HERE

Vaughn sells his young bulls as fast as they are ready for service and says the market in California is better at present than in the East. Most of his stock goes to range stockmen.

Comparing Iowa farming to his present vocation, Vaughn stated that to support his herd of approximately 100 Shorthorn cattle it would require 270 acres of Iowa land valued at $250 an acre; whereas, his eighty-acre farm at Dixon is sufficient to maintain them, and with much less work and care.

This valuable trio of Chester White sows not only pay for their feed, but also that which is consumed by a large herd of cows. Below—Some of Vaughn's young Shorthorns.

"I can put 300 pounds more flesh on fall calves here by the first of March than was possible to do in Iowa under the most favorable circumstances," asserted Vaughn. "I have one bull that gained 700 pounds in seven months on a ration of alfalfa hay, barley and beets."

Vaughn's Shorthorn herd consists of forty-five head of breeding cows and two service bulls. All his animals are tuberculin tested. The herd sire is Right Sort Jr., 830864, a prize winner wherever shown. His offspring have also won prizes in numerous contests. One of his cows, Lady Lytton, Vaughn prizes above all others. She is descended directly from individuals that have been in the Vaughn family for nine generations of Shorthorns, Vaughn's grandfather having started breeding purebreds in 1870, more than half a century ago.

As a profit maker, Homewood Rose is in a class by herself. She has raised eight calves, seven of which have been sold for a total of $5200, an average of $745 each. Vaughn's cows are good milkers, although of the strictly beef type. They raise their own calves and usually have to be dried up when with calf.

As a side-line, purebred Chester White hogs have proved profitable. In 1922 Vaughn sold $1100 worth of stock from his two brood sows. The total cost of all the grain used on the farm that year amounted to $750. It will thus be seen that the hogs not only earned their own way and $350 over, but paid for all the grain consumed by the cows as well.

Vaughn's grandfather bred Chester Whites in Chester County (Pennsylvania) in 1868 and brought his stock to Iowa. In Iowa the Vaughns owned and developed Wildwood Prince, a 1060-pound boar, who was the originator of the big type strain of Chester Whites, descendants of which have won more prizes than those from any other sire of any breed.

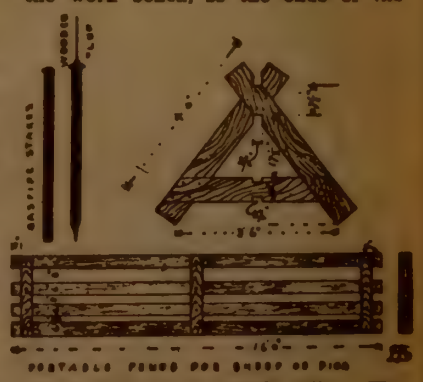
Vaughn is sales manager and acting secretary of the California Shorthorn Breeders' Association. He is strong for public stockyards and is in favor of the construction of such a yard in Northern California. His farm and stock are considered a big asset to the community and an inspiration to others.

Portable Fence

GROWING hog feed on the "help yourself" plan requires a portable fence. Hogs are busy but mussy workers. If not confined they will overrun the whole field and tramp down more than they eat.

Here is a fence that may be moved with little labor, so the planting and the feeding-off may be followed across the field, keeping the ground occupied and the pigs busy the whole season.

To make the panels for this portable fence it is necessary to nail blocks on the work bench, so the ends of the

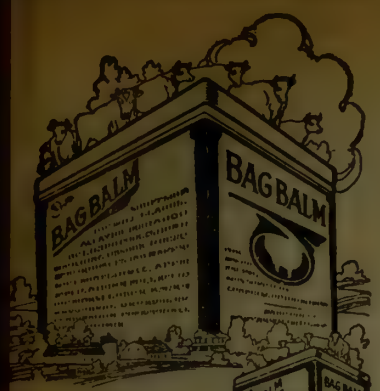


PORTABLE FENCE FOR GROWING OF PIGS

panels will all be exactly alike. The same plan must be followed in making the cross-legged uprights. The parts will then all be interchangeable and any panel will fit into any upright and the whole fence will go together without a hitch.

One panel and one cross leg are shown. The others are duplicates. Wooden stakes will hold the fence down, but iron stakes are better. They may be made of old gas pipe. Cut the pipe in lengths of two to three feet with pipe cutter or hack saw. Smooth the upper end inside and drive in a hardwood plug. Flatten the lower end and dress with a cold chisel.

Remember, no portable fence will hold a tricky old sow. This fence is for young pigs.—H. A. SHEARER.



Healthy Udders are the foundation of milk profits

THE udder and teats must be free from cuts, scratches, sores, bruises and chaps, or the milk flow shows a quick falling off.

Bag Balm promptly heals any inflammation, soreness, congestion or hardening of these tender tissues—brings about normal production by giving comfort to the cow. A reliable remedy in relieving Caked Bag, Bunches and Cow Pox.

Wherever cows are, BAG BALM should be always on hand. The big 10-ounce package costs only 60c and goes a long way.

General stores, feed dealers and druggists sell Bag Balm; or, we will send postpaid if your dealer is not supplied.

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The EGAN THEATER,
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Bee Hives and Supplies

Headquarters for Everything Needed in the Care of Bees
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PACKERS OF AIRLINE HONEY

Patents Write today for free instruction book and "Evidence of Conception" blank. Send sketch or model for personal opinion. CLARENCE O'BRIEN, Registered Patent Lawyer, 1011 Southern Building, Washington, D. C.

Spray With Dust

DUST spraying is especially desirable for aphis and similar types of insects, according to V. F. Blanchard, of the Farm Adviser's Office, Los Angeles County. "Where the dust is properly applied under suitable weather conditions, excellent results are obtained," says Mr. Blanchard.

"Tests show that the treatment is most effective when those portions of the trees or plants susceptible to injury are well covered with finely powdered chemicals. The work can best be done when there is little or no wind and is most effective during or when followed by high temperature.

"Early morning is generally the best time for dust spraying, especially in windy sections. 'Spray early and often' is a good rule to follow.

"For those kinds of aphis which attack walnut trees, most deciduous fruits and vegetables, also thrips on pear and peach trees, the nicotine-sulphur dust prepared by the California Walnut Growers' Association has given excellent results. The walnut people also have had good success in controlling the red spider with sulphur dusting.

"During the past few years the use of dust sprays has been developing extensively, due to the many advantages of this method. Dry chemicals can be quickly and easily applied; the necessary machinery costs less and the spray outfit, being lighter, is more easily moved over steep ground, wet or sandy soil."

Planting Cuttings Like Seeds

WHEN one has only a small amount of wood that will make cuttings and wants to grow as many plants as possible without too much trouble, he can occasionally get good results by cutting it into short pieces and planting it in furrows, like seeds. The joints of sugar cane are planted thus in tropical countries.

Not long ago the writer helped dig some fig trees planted in this manner. The man who raised them had planted most of his cuttings in the regular way. He had some stubs and short pieces left over and a former nurseryman suggested he plant them in furrows. He did so, although the "stand" was poor because the wood got too dry before planting. Those that did grow made nice trees.

This rancher claimed the furrow method of planting is surer than the regular way, as all the wood remains under ground and does not dry out as an ordinary cutting would with one end sticking out of the ground. Unless a person has tried this method it would be well to try it at first on a small scale.—TULARE FARMER.

See Orange Juice Made

THE consumption of orange juice has been increased enormously by the installation of machines which extract the fluid from the fruit right before customers' eyes. The California Fruit Growers' Exchange bought the patent right to this machine and has equipped with it a large number of soft-drink fountains. People had become so accustomed previously to adulterated orange juice that little was sold.

The increased demand which has resulted from the use of the machines is well illustrated by the experience of the keepers of a soda fountain at the Pennsylvania Railroad terminal in New York City, where seven cases of oranges and three cases of lemons are used each morning in making pure fruit juices for travelers.

Too Hot for Carobs?

FAVORABLE as the prospects may be for the carob in some portions of Southern California, in the great interior valleys there is reason for believing that the summers are too hot and dry for this tree to flourish. A milder climate, such as that of the Southern California Coast, seems more what is wanted.

At least this is the observation of F. W. Pohlmann of Fresno County. He has two carob trees which set fruit and bear some good pods. However, when the hottest, dryest days of summer come, most of the crop shrivels and falls off. The trees make nice shade trees but bear too small crops to be of commercial value.—TULARE FARMER.

Simplicity

The De Laval Separator is so simple, all of its parts are made with such care, accuracy and precision, that any one, no matter how inexperienced, can operate it successfully under all conditions of use. And any one capable of handling a wrench can completely assemble or disassemble it, quickly and easily, with the one simple tool shown above.

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De Laval Separators are sold on such liberal terms that they will pay for themselves within a year. See your De Laval Agent or write us for full information.

There are over 2,500,000 De Laval Separators in use the world over—about as many as all other makes put together.

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Are You Fitted for Poultry Raising?

Of course there's money in poultry raising—if you know how! But that "know how" is a mighty important factor in making a success.

That is why we have established the WEEKS PRACTICAL POULTRY SCHOOL. In this school you will not only get instruction by experts, but you will get real practical experience on one of the biggest and most successful poultry ranches in the world. It won't take you long to find out here whether you can make a success at poultry raising.

Students here now represent nearly every trade and profession, and have come from as far as Honolulu and New York. Board and lodging at the school—and some of the finest cooking you ever tasted.

Write for Full Information.

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Palo Alto, Calif. (2)

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WEEDICATOR

Kills the roots **of Johnson Grass, Morning Glory, Bermuda Grass and other noxious weeds.**

Destroys the pest weeds that attack the roots of orchard trees.

We stand behind every gallon sold.

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WEEDICATOR WEED CO.
1238 E. Sixth St., Los Angeles, Cal.

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MANY NEW FEATURES

Now Made in Two Sizes

With the BEEMAN you can do all the work usually done with one horse. The BEEMAN JR. does your light cultivating, weeding, belt work, etc.

IF INTERESTED WRITE for catalogs on—Ottawa Drag Saws, Allis-Chalmers Tractors, Hand, Horse or Power Lawn Mowers.

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60 cents a line (average 7 words). For white space, cuts or display type, most is computed according to total space occupied by advertisements.

Advertisement must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

POULTRY

PROFITABLE POULTRY AND CO-OPERATIVE ELECTRIC HATCHERIES. Thousands vigorous chicks, turks, ducklings every week from unforced, high winter egg-producing 180-290 egg White, Brown, Buff Legs.; Barred, W. Rocks; Reds; Anconas; Minorcas; Brahmas; Wyandottes; Andalusians. They clear money laying abundant high-priced winter eggs. Customers after trial say: "Rather pay $15 your trapnested Brown Legs. than $12 some others"; "After 4 years with 5700 your chicks (Legs., B. Min.) want 1500 again"; "Raised 94 Reds out of 100, on road 74 hours." Price, quality, profit right; chicks, turks ready. Write Box O, 13 N. Fair Oaks, Pasadena, Calif.

BABY CHICKS

The kind that live and thrive, lay and pay. We hatch from purebred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 12½c; Reds, 16½c; Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELEC-CHICK HATCHERIES Dept. "L," Burbank, Calif. References: State Bank of Burbank.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

WHITE LEGHORN BABY CHICKS from selected flocks mated with males having pedigreed record by sire's dam of 240-297 eggs per year. Price per 100: February, $16; March, $14; April, $12.50; May and June, $12. Safe arrival of full count live, strong chix guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 418 Sixth St., Petaluma, Calif.

BABY CHICKS every week. White Leghorns, R. L. Reds, Barred Rocks. Some open dates for April, May and June. Only selected breeders used. Safe arrival of full count guaranteed. Send for circular now. Also limited number of White Leg. pullets, 8 weeks old. The J. H. STUBBE POULTRY RANCH AND HATCHERY, P. O. Box 67-C, Palo Alto, Calif.

WHITE LEGHORNS—Chicks and hatching eggs from individually selected, orchard range birds. An unusually alert, vigorous egg-laying strain of real merit. Progressive poultrymen demand the best. Surprisingly low prices; ask for them. CURTIS WHITE LEGHORN RANCH, Route 2, Box 29, Gardena, Calif.

HANSON'S Pedigree S. C. W. Leghorns. Over 200 egg flock average for 6 years. Over 221 egg flock average for 3 years. Unexcelled in production and stamina. Contest Winners in two hemispheres. Send for interesting catalogue. J. A. Hanson, Corvallis, Oregon.

BABY CHICKS—R. I. Reds. Utility stock. Large, dark birds; grow into broilers fast and are heavy layers. White Leghorns from selected breeders. Capacity 50,000. Attractive prices on large orders. Also booking orders for 10 and 12 weeks old W. L. pullets, any quantity. Anderson's Hatchery, Modesto, Cal.

BUFF LEGHORNS ONLY!

BABY CHICKS, $16 per hundred. Don't buy chicks until you get my free circular. MRS. W. T. WHEELER, Berkeley, Calif., Rt. 1, Box 496-E.

BABY CHICKS—Hatching eggs from Hogan-ized flocks, fully matured breeders. Barred Rox, R. I. Reds, Minorcas, Brown and White Leghorns. Safe arrival and satisfaction guaranteed. TOBENER HATCHERY, Route 2, Box 306, San Jose, Calif.

WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

BROWN LEGHORN PRIZE STOCK BABY CHICKS & EGGS. GREAT OPPORTUNITY TO QUALITY BREEDERS. WE OWN CREATOR, INGOMAR, FIREFLY—BEST ON COAST. CASA DE ROSAS, CARMEL, CAL.

SOMETHING GOOD in WHITE LEGHORN CHIX—Best strains at reasonable prices. All popular varieties, hatching each week. LINGO-DELL RANCH, Eleventh and Verdugo Sts., Burbank, Calif.

S. C. WHITE LEGHORN BABY CHIX from our own bred-to-lay stock. Our prices are right. Model Poultry Farm. W. C. Smith, Prop., Corning, Calif. Established 1904.

DRYDEN' POULTRY BREEDING FARM, Concord, Calif.—High-producing O. A. C. White Leghorns and Barred Plymouth Rocks. Pedigreed cockerels. Eggs for hatching.

SPENCER TURKEN, a new turkey-chicken. Large fowl, meat turk. flav. Avg. 200 eggs. Booklet for stamp. Spencer, R. 1, Santa Cruz, Cal.

S. C. WHITE LEGHORN BABY CHICKS—McFarland strain, $8-$10 a 100. Mail orders C. O. D. Safe arrival. Hatcherymen's Ex. 5872-A, Moneta ave., L. A.

BABY CHICKS—Leading varieties, standard bred, vigorous, heavy-laying stock. Lowest prices. Best quality. Post. paid. Illus. catalog free. Superior Poultry Co., Windsor, Mo.

BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

WHITE LEGHORN BABY CHICKS—Tancred strain. Price reasonable. Tenth year. HENRY TARRATT, Corning, Calif.

BROWN LEGHORN baby chicks, $16 per 100. Poultry Equipment Co., Burbank, Cal.

POULTRY

MR. AND MRS. POULTRY FARMER—The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than those we handle. No pullet eggs are used and every egg that goes into the incubator is selected from thoroughbred flocks that have been Hoganized. Prices for April are as follows:

	50	100
White Leghorns	$6.00	$11.50
Rhode Island Reds	9.00	18.00
Barred Plymouth Rocks	9.50	18.50
Anconas	9.00	18.00
Brown Leghorns	8.00	15.00
Buff Orpingtons	9.50	18.50

May we not have your order again this year? Conkey's Buttermilk Starting Food will raise healthy chicks.

ANSEL W. ROBISON,
1196-98 Market st., San Francisco, Calif.

P. S.—WE ARE THE PACIFIC COAST AGENTS FOR BUCKEYE INCUBATORS AND BROODERS. SEND FOR CATALOG.

"QUALITY" BABY CHICKS
Turkeys, Ducklings

If you want any, don't just buy anywhere, but get them direct from the incubators of a hatchery where "Quality" is the watchword. Our "Quality" chicks are electrically hatched, strong and sturdy, and from good stock. All leading varieties. We specialize in very choice S. C. White Leghorns from hens of very heavy egg-yielding reputation. Hatching eggs and electric brooders. Write for prices.

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Capacity, 125,000 eggs.

CERTIFIED White Leghorn Quality Chicks at Utility Prices. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.50 per 50; $12 per 100. Special prices 500 and 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 Seventh St., Petaluma, Calif.

CHICKEN FEED CUTTER — Only $8.50. Hundreds used. Prepaid anywhere. Write for Feed Cutter catalog. ARNOTT & CO., Inc., Wholesale Implements, 112-118 S. Los Angeles St., Los Angeles.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

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CARMEL MAMMOTH BRONZE TURKEYS. BEST IN CALIFORNIA; GOLDBANK-COPPER KING STRAIN; BABY TURKS AND EGGS. WONDERFUL FOUNDATION STOCK AT RIGHT PRICES. ORDER NOW. Casa de Rosas, Carmel-by-the-Sea, Calif.

HART'S MAMMOTH BRONZE TURKEYS and eggs. Albert M. Hart, Clements, Calif.

PLANTS AND BULBS

CHOICE GLADIOLAS at reduced prices—12 bulbs, all standard named varieties, regular retail price $1.50 to $1.75, sent postpaid for $1, 30 bulbs for $2. ROSEDALE FLOWER GARDENS, Pacific Grove, Calif.

GLADIOLUS BULBS—25 first-size bulbs or 40 blooming-size bulbs for $1, postpaid. Send for price list for choice gladiolus. Carl O. Jorgensen, 336 Salinas St., Salinas, Calif.

GIANT WINTER RHUBARB PLANTS—Now $1 per dozen. F. R. Walker, Puente, Calif.

NURSERY TREES AND PLANTS

CLARKADOTA fig cuttings, $25 per thousand. RADIUS & POMEROY, Oakdale, Cal.

CIGARS AND TOBACCO

KENTUCKY NATURAL LEAF TOBACCO—Chewing: 5 pounds, $1.75; 10 pounds, $3. Smoking: 5 pounds, $1.25; 10 pounds, $2; 20 pounds, $3.50. Send no money. Pay when received. FARMERS' CO-OPERATIVE TOBACCO UNION, Paducah, Ky.

HOMESPUN TOBACCO—Chewing: 5 lbs., $1.75; 10 lbs., $3; 20 lbs., $5.25. Smoking: 5 lbs., $1.25; 10 lbs., $2; 20 lbs., $3.50. Send no money, pay when received. CO-OPERATIVE TOBACCO GROWERS, Paducah, Ky.

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WOOL SCOURED AND CARDED
Have your own wool made into Batts, Comforters and Mattresses. Old wool bedding made new. Write for prices and shipping tags. CRESCENT BATT AND BEDDING CO., Stayton, Oregon.

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USED FARM IMPLEMENTS—Harrows, Cultivators, Plows, Tractors, Tractor Tools. Save half price. ARNOTT & CO., Inc., 112-118 S. Los Angeles St., Los Angeles. Between First and Second Sts.

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ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate; fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

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AUTOMOBILE owners, garagemen, mechanics send today for free copy America's most popular motor magazine. Contains helpful articles on overhauling, repairing, ignition, carburetors, batteries, etc. Automobile Digest, 606 Butler Bldg., Cincinnati.

RAILWAY MAIL CLERKS—Start $130 mo.; expenses paid. Specimen examination questions free. Columbus Institute, H-7, Columbus, Ohio.

HEMSTITCHING, Picoting attachment. Fits any mach. Artistic work. Illustration, descrip., B. Krafft, Box 896-OF San Fran., Cal.

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REBUILT WINDMILLS, tanks, pumps, cyl., surface irrigat. pipe. Pipe, all sizes, used 8 and 9-in., cheap. New galv. tanks, all sizes. Demmitt Co., 120 N. Main, Yards 816 Yale. Phone Bdwy. 1984, Los Angeles.

FARMS FOR SALE

State Inspected and Approved California Irrigated Lands

NOW OPEN FOR SETTLEMENT to experienced farmers only. In tracts of 40 acres or less. Located in the heart of Fresno County, with a population of 125,000.

If you are a REAL farmer, with $5000 capital or credit, or have dairy stock or farm equipment for development, we can locate you on 40 acres of this land on a cash payment of only $1000. Balance 18 years at 6%. Applications for these tracts of 40 acres or less WILL BE ENTERED IN THE ORDER RECEIVED.

These rich, irrigated lands are suitable for deciduous fruits, grapes, vegetables, alfalfa, hogs and poultry. Especial opportunity now for dairymen. Good roads, modern schools, churches, railroad and auto bus transportation. Creamery being built now.

SECOND WEALTHIEST AGRICULTURAL county in the United States. Home of the famous Sun-Maid Raisins, where improved farms sell up to $2500 an acre. Center of successful CO-OPERATIVE MARKETING.

Write for free descriptive literature to W. E. JONES, First National Bank, San Joaquin, Fresno County, Calif.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

FARM LAND FOR SALE

THE CHARLES WEEKS SYSTEM OF INTENSIVE POULTRY AND BERRY FARMS.
ONE ACRE AND INDEPENDENCE;
or
The Fine Art of Earning a Comfortable Living on One Acre in California. For those who desire to dwell in sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles. Write for literature.
CHARLES WEEKS, Owensmouth, Calif.

BEES AND HONEY

BEES AND HONEY—Beekeepers' price list free or instruction booklet explaining fully for dime. Spencer Apiaries, Sawtelle, Calif.

FARMS WANTED

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNown, 367 Wilkinson Bldg., Omaha, Neb.

Clearing Land With Stock

CATTLE, hogs and sheep are a great help in clearing river bottom land. Of course goats are, also, but they are hard to confine and it is a difficult matter to keep them out of orchards. Cattle rub down burned and rotten elders, work their way through small brush and rose bushes and browse on almost everything, while sheep eat all manner of tender, green shoots.—W. S. G.

Free Cows Before Milking?

IT is rarely that cows with advantage can be turned loose, but when this is possible the best time to do this is about an hour before milking, rather than afterwards. Our two cows have a pasture which is not very good and in winter when trees and vines are not growing they find much good grass. When they are turned out in the morning after milking they want to wander off whenever they have eaten their fill, but if liberated late in the afternoon—as soon as filled with grass—return to the gate and wait to be milked.'—TULARE FARMER.

RATTLESNAKES KILL HORSES

Rattlesnakes occasionally kill horses in the Antelope Valley, Los Angeles County, usually biting the victim on the nose, which soon swells up. The marks of the rattler's two fangs indicate the source of injury. If applied soon enough, permanganate of potash will save the horse's life, according to those who have tried this remedy.

ALFALFA TAINTS MILK

The feeding of thirty pounds of green alfalfa to cows one hour before milking produces a pronounced "off" flavor and odor in the milk, according to the U. S. Department of Agriculture, which recommends feeding this particular provender five hours or more before milking.

BUYS ONE HUNDRED HEIFERS

A Marin County dairyman has ordered 100 grade heifers from Oregon breeders.

Why Not Kill Animals Mercifully?

A New Movement on Foot to Improve Butchering Practice in America

THE financial loss through the cruel and careless handling of animals in transportation and at stockyards and slaughter houses is estimated at $3,500,000 annually. Packers admit it is enormous and that kindness pays in dollars and cents.

A prize of $10,000 is offered by the American Humane Association for a mechanical device for rendering food animals instantly, completely and painlessly unconscious before the use of the knife in slaughter houses. The device must be one that can be mechanically operated, economical, safe, sure and rapid in action. It must also be of such character that it can be successfully operated by any one of ordinary intelligence.

It is estimated that 87 per cent of the 100,000,000 cattle, sheep and hogs killed annually in the United States for food are suspended by one of the hind legs and their throats cut, afterwards bleeding to death. An examination of 70 cattle killed by this method in Stuttgart showed that consciousness continued for about three minutes. Ninety-six per cent of the superintendents of abattoirs in Holland signed a statement that "cutting the throat does not sever the cerebral arteries. So long as heart action continues the brain receives a sufficient quantity of blood, so that complete anemia of the brain does not immediately follow the action of the knife."

EUROPEAN METHODS

Frances H. Rowley visited last summer municipal and other abattoirs in Norway, Sweden, England, France, Germany, Switzerland and Denmark. In the Scandinavian countries all animals are stunned before the knife is used in the municipal abattoirs. The utmost care is used in handling the animals, no clubs or whips being employed, in striking contrast, says Mr. Rowley, to the inhumanity so often seen in American slaughter houses.

In Germany conditions are much the same as in the Scandinavian countries, a police regulation requiring that all animals be stunned before being bled. Exceptions are made in the case of animals killed for Jewish consumption. Calves and sheep are stunned with a piece of wood about eighteen inches long and weighted at one end with iron. Pigs are forced into a small V-shaped box which holds the head tightly in place. An instrument containing a sliding bolt is placed slightly above the eyes and a bolt driven into the brain by a mallet. Larger animals are either shot with a heavy pistol or felled with a pole axe or sledge hammer.

In England all slaughtering for the army and navy is done under the most humane conditions possible, every animal being stunned before being bled. Fifty cities have passed laws which compel similar slaughtering methods. In a great abattoir at La Villette, France, the manner of handling and killing animals for food is reported to be very inhuman and needlessly crude, forming a conspicuous exception to the general rule of kindness and consideration observed in the other European countries visited.

A tablet at the entrance to the Dresden abattoir contains this inscription:

"Thine is a task of blood; discharge that task
With mercy; let thy victim know
No pain, but let the sudden blow
Bring death, such death as thou wouldst ask."

GOATS BRING BIG PRICES

In less than two hours nine purebred Toggenburg does, belonging to Charles A. Stevens, Chicago millionaire, sold at auction for $24,945, an average of $277 each. Mr. Stevens is president of a goat breeders' association and spent a portion of last winter in Southern California, where he visited a number of milk goat farms.

SPERRY
"Save the Babies"
BABY CHICK FEEDS
Every Dealer Everywhere

Our new Sunlight Laboratory, one of the finest, most up-to-date in America

Big Money Running a Store on Wheels

Write today for our big free book which tells you how to make big money running a "store on wheels" selling a big line of Sanitary Medicines, Toilet Goods, Perfumes, Tea, Coffee, Spices, Stock Remedies, etc., direct to farmers and homes. We instruct you how to earn, clear of all expenses, from

$200 to $500 a Month

Our selling plan wipes out all competition. Nearly 100 different articles to sell—sure repeaters; you sell to same customers month after month. You don't need to be a salesman—simply leave free samples—articles sell themselves on own merits. We make our products from proven formulas and purest materials, in our new, Sunlight Laboratory, one of the finest, most up-to-date in America.

No Capital Required A team and wagon or auto your only investment. We will also supply you with a $500 to $1000 stock of goods at lowest wholesale prices, on credit without interest. Most liberal plan—squarest deal—ever offered. Big free book gives all facts. Write.

FURST & THOMAS, Box 767, FREEPORT, ILL.

Capital and Resources over $1,000,000.00

Science's Discovery Routs Chicken Lice

Mineralized Water Gets Rid of Dusting or Spring — Birds Delouse Themselves Fine for Baby Chicks and All Poultry

A recent discovery promises to revolutionize all the commonly accepted methods for keeping poultry free from lice and mites. This wonderful product keeps the poultry always lice-free without the poultry raiser doing any work. It is the simplest, easiest, surest and best method ever discovered.

Hick's Lice-Go, which is the name of this remarkable lice remedy, is dropped in the chicken's drinking water. Taken into the system of the bird, it comes out through the oil glands of the skin and every louse or mite leaves the body. It is guaranteed to help the hatchability of the eggs and cannot injure the flavor o fthe eggs or meat; is harmless to chicks and does not affect the plumage. A few days treatment at the start and then a little added to the drinking water each month is all that is necessary.

Send No Money—just your name and address to Chas. M. Hick & Company, Dept. 443, 1018 So. Wabash Ave., Chicago, Ill. A card will do. Mr. Hick is so confident that Hick's Lice-Go will get rid of every louse or mite that he will send you two large double strength $1.00 packages for the price of one. When they arrive, pay postman only $1.00 and postage. Sell one to your neighbor and get yours free. If you are not absolutely satisfied after 30 days trial, your money will be refunded. This offer is guaranteed by two big Chicago banks, who say that Mr. Hick will do exactly as he agrees without question or argument. Write today before this remarkable trial offer is withdrawn.

Grape Mildew

For control of this disease use *Ortho Dusting Sulphur.*

Finest sulphur on the market. Flows like liquid through the dusting machine and not only covers the vines more uniformly, but goes farther.

Contains no acid so cannot burn the leaves.

Use ORTHO for RESULTS

ORTHO SPRAYS — HIGHEST AWARD PANAMA PACIFIC EXPOSITION 1915 — CALIFORNIA SPRAY CHEMICAL CO. WATSONVILLE, CALIF.

120-18

You Haven't Read the Paper Until You've Read the Ads

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES

ASPARAGUS—FIFTY A CRATE.—California's first crate of asparagus from the Sacramento River district this year sold for $50. It was shipped from Walnut Grove February 25th. Asparagus is a product in which California excels. The output from California is more than half that of the entire United States.

THE LYING HOT WATER BOTTLE.—The hot water bottle is gaining notoriety as a medium for fakers. The Michigan girl's prank on doctors who were deceived into believing she was running an impossible temperature recalls the fact that the hot water bottle was used in a great dairy fake. Purebred breeders will recall how a certain herdsman, anxious to make a big record for his millionaire employer, used a hot water bottle as a means of secretly adding cream to the bucket into which he was milking the supposedly record-breaking cow. He continued his fake practice for a number of months by carrying the rubber bottle filled with cream under his blouse and letting the cream run from it through a rubber tube which could not be seen by the tester on guard. This hot water bottle has caused the Holstein-Friesian Association more trouble even than the Michigan girl's bottle caused the medics.

OLD DAYS IN SACRAMENTO H. C. Muddox, Sacramento capitalist and farmer, met George Murphy, Berkshire breeder of Perkins, the other day, and the conversation drifted onto old times in the Capitol City. The Murphy family has been in the farm game almost since John A. Sutter started the town of Sutterville, which later became Sacramento. George Murphy's father exhibited purebred Berkshire hogs at the California State Fair in a day when the breeders of today literally were on a milk diet. "I can remember your father very well," Muddox remarked to George Murphy. "I used to sell him fish at $2 a barrel. I'd seine the fish—cats and perch—from Burns Slough and your father would take them out in his spring wagon to stock a reservoir at Perkins." It is of interest to mention that this Burns Slough, where Muddox used to get his fish, now has disappeared, for the heart of Sacramento's residence section is built over it, and the old depression has become a trunk-line of the city's sewage system.

SOMETHING TO THINK ABOUT "The white race cannot survive without dairy products."

Who first said it, and when? The quoted sentence is so true and so self-evident to one who has but a smattering of human history. It seems to have age, like so many of those truisms which have come down from Greek and Roman history. It might have been uttered by one who made literature his vocation, for the tone of it. The odd thing is that the sentence has neither age, nor was it uttered by a historian. It is a product of the late great war and was voiced by no less an efficient, modern American than Herbert Hoover. Hoover made the statement in a speech before the Associated Charities in San Francisco in 1919. It was the expression of his belief, grounded on the experience he gained feeding starving children of Europe during the Great War. It, therefore, is not a mere well-rounded sentence, but the expression of a scientific fact, put into a simple sentence by a man not connected with the dairy industry, who has only the welfare of humanity at heart. California specialty farmers are beginning to learn, too, that their kind of agriculture cannot survive without the dairy cow.

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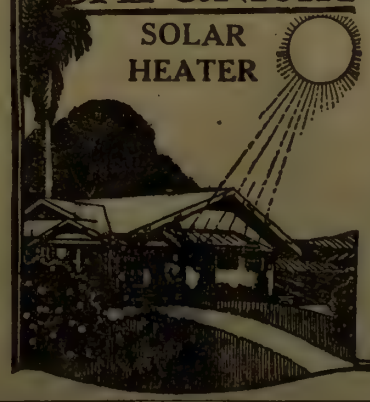
DAY & NIGHT



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Professor Stoneburn's Article

(Continued from Page 3)

suited to meet the needs of the back-yard poultryman.

Well bred flocks of Pekins are wonderfully uniform in size and type. The ducks and drakes are very similar in appearance, the latter being identified by two or three short, stiff feathers curving upward at the base of the tail.

The typical Pekin duck has a broad, deep breast, carried low. The body is long and broad, carried close to the ground, slightly elevated in front and sloping downward to the rear. The thighs and shanks, set well back, are short and large.

PROF. STONEBURN

The finely formed, long head, with medium-sized bill and large, deep eyes, is set on a large, curved neck which is carried well forward. Short, close wings are borne snugly against the sides. The whole bird is trim and alert.

For the show room, adult drakes should weigh nine pounds, adult ducks eight pounds, young drakes eight pounds, young ducks seven pounds. On duck farms it is not unusual to find many specimens which greatly exceed the standard weights. In fact, there are certain strains, or families, which well deserve the name Mammoth Pekins.

There is but one variety, the white. The plumage should be pure or creamy white, black feathers in any part of the plumage being a disqualification in exhibition specimens. Shanks and toes are reddish-orange, bills are orange-yellow, eyes deep leaden-blue.

New York City is the largest market for these toothsome ducklings, and the great duck-growing districts mostly are within easy shipping distance of this huge market. Boston, also, calls for large quantities of ducks, as do many of the great Summer resorts along the Atlantic Coast. In certain sections of comparatively limited extent, the annual output ranges from 500,000 to 2,000,000 ducks.

Long Island is, perhaps, the real Eastern center of the industry, but many large duck-farms are found in New England and New Jersey. Pennsylvania, too, boasts of several large establishments.

Again, I would like to drop the suggestion that owners of home flocks of poultry and general farmers in all parts of the country well may grow each season a small bunch of ducks for home use.

All such will be wise if they use pure-bred stock, because the common, nondescript "puddle ducks" will not prove satisfactory. The Pekin has established its reputation among those who know good ducks, the hard-headed commercial growers.

KILL THEM ALL

Every Rat and Mouse Easily Destroyed by New Discovery. Not a Poison.

Absolute freedom from rats, mice, gophers and all rodents is now assured everyone through Hick's Rat-Kill. No more trapping or poisoning only a few; kill every one.

Hick's Rat-Kill kills rodents only. Harmless to children, pets, poultry and stock. Spread anywhere. Rats eat it and die quickly outside, hunting water. No smell. Endorsed by Farm Bureau Experts. Proven by hundreds of thousands of satisfied users.

Mr Burch says: "Rats were greatest pests. House, barns and all outbuildings were full of them. Haven't seen one since using your Rat-Kill."

Send No Money—just your name and address to Chas. M. Hick & Company, Dept. 213, 1018 So. Wabash Av., Chicago, Ill. Mr. Hick is so confident that Hick's Rat-Kill will kill every rat that he will send you two large $1.00 packages (double strength) for price of one. When they arrive, pay postman only $1.00 and postage. If not absolutely satisfied after 30 days' trial, your money will be refunded. No one need hesitate to accept this offer as it is fully guaranteed. Two big Chicago banks say Mr. Hick will do exactly as he agrees without argument. Write today before this trial offer is withdrawn.

Ducks in California

(Continued from Page 3)

ready sale, and the demand seems to be increasing, especially in Los Angeles. One Southern grower maintains large flocks principally for egg production, selling the product to hotels and cafes, while two of the retail grocers of the Southern city buy duck eggs regularly for sale to customers who prefer them for baking.

Another source of income is from breeding stock, which goes principally to poultry raisers, farmers and suburbanites who wish to keep a few ducks for home use. Large lots are sold to occasional enthusiasts who want to get into the business. Baby ducks (sold like chicks immediately after hatching) bring from 20 to 35 cents each, and at Easter large numbers are killed for stuffing.

A discouraging factor in parts of California, from the viewpoint of the large-scale producer, is demoralization of the market by owners of a few ducks, who, individually, would not be an important factor, but who, collectively, sell at almost any price offered by dealers, flooding the market with low-priced fowls of mixed sizes and uncertain quality. Consequently, the grower who has not developed a special demand of his own never knows just what the situation will be when his stock is ready to sell.

Those who are in the business to stay are overcoming these conditions. By standardization and intelligent managemetnt they are finding special customers, and by raising the one most popular breetd (the White Pekin) they are creating a reputation for uniformity.

Experienced breeders and feeders do not advise any novice to enter the field with the expectation of attaining large-scale production immediately; in fact, the duck business in this State is distinctly a "specialty," operating upon such a nice balance that any attempt to "crowd" the market is likely to result in disaster for all concerned.

Renewing the Brood Combs

By J. D. BIXBY SR.

A QUANTITY of brown dust on the alighting board is a certain indication of a comb that has passed its usefulness, either from age or from decay caused by moisture. Open the hive and you will find one or more combs, sometimes nearly the full set, being torn down to the mid-rib or completely removed by the bees, preparatory to rebuilding as soon as a free flow of honey occurs.

This condition means a loss of efficiency, as all this old wax will be removed and wasted. The cells and often the whole comb then must be rebuilt at a time when wax can be secreted only at an excessive cost in honey and at a time when every particle of nectar is needed for the normal progress of the colony. Wax secretion during a free flow of nectar is partly involuntary; if voluntarily accomplished the consumption of honey is much greater in producing the wax scales.

Remove these old combs and send them to the wax-rendering tank. If they should contain honey or pollen needed by the colony they may be placed in a super over the brood-nest and the cappings broken. The bees then will soon carry down the contents of the combs. Replace the latter with drawn combs, never with sheets of foundation, for if foundation is given to a colony at any time when a flow of honey is not being gathered it will be seriously injured or destroyed.

Keep combs sound and serviceable by exchanging as suggested above, especially at the first thorough inspection early in the spring. Often the condensation of moisture at the sides of the hive or leakage from a defective cover causes the outside combs to become moldy and brittle. Such combs are seldom used afterwards until they are torn down and renewed by the bees. Usually this process commences at the front end of the outside combs, nearest the entrance, and sometimes two or three combs are destroyed. This leaves a large vacant space, which is promptly occupied by black spiders to the great annoyance of the colony.

These sometimes are a serious menace in secluded apiaries. They are fond of stringing their webs in the flight line from the entrance of a hive and catch hundreds of bees in these nets. When spring inspecting, tip up the hives and kill every spider in sight. If ventilated covers are used give them attention also.

The Latest Flowers

IF WE want to keep our gardens up to date, we must change the style of them, just as we do our clothes. The double and anemone-flowered cosmos have displaced the old single ones among flower lovers, but generally an inopportune frost came along, when they were at their best. This year for the first time, two Eastern firms list early-blooming double cosmos, and June and July will see them in full bloom. Any one wanting these seeds can obtain the names of the dealers by writing the editor of ORCHARD and FARM.

A new lily, Lilium Regale (Regal Lily) was introduced into America from China by E. H. Wilson, now traveling in Australia for the U. S. Department of Agriculture. This lily comes from a part of China which has hot and dry summers and cold frosty winters, and is particularly suited to all parts of California. It blooms in June or July and is very beautiful, having petals white inside, tinged pink outside, and a beautiful yellow throat. A new perennial sunflower, about the size of the Klondyke cosmos, frost-proof, is very much finer for display and cutting. Helianthus Angustifolius is its name, and it blooms the first year from seed. The dahlia-flowered zinnias bid fair to supplant the old giant-flowered, as the flowers have a softness not seen in the older varieties. Overlapping rounded petals give a depth to the blossoms and the colors are blended tints, instead of staring reds and yellows.—ELGENIA B. BIXBY.

Blue Jays and Sap Suckers

AN Eldorado County rancher claims that California jays and sap suckers last year ruined a heavy crop of nuts on his six-acre almond orchard. The birds bored through the shells of the green nuts and extracted the kernels, which then had the consistency of jelly.

Small windmills failed to frighten away the birds. Dusting the fruit with nico-dust discouraged the marauders to some extent, but injured the fruit. Audubon societies are asked to suggest means for protecting the young almond crops from the birds. Many bird lovers deny that sap suckers bore through the bark of healthy trees, claiming that the birds make such holes only in pursuit of insects within.—O. H. B.

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From the cheapest that's good to the best that's made—National Quality Silos are made from finest lumber accurately fitted, scientifically designed and bracedto withstand any weather. Exclusive patents protect our better bracing system, improved doors, and other exclusive features. From the heart of the world's greatest lumber country we ship our lumber, tanks and silos anywhere.

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Los Angeles' Great Terminal Market

UNLIKE most large cities, Los Angeles ships out more fruits and vegetables than are imported into the municipality, 10,000 carloads being exported annually, while only 7000 are received. More than half the carlot imports consist of potatoes, of which 4000 carloads are received annually, principally from Idaho, Washington and Oregon. Between 600 and 700 carloads are brought in by auto trucks.

Another striking feature of the Los Angeles produce market is that 85 per cent of the vegetables and 35 per cent of the fruits consumed here are grown locally. One-fourth of all the lettuce, cauliflower and mixed vegetable shipments are produced near the city.

The terminal wholesale produce market is one of the largest and finest in the country. It consists of a two-story concrete building surrounding two entire blocks. Brokers, shippers and wholesalers occupy the second story, while the ground floor is divided into open-front or "stalls" for the storing and display of merchandise.

The market opens at 4 o'clock in the morning and closes at 5 o'clock in the afternoon, the greatest activity being between 6 and 8 a. m The producers' market, located at Ninth and San Pedro streets, opens at midnight and closes six hours later. Many jobbers buy their supplies at the producers' market before the terminal market opens and then sell to dealers at the latter place.

A distinctive feature of the Los Angeles market is the almost exclusive use of crates and boxes for handling fresh fruits and vegetables, instead of baskets and barrels

Scenes which at first appear confusing resolve themselves into most orderly handling of great quantities of fruits and vegetables.

There has been a noticeable decrease in the number of Japanese engaged in the vegetable industry, according to authorities. However, many yellow faces are seen among the traders at the market. Almost like a scene from the Old World.

The bulk of the apples come from the Watsonville district, Santa Cruz County, although increasingly large shipments are being received from the mountain valleys.

A suburban retailer uses his car to haul the day's supplies of fresh vegetables from the market to his store.

Hour after hour, day after day, the trucks and wagons come and go. One wonders who consumes these mountains of food.

Preventing "Red-Berry" Disease

Samples of Himalaya blackberries infested with microscopic insects

By E. O. ESSIG

Department of Economic Entomology, University of California

THROUGHOUT the State there is a growing number of complaints regarding the red berry disease which affects the Himalaya blackberry. In some sections this trouble has affected and destroyed the entire crop, due to the fact that the berries never ripened beyond the red stage.

In some cases the berries remained small, while in others they appeared normal or abnormally large in size. Some of the berries became partially ripe, half or more of the druplets remaining red and the rest turning black. The trouble is apparently confined at the present time to the Himalaya variety, but may, in time, spread to other kinds of blackberries.

For some time the cause of this mysterious trouble was unknown. It was finally discovered that the cause was a microscopic mite, *Eriophyes gracilis* (Nalepa). This insect is closely related to the pear leaf blister mite and the silver or rust mite of citrus trees. It is pale white in color, elongate in shape, with but four legs near the head, which is composed largely of piercing and sucking parts.

MITES INJURE BERRIES

The very minute mites live during the winter in the leaf buds on the canes and make their way to the blossoms as soon as they begin to open. Entering the blossoms they work down to the bases of the green developing druplets, where they feed, causing a stunting or abnormal growth of the growing berries and prevent ripening.

They soon spread to all parts of the infested plants, and the writer has seen small patches where not a single berry ripened, and large patches where a large portion of the crop could not be harvested. Red berries hang on the vines all winter in the coastal regions of the State and are found to harbor thousands of the over-wintering mites.

The mites have naturally been distributed with the plants and in all probability will be found wherever the Himalaya berry is grown extensively. It appears that the pest was introduced into this country with the host and it has taken some years for it to breed in sufficient numbers to make its presence known.

PEST EASY TO CONTROL

The fortunate thing about this pest is the cheapness, effectiveness and ease of control, all of which were thoroughly demonstrated in many parts of the State last year. As in the case of most mites, sulphur is the basis of the material used to kill them. The most important time to spray is in March, when the new growth is starting. At this time use one gallon of liquid lime-sulphur to 100 gallons of water, or the equivalent of dry lime-sulphur. One application is sufficient for complete control, if the work is thoroughly done.

If the spring application is not effective, the mites may be destroyed any time during the summer by using five pounds of wettable sulphur to 100 gallons of water. The liquid sprays are preferable for this work because dry flowers of sulphur often causes severe damage to the foliage during hot weather.

In our spray tests last year every sprayed bush or row stood out as a splendid example of complete control of the trouble, while adjoining unsprayed vines produced only red berries. Any of the sulphur sprays may cause burning if applied during hot weather or when the plants are in need of soil moisture, but if applied under normal conditions will give complete control at small cost.

June Buds and Yearlings

SACRAMENTO VALLEY peach growers this year were given the choice of "June buds" at 25 cents and yearlings at 40 cents. Both kinds sold well, the demand for good, local-grown trees exceeding the supply.

Peach seedlings are sometimes budded in June, the buds making sufficient growth the same season to justify transplanting the trees. Other seedlings are budded late in the summer, dormant buds being used. The latter "set" in the fall and make a large growth the next year.

It will thus be seen that yearlings have one-year tops on two-year roots, while the June buds grow during the summer on seedlings which have been started early in the spring.

Concords in Demand

GROSS receipts of $7700 from three and one-half acres of Concord grapes is the remarkable record claimed by W. J. Embree of El Monte (Los Angeles County).

"My Concords have been the best profit producers on my ranch," asserts Mr. Embree, who raises also rhubarb, walnuts and other specialties. This little patch of grapes produced 33 tons of fruit last year, and I have been unable to keep up with the demand for cuttings."

The fruit is packed in four-basket crates and sold on the Los Angeles market. Each container is labeled, "Genuine Eastern Concords."

Whether the high prices and insistent demand are due to the hunger of Eastern tourists for the Concord flavor, or to the superior quality of these grapes when grown under irrigation in California, is a matter of conjecture. However, the fact remains that there is an enormous demand for nursery stock of this variety.

Samson Dealers in California

James R. Dibble, Bakersfield, California
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Philly & Gill, El Centro, California
Lundblade & Jewett, Eureka, California
L. A. Bobo Tire Co., Fresno, California
W. H. Hooper Co., Glendale, California
Garden Court Garage, Hollywood, California
Lyon & Irey, Lodi, California
Guasti, House & Gioili, Los Angeles, California
Rock & Young, Marysville, California
M. S. Hamilton, Modesto, California
Baxter, Shaw Co., Inc., Oakland, California
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San Bernardino Vulcanizing Works, San Bernardino, Cal.
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It is not mere rubber and material alone that make Samson's what they are. True, the materials used in Samsons are the very finest obtainable, and the mechanical principles on which they are built are the most advanced in the entire industry—but it is honest skilled conscientious workmanship that gives to Samson's that inherent stamina for which they are famous.

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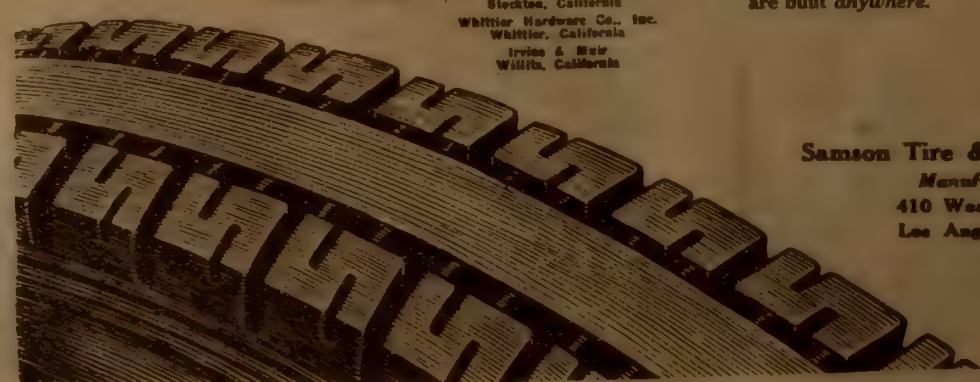

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SAMSON SUPER SIZE—CORDS

ORCHARD *and* FARM

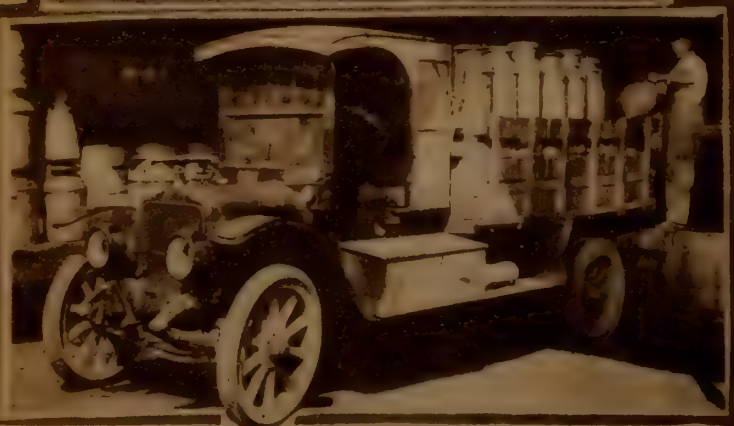
SECTION OF THE SUNDAY EXAMINER

APRIL 22, 1923

Petaluma's Co-op Creamery

Upon the grassy, oak-crowned hills surrounding Petaluma, thousands of contented cows graze peacefully.

Although Petaluma's fame rests chiefly upon her premier egg production, she also possesses a splendid co-operative creamery, which H. A. Weinland, Sonoma County Farm Adviser, declares is one of the best managed and most successful in America.



Type of truck used in delivering supplies to the creamery. Seventy-five members bring milk or cream to the plant.

This battery of separators extract cream from whole milk, which is delivered in large quantities to the creamery.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
APRIL 22, 1923

Co-operation Pays Marin and Sonoma Dairymen

Efficient Management and a Large and Loyal Membership Bring Success to Petaluma's Big Co-operative Creamery Enterprise

By O. H. BARNHILL

(See Illustrations on Opposite Page)

A SUCCESSFUL co-operative creamery? The Eastern farmer smiled skeptically, remarking that he was from Missouri—or words to that effect.

"Why, my friend," confided the newcomer, "the corn belt is smeared all over with rural creamery wrecks. Wait a minute," he protested, lifting a horny hand as the Californian started to tell how much better we did things out here in the Pacific West. "Didn't the Oregon Dairymen's League fizzle out just last year, leaving a lot of producers holding the sack?

"I wonder why it is," continued the grain and pork producer, "that we farmers fall down oftener on the creamery proposition than any other in the line of co-operation except possibly the running of a store. If this Petaluma butter factory is an honest-to-goodness success, I'd sure like to see the proof."

Willing to investigate, the farmer-tourist accompanied his California friend to the large and substantial looking dairy products factory which takes care of the cream from 400 Marin and Sonoma County cows.

"Did you say 400?" asked the Easterner. When assured of the correctness of the number, he remarked: "That goes a long way towards accounting for the success you claim for this establishment. One of the two great difficulties we encountered in starting farmers' creameries in the Mississippi Valley, and especially in keeping them going, was to get enough cows lined up to prevent the overhead from breaking down the enterprise. We learned that it takes an immense amount of cream to make a butter factory a success."

VOLUME CUTS OVERHEAD

When we learned the Petaluma plant was making nearly six tons of butter per day—3,000,000 pounds per year—the Easterner was more than half convinced of the success of the establishment. With such a large volume of business there seemed to him no good reason why the members should not receive attractive prices for their product. Nothing but mismanagement, we agreed, could account for failure.

FALSE ECONOMY EXPENSIVE

"Mismanagement! That's the other rock on which so many of our co-operative ships were wrecked," remarked the man from Missouri. "We didn't realize until it was too late, generally, what a difficult proposition it was to manage a mutual concern successfully. The one big idea we had was economy. We hired cheap men and we got what we hired. Cheap they were, in one way, but expensive in the end, for they wasted most of the money we put into the creameries."

In the comfortable creamery office, W. B. Hopkins, manager, told us the story of the enterprise. "When we organized, nine years ago, we had thirty-three members. Now we have nearly 400. Our growth has been gradual, but permanent. Our business rests upon a solid foundation, the corner stone of which is abundant supplies and plenty of capital.

"A record of prompt payment of good prices, covering a long term of years, insures the loyalty of old members and the acquisition of new ones."

"Just what do you call good prices?" inquired the visiting skeptic.

PREMIUM BUTTERFAT PRICES

"The San Francisco price last year averaged 51.18 cents a pound," answered Hopkins. "We paid our members 54.97 cents, a premium of 2.79 above the market."

"That was certainly a fine figure," admitted the Easterner. "But how did you know just what price you could afford to pay? One of the commonest mistakes our managers made was to overestimate the price, which resulted in loss and dissatisfaction later on when our accounts were properly audited."

"That's one mistake we carefully avoided making," explained the Petaluma creameryman. "We first pay the current market price and then at the end of every six months, when all expenses are carefully counted and every contingency provided for, the net profits are apportioned to the members in proportion to the amount of milk and cream which they have delivered to the plant.

"This bonus has averaged 1½ to 2 cents a pound for butterfat. It is a substantial advantage in the form of cash profits; an unanswerable argument in favor of co-operation, which our patrons wisely appreciate.

PAY INTEREST ON CAPITAL

"In addition to above-the-market prices, our members have been paid 6 to 8 per cent annual interest on the $80,332 which they have invested in the business. We have proceeded on the theory that money is entitled to wages, independent of any profits which might be made.

"During the past five years we have accumulated a reserve fund of $10,000. This surplus is to be added to our capital stock, making the shares worth $7 each, instead of $5, their present book value. New members will be charged $7 a share. It will thus be seen that those who risked cream and capital to establish this co-operative enterprise have been benefited in three ways: extra good prices, interest on their money and surplus profits. We expect to issue 20,000 shares at $7 each, which will give us ample working capital."

As we inspected the establishment we were impressed with its size and were not surprised to learn that it was one of the largest in the country. The employment of efficient methods and up-to-date, adequate equipment were everywhere apparent. The testing and sterilizing departments are fitted with the latest approved appliances for determining the richness of cream and insuring the keeping qualities of the butter produced.

PROFITABLE BY-PRODUCTS

When questioned regarding the reasons for the conspicuous success and gratifying growth of the creamery, Manager Hopkins became modestly reticent. We observed, however, that instead of "sloughing off" the buttermilk at a nominal price, it was being used in the manufacture of large quantities of dry curd and casein. The former is sold for chicken feed, being easier to handle than buttermilk. The casein is used as a spreader and sticker for spray solutions. Most of it is shipped East. In addition to cream, the plant receives about twenty-five tons of whole milk per day during the spring season.

In order to take advantage of favorable markets, a 125,000-pound cold storage plant is being built; it will be used to store butter during the low-price season and hold it until values advance to a profitable figure.

"Man and nature here have combined to produce very favorable conditions for our business," Mr. Hopkins explained, by way of passing the success buck out of his deserving hands. "Cows subsist on natural grass four to six months of the year, while oat and barley hay furnish nutritious roughage at other seasons. Some dairymen mix their seed grain with vetch, which greatly increases the yield. Others feed stock beets, which make good cow feed, but lots of hard work.

"Years ago *(Continued on Page 11)*

This Is Avocado Planting Time in the Southland

What Experience Has Taught About Starting Young Trees—Helpful Information

By J. ELIOT COIT

Contributing Editor of ORCHARD and FARM

THE avocado is particularly well suited to yard and garden planting in town and suburban districts. It is a very ornamental evergreen, producing fruit of high quality and value, and is free from the bothersome scale insects and diseases which affect citrus and other fruits. Where there is room for several trees, a proper selection of varieties will provide mature fruit throughout the year.

DR. COIT

During the last five years Southern California nurserymen have made great progress in learning how to produce good trees, and the stock available this year is 100 per cent better and more likely to grow well than that offered five years ago.

PREPARATION FOR PLANTING

March and April are the best months for planting, although trees planted as late as June may do well if given special attention. All avocado trees should be dug with a large ball of earth securely wrapped with burlap. They should be lifted when in a dormant state. About half the leaves should be removed and the tips of the side branches cut back. They are then stored in a lath house or other shady place, the spaces between the balls is firmly packed with shavings, and the trees sprinkled daily for about two weeks or until the buds swell and new growth starts which is the signal for planting.

LARGE HOLES REQUIRED

Large holes two feet wide and three feet deep should be dug. No manure or fertilizer should be put in the hole, but rich top soil should be put in and tramped down until the tree when set will be at the same level with the surface as it was in the nursery.

The hole then is half filled and the cord holding the burlap is cut, the corners of the burlap turned down and the hole filled and tramped down firmly. It is better to firm soil with the feet than to run water in and depend on that to settle it.

After the tree is planted, a large basin four feet in diameter and six inches deep is made with a little mound of earth in the center to keep the water from standing against the trunk. This basin is filled with water several times until all the moved soil is thoroughly wet. The next step is to fill the basin full or six inches deep with a mulch of coarse, strawy manure, alfalfa hay or even chopped grass and weeds. This is to remain all summer and if there are any chickens around it is necessary to cover it with wire netting firmly fastened down with stout pegs.

After the first good soaking, the trees should be watered every ten days or two weeks during the summer, taking care not to overwater in adobe soil.

Avocado trees are subject to sunburn. There are several ways to prevent this but the best way is to paint the entire trunk with whitewash to which a very little flour is added to make it sticky. This flakes off gradually as the trunk expands with growth and the bark gains resistance to the sun.

In addition to this it is well to place a shingle on the southwest side to protect the bud union. It is necessary to provide a good strong stake for the first two years. This is driven close to the tree on the sunny side and the tree is fastened to it with bands of soft cloth, or a wire run through a piece of old garden hose.

AVOID DEFECTIVE SOILS

No pruning is necessary at time of planting as this is always done in the nursery. Good trees planted in this way are quite sure to grow and do well unless there is some peculiar defect in the soil, such as alkali or serious hardpan.

In Southern California, within about 40 miles of the ocean, a large number of varieties are available. In frostless places, Spinks, Dickinson, Fuerte, Lyon, Prince, Linda, Ganter, Puebla, Dickey and many others will do well. Where it is fairly frosty, Fuerte and Puebla; where frosts are fairly severe, Ganter, Northrop, Mexicala and other Mexican varieties should be tried out. For the hot interior valleys, only Mexican varieties known to be heat resistant may be expected to do well.

Caliente, Tiger and Northrop are suggested as best for interior conditions. It is not likely that any variety of avocado which we know to be available can be made to grow well and produce fruit satisfactorily in desert valleys such as Coachella and Imperial, or in Arizona.

ORCHARD and FARM

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JAS C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS
J. D. Bixby Sr. — W. S. Guilford
Luther Burbank — Robert E. Jones
William Reynolds Butler — W. S. Killingsworth
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Dr. J. Eliot Coit — Prof. F. H. Stoneburn
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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is [illegible].

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

EASTERN FARMERS FOR CALIFORNIA. Do Eastern farmers want to come to California? An exchange says that only five per cent of the inquiries received by Californians Incorporated, the development association, are from farmers. If the right kind of advertisements were inserted in Mississippi Valley agricultural journals, it would seem that a large number of farmers might be interested in locating here.

At least one California land company recently has brought a great many families from the region named. George Kreutzer, superintendent of the State Land Colony at Durham, visited that section in January and found a multitude of farmers wanting to move to California. The only thing that kept them from coming, he said, was inability to dispose of their Eastern property; they were ready and willing to trade for Pacific Coast lands!

LESSONS FROM THE DROUTH The recent unprecedented spring drouth has been a serious blow to nearly all producers. The only ones, in fact, who have suffered little, are those who had their spring plowing out of the way very early. In Southern California, it is unsafe to postpone plowing, especially the turning under of cover crops, later than March first.

In the Central valleys and the north, later rains and varying weather conditions make it difficult to set an arbitrary date, but the men who took advantage of every dry "spell" during the winter and early spring to plow a few acres at a time are envied now by their neighbors who postponed the job to "do it up all at once."

This soil moisture question is perhaps the biggest one before the farmers of California today. Progressive producers are learning to use the soil augur; to be real "dirt farmers" in that they know what is happening beneath the surface of their land. Such far-sighted ones are not likely to be caught napping. And their trees and plants and vines show the difference—every time!

MORE MONEY FOR SUPPRESSION THAN FOR CONSTRUCTION—Without casting any reflections upon the efficiency and importance of the horticultural inspection service, one is moved to wonder why the maintenance of this bureau in one California county costs $100,000 a year, while the appropriation for the farm adviser's office in the same county is $15,000!

The horticultural commissioner and his aides are essentially police officers; that is, they are empowered to enforce the laws dealing with control of plant pests and diseases, as well as other menaces to agriculture. And California has one of the finest and best organized departments of this kind in the world.

But it seems a pity that the farm adviser's office, an educational institution, should receive comparatively so small an appropriation for its work, and be forced to operate with a force of less than ten men, as compared with nearly twenty-five for the "policing" department.

The farm adviser has attained a position of major importance in our agricultural development. No other public agent co-operates as closely with Federal, State and county departments, educational institutions, and the people. The farm adviser, or county agent, holds a unique position. His is essentially instructive and constructive work. He is a positive, never a negative, force. His department should receive the recognition and financial support it deserves.

"What's New?"—Keeping Abreast of Agricultural Progress

Many Study Agriculture

NEARLY 60,000 students were enrolled in the agricultural colleges of the United States last year, compared to 15,000 in 1918. In the same time the number of agricultural vocational schools increased from 609 to 2175.

Children Raising Poultry

NINETY Los Angeles County children have formed ten poultry clubs, under the supervision of the Agricultural Extension Service, and are engaged in an egg-production contest. Improvement of backyard poultry methods is said to be one of the most gratifying results of this work.

Bioletti Likes Oregon

"THE Rogue River Valley, Oregon, can produce as fine Tokay grapes as can be grown in any country in the world," declares Prof. F. T. Bioletti of the University of California, who is said to have been much impressed with the viticultural possibilities of Southern Oregon during a visit to that locality.

Inoculating Washington Soil

NEARLY a thousand Washington farmers last year inoculated their soil with nitrogen-gathering bacteria, for the purpose of insuring a "stand" of legumes, principally alfalfa. The culture used was obtained from the State Agricultural College at an expense of 25 cents per acre.

Meet Co-operative Law

THE reorganization plan of the Sun-Maid Raisin Growers appears to meet the requirements of the Capper-Volstead co-operative marketing act, which stipulates that such associations must confine their membership to producers. About 15 per cent of the Sun-Maid stock has been held by non-producers.

Forces Water Development

"THE dry weather which has prevailed in Ventura County for the past four years is forcing the development of artificial watering systems," reports a prominent citizen of that community. "People are just beginning to mine Ventura's liquid riches. A number of valuable wells have been put down and plans are being considered for conserving the immense amount of flood waters which each year are wasted."

Study Farming at Night

EVENING schools in agriculture represent the latest development in rural education. Last year there were 238 such schools in this country. The need for such instruction is shown by the fact that there are more than a million farm boys of the "teen" age not attending school. Evening agricultural schools also are attended by men over 20, of whom there are 8,000,000 in the United States who would, it is estimated, be benefited by part-time or evening classes.

Dust Spraying in Oregon

DUST spraying has been used successfully to control potato blight at the Astoria (Oregon) branch experiment station and has been found effective in controlling apple scab and codling moth at the Hood River station.

"Any grower who for three years will dust with as much attention to materials applied, timeliness and thoroughness of application as he does with wet sprays will never use the liquid method again," declares Prof. H. H. Whetzel of Cornell University.

Cold Storage Seed Potatoes

FALL crop seed potatoes held in cold storage and planted last fall in a field test conducted in Los Angeles County by the Agricultural Extension Service yielded 79 sacks per acre, compared to 67 sacks for spring-grown seed held in cold storage and 49 sacks for spring-grown seed not held in storage. The experience of E. D. McSweeney, who grows each year about 500 acres of seed potatoes at El Monte and Temecula, also indicates the superiority of fall-grown seed held in cold storage.

California Grape Acreage

ON ACCOUNT of the very heavy plantings of grapes within recent years, the report of E. E. Kaufman, statistician of the State Department of Agriculture, is of especial interest. These figures indicate that in 1921 the new plantings amounted to 90,965 acres and in 1922 the new acreage was 72,302. The total grape acreage in California, exclusive of 1923 plantings, is 612,098.

More than one-third of the entire California grape acreage is in Fresno County, which now boasts 220,695 acres. Tulare is second with 82,040, San Joaquin is third with 51,108, and San Bernardino fourth with 29,635 acres.—J. E. C.

Importing Australian Oranges

CANADA imported nearly 7000 cases of Australian oranges, mostly navels, last summer. The Australian season for navels is from May to October, and for Valencias, September to January.

Children Grow Strawberries

NINETEEN Kern County school children are growing strawberries, under the direction of the Agricultural Extension Service. The pupils which are most successful in their horticultural efforts will be given a free trip to the University Farm at Davis next fall.

Depleting California Lands

"CALIFORNIA arable lands, both orchard and grain, are being slowly but surely exploited of soil fertility by the removal of crops, the burning out of organic matter and the leaching out of nutritive properties," declares Prof. P. B. Kennedy of the University of California. "The use of vegetable manures is the safest, surest and most economical solution of California's fertility problem."

Gives Away Holstein Heifer

THE children's Holstein calf club recently organized at Downey (Los Angeles County) was given a purebred heifer by Mrs. Anita Baldwin. About 150 persons were present at the formation of the club. Two of the chief purposes of the work, explained County Club Leader Ernst, are to interest young people in advanced agriculture and demonstrate to dairymen the advantage of keeping purebred stock.

Finding Plant Pests

F. R. BRANN, Tulare County horticultural commissioner, during March inspected more than a million grapevines, 130,000 fruit and nut trees, 350,000 cuttings, and 50,000 ornamentals, garden and berry plants. A total of 42,000 pieces of nursery stock were rejected, having been found infected with the following pests: Nematode, black knot, root knot, hemispherical scale, phylloxera, white fly, crown gall, gummosis, borers, mealy bug, red scale and rose scale.

Making Gas From Corncobs

AFTER more than six years of experimental work, chemists of the United States Department of Agriculture report they have succeeded in perfecting a process for the manufacture from corncobs of a low-priced fuel for auto engines; also a wide variety of hard rubber and synthetic resin products. If this process comes into general use it will, it is predicted, provide a good market for waste farm by-products and conserve the native supply of wood alcohol and the hardwoods now used in making this liquid.

Killing Rodents in Tulare

UNDER the supervision of F. R. Brann, Tulare County horticultural commissioner, the people of that community are engaged in the wholesale destruction of rodent pests. During March they got rid of more than 100,000 rodents, chiefly by poisoning. They bought an entire carload of bisulphide of carbon and jute balls and treated 20,000 acres, having much material left for additional work. The total cost of the campaign was less than $3000, or about 3 cents per rodent. Of 130,000 acres inspected, 100,000 were found free from such pests.

Graft Olives at "Whistle Time"

"WHISTLE time"—when the bark slips sufficiently to make whistles—is the best season to graft olives, according to Warren Woodson, president of the Maywood Packing Company, Corning, who reports that a great many olive trees of inferior sorts are being top-worked with Sevillano cions. The charge is 30 cents per tree.

Earle Hazen is said to be one of the greatest "grafters" in Tehama County, having a single contract for top-working 7600 olive trees to the superior Sevillano. Grafted trees begin to bear the third year after top-working, and bear a considerable crop the fourth year, Woodson points out.

Milk Goats for Argentina

FORTY registered California-bred Saanen and Toggenburg milk goats were shipped to Buenos Aires from Los Angeles April 16. The animals were selected by Miss Irmagarde Richards of Montara and G. E. Gordon, assistant farm adviser of Los Angeles County, under the direction of the University of California. Miss Richards accompanies the shipment to its destination, in order to see that the animals are given proper care.

Prof. Gorden H. True, head of the Division of Animal Husbandry, personally was responsible for the high quality of the animals selected, considering it important that only the best stock be exported from the United States for breeding purposes.

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES

CLOSER TO THE FARMER.—Charles G. Johnson, the new State Treasurer, has announced that hereafter small banks of California rural districts, which need money to meet the seasonal demands of farming, will be favored in depositing State funds. "Particularly will this policy apply to banks that need and use funds to relieve aggravated demands of the agricultural industry," he asserts. All of which sounds good to the farmer who is constantly in need of a ready supply of money.

THE COW—AND AIRPLANES.—Do you know that the dairy industry has a direct relationship to the building of airplanes? It seems like a far cry from the cow in a grassy pasture to an airplane soaring among the clouds. But somebody in fable land predicted it long ago with the story of the "cow that jumped over the moon." Anyhow, I have just been talking to a man who is in the market for casein, which is a by-product of the modern dairy manufacturing plant. This casein he desires to make into glue which his company supplies to certain airplane manufacturers. In this day and age there is no telling how closely one industry is related to another.

IMPROVING WHEAT YIELDS.—There are large areas of land in the Sacramento Valley which probably never will be taken over by the fruit industry, unless it be fifty years hence. Farm Adviser William Harrison of Yuba County is working on some of these lands with the hope of increasing wheat yields there by inducing farmers to plant cover crops and to use sub-soilers. Thus far subsoiling operations on one plot increased the yield by two sacks to the acre, which more than paid for the work. This land for years has been steadily producing less grain and it is recognized that something must be done to build up its fertility.

CALIFORNIA HEN IN NEW YORK.—Figures recently available show that the Central California Poultry Producers and other shipping agencies have sent during the last year more than 700 carloads of eggs to New York! There are more than 600 crates to the carload and thirty dozen eggs in each case. This is a remarkable growth in the business for export to the East since New York was entered by the California hen. Best of all, from a California standpoint, the Western eggs are sold at a premium above those from poultry farms on Long Island, adjoining New York; this is a tribute to standardization, quality and advertising.

PRODUCTION IMPROVEMENT BY BREEDING.—George Wolf, tester for the San Joaquin County Association, at a recent meeting of the Farm Bureau, gave a rather striking instance of the improvement in dairy cattle through better breeding. It was the story of a fairly good cow which made a record of 283 pounds of butterfat in a year. Her first daughter was by a scrub bull and when it reached maturity the best it could do was 196 pounds of butterfat for a year, which was ample evidence of a deterioration due to the ancestry of the sire. Next time the dairyman bred his sow to a purebred bull and the offspring of this union, a fine heifer, made 302 pounds of butterfat in her second year, which, in turn, is ample evidence of improvement due to the productive ancestry behind the bull.

SHIP SIXTY MILLION EGGS

The Poultry Producers of Southern California expect to ship 60,000,000 eggs this year.

Do You *Know* When Your Soil *Needs* Water?

By C. C. STAUNTON

Farm Adviser Ventura County

THOUSANDS of orchardists know no more than the birds of the air about what is going on under the surface of the soil, as regards moisture conditions. To show the importance of this knowledge and how it could be obtained and used to advantage was the purpose of the demonstration meetings recently held in the Sespe Canyon (Ventura County) by Prof. J. W. Nelson, University of California soil specialist, assisted by the county farm adviser.

Many ranchers were surprised to learn what were the water requirements of their soil, and to find that they had been either over or underirrigating. The heavy, hot winds of early spring had alarmed many of the citrus growers in the section named and they wanted to know how their limited supply of water could be used to the best advantage.

By using the soil augur, Professor Nelson showed the soil in Edward Elander's lemon orchard, where the first demonstration was held, contained an adequate supply of moisture in the first 18 inches and was sufficiently warm to stimulate bacterial action in the highest degree. Down to six feet the moisture increased normally, although the subsoil was yet cold.

IRRIGATION SOMETIMES HARMFUL

As a result of this examination, the orchardists present were convinced that the immediate application of water would do more harm than good, because it would chill the soil and close up the air spaces, thereby retarding the development of needful bacteria. One orchardist afterwards told the writer that as soon as the meeting was over he was going to close up the deep furrows which he had opened with a tractor for irrigation purposes.

The demonstrations were attended by fifty citrus growers, who had been called together by the Fillmore Citrus Association. It was something of an emergency meeting, for the orchardists felt that their trees were in dire distress and had planned to take turns in irrigating their groves, only a limited amount of water being available for this purpose.

"Probably the greatest factor of all in determining healthy plant growth is the water supply in the soil, and this was particularly true of the citrus tree," said Professor Nelson. "When trees show an unhealthy condition the owner immediately should make a test of the soil for the moisture content and endeavor to determine whether this is the cause of the trouble.

SOIL KNOWLEDGE LACKING

"Many fruit growers do not know whether there happens to be a gravel stratum beneath some areas, allowing the irrigating waters to be lost by rapidly sinking, or whether a heavy clay underlies other sections, upon which copious applications of water are made to the great detriment of the tree through the closing up of the air spaces, thereby destroying beneficial bacteria and inducing growth of harmful ones. Nor are they aware of the many factors dealing with proper environment for root development."

Professor Nelson suggested that every orchardist dig a trench from midway between two rows to the base of a tree, making the opening 3½ to 4 feet in depth. This will show where the feeding roots are lying, thus indicating the average depth to which the most attention should be given.

The fruit growers were keenly interested when Professor Nelson stated he could easily put the feeding roots on one side of a tree or the other, or on two sides only, within six or eight inches of surface soil, or down nearer the three-foot level—all by varying the application of water. This statement was made in order to have his listeners appreciate what a determining factor is water in causing feeding roots to become active in one section of the soil and stagnant in another.

MAKE INTERESTING COMPARISONS

One interesting phase of the meeting was comparing the moisture condition and general tilth of the soil in a grove in which the cover crop was plowed under before drying the ground too much, and an adjacent grove, which was still maturing melilotus indica. The former orchard was in what might be termed perfect condition. The cover crop had been turned under while still quite succulent, yet mature enough to supply a high tonnage of manure. The soil was warmed deeply and the moisture excellent. The ground in the other grove was so hard on top that it was difficult to pierce with the soil augur. Surface cracks had appeared and the first two feet of soil was so dry that water was immediately necessary, the total six-foot column of soil showing a condition nearing the wilting point. Both cover crops had been planted at approximately the same time, the rainfall had been equal, but one man had helped his trees by turning under the green manure at the proper time, while the other orchardist was injuring his grove by allowing the cover to remain until it sapped the ground of needed moisture.

TEST SHOWS GOOD CONDITION

Tests were made on the Holley ranch, where the soil is shattered shale. As the augur could not be used, a hole was dug with pick and shovel, disclosing the majority of feeder roots in the first two feet of soil. As his ground cannot be plowed deeply, Mr. Holley practices heavy manuring, working in the fertilizer as deeply as possible. The result is a heavy humus content in the upper two feet, which acts as a sponge to hold the water. The roots are able to feed heavily and the trees are in excellent condition.

Following this test, an examination was made of Mr. Sprague's orchard, where the soil was rather heavy, cold and almost saturated with water at three feet and down to six feet. The upper stratum was just getting warmed up and into good moisture condition. And yet the owner had felt that the trees needed water, after the long dry spell.

As a result of the demonstrations, the attending growers felt that they had received an object lesson they would never forget and that, although they might have been growing good crops, they were not obtaining anywhere near maximum returns for their labor. They also seemed determined not to be caught napping and to learn what was going on beneath the surface of their soils.

Raising Healthy Watermelons

WATERMELON wilt may be avoided by planting land which has not grown this crop and by avoiding the use of wilt-infested manure and contaminating the land with livestock, drainage and irrigation water, according to the U. S. Department of Agriculture.

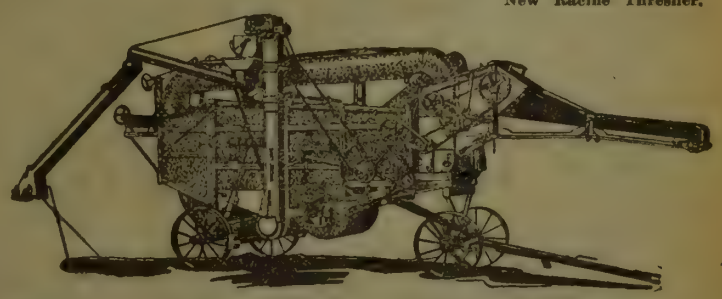
Root-knot can be prevented by the use of land free from infestation, or by rotating infested fields with root-knot immune crops.

Anthracnose is controlled by Bordeaux spraying. For stem-end rot the most important measure is the disinfection of the cut stems with a bluestone paste as the melons are loaded for shipment. Seed disinfection is advised for reducing anthracnose, gummy stem blight and ground rot.

Nicotine Dusting Vegetables

DUSTING truck crop vegetables with a preparation of nicotine sulphate and lime is a good way to destroy insects, according to the U. S. Department of Agriculture. Several applications are sometimes necessary. The material should be kept in airtight containers. By adding powdered sulphur, certain plant diseases—as well as insect pests—may be controlled. Adding 10 per cent of powdered lead arsenate is advised for killing chewing insects.

New Racine Thresher.



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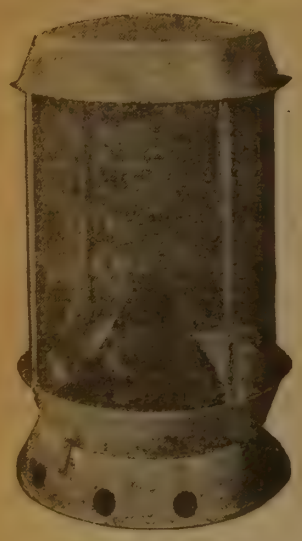

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Lankershim, L. A. County, California. Route 1, Box 227.

ECKMAN AND MILLIGAN

25c brings big Telescope 3 ft. long

View objects miles away just like they were close. Watch persons at a distance on land and sea. See the Sun, Moon and Stars as you never saw them before. The Wonder Telescope opens out over 3 ft. long; closed measures 12 in. Brass bound, fitted with powerful lenses. Can be used as a microscope.

Special Offer

because of a fortunate purchase of a large European manufacturer we can give you a big bargain. Supply limited—order today. Send only 25c with order, and we will ship telescope complete by parcel post, on arrival deposit $1.75 with the postman. Satisfaction guaranteed or your money returned in full. If you prefer send $1.85 with order in full payment.

on Wonder Telescope. Telescopes of this size have sold for $8.00 to $10.00—

Useful and Entertaining

"I trained Wonder Telescope on buttes 25 miles away, they looked to be 2 to 3 miles instead"—C. A. Storey, Ft. Robinson, Neb. "I count windows in houses 12 miles away"—Henry Conner, Manor, Tex. "Can see children playing in school yard 6 miles away" P. H. Hennington, Mc Dade, Tex. "Can tell exact minute on Court House clock 2 miles away"—Jennie Beers, Columbus, Ind. "Don't know anything we ever enjoyed so much"—Chas. Hunter, Neenah, Wis. "Wouldn't take $10 for it"—W. A. Eskridge, Ammond, Ky. "Can read numbers on freight cars a mile away"—A. C. Palmer, Indianapolis, Ind.

FERRY & CO., 75 W. Van Buren, Dept. 5785 Chicago, Ill.

New Grape Varieties

GRAFTING has changed F. W. Pohlmann's Fresno County old vineyard of an unprofitable kind of grapes to a plantation of new and profitable varieties.

Several years ago he received from the Government a number of cuttings which were grafted into old vines. The most promising sorts were grafted into the rest of his vineyard.

Now Pohlmann has two good-sized blocks of Black Monukka and Olivette Blanche, which are in great demand for planting. He also has a number of other good varieties including Red Malaga and Ohanez or Almeria.

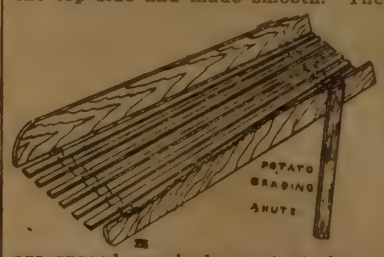
The latter has been made to bear good crops of nice grapes by pinching back the canes in spring in order to make it send out laterals. On most other ranches this variety is a failure because it does not bear well. Mr. Pohlmann thinks this style of pruning is what is needed. However, in spite of the fact that immense quantities of these grapes are imported every year from Spain, he does not consider it a good commercial prospect in California. As a late grape the Olivette Blanche is much to be preferred, he says.

Success with the Monukka seems also to be largely a matter of pruning. Agreeing with Professor Bioletti's observations, Mr. Pohlmann finds that poor quality is largely a matter of leaving too much wood. Two years ago his vines were pruned short and bore big bunches of fine color and quality. A year ago a lot of wood was left and the grapes were poor in quality and color. He thinks very highly of this grape when it is well pruned. —TULARE FARMER.

Potato Grading Chute

THIS potato grading chute is offered as first aid in preparing field run potatoes for top prices. It is a little wider than the wagon box at the top and flares out to nearly four feet at the bottom end. It is made nearly ten feet long, to give the potatoes plenty of time to drop through if they are small.

The slats are slightly rounded on the top side and made smooth. They



are spaced one inch apart at the top ends and two and a quarter inches at the ground. The sand sifts through first and the little potatoes soon follow.

Good work depends upon the man with the shovel. The potatoes must be placed on the sorting bars near the top and the chute must stand at the right angle to carry the potatoes down with due deliberation. A muscular man in a hurry is likely to pitch them over instead of allowing them to sort themselves.—H. A. SHEARER.

Trellising Blackberries

THE following suggestions are from Charles E. Mortenson of Lodi:

Because of their smooth bark and trailing nature, the vines of the Cory Mammoth Thornless blackberry require trellising.

The trellis may be constructed by setting seven foot posts two feet in the ground, 24 feet apart in the rows. Two No. 15 wires are used, one on top of the posts and one two feet lower.

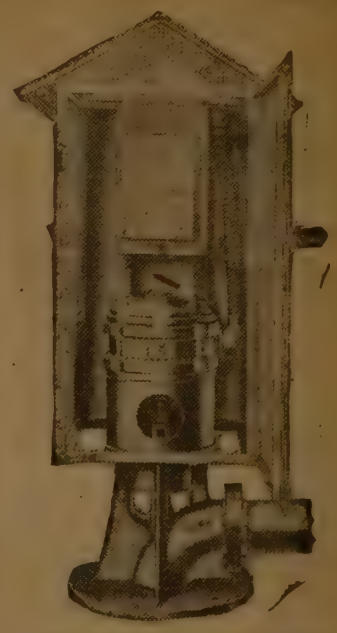
This type of trellis facilitates the harvesting of the crop, as less stooping is required than with lower wires and the pickers enjoy more shade.

The cost of establishing a blackberry "patch" varies with different localities, but is comparatively small considering the quick and profitable returns.

MOUNTAIN APPLES EXCEL

While most California winter apples brought 75 cents to $1.50 a box the past season, those raised in the Santa Cruz Mountains sold for $2 to $2.50, according to Elisha Brooks, a grower of the kind of fruit last mentioned. Mr. Brooks claims his apples outsell Hood River, Oregon, fruit on the San Francisco market.

Bean Electric Turbine Pump



Bean Electric Turbine Pump

Head and motor built in a single unit. Fewer bearings. Perfect alignment. Less friction. Higher efficiency. The Bean Turbine has no column bearings to lubricate; hence less friction and no lubrication troubles.

Made in small sizes to fit your domestic wells from 6 feet up and also larger sizes up to 15 inches. Before you dig a new well try your old one with a Bean turbine.

Send the coupon.

BEAN SPRAY PUMP CO.
101 W. Julian St., SAN JOSE, CAL.

BEAN SPRAY PUMP CO.
101 W. Julian Street, San Jose, Cal.:
Please send full description of the Bean Electric Turbine.
Name .....
Address .....
50-P9

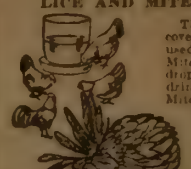
New Way to Rid Poultry of Lice

Rev. G. R. Mente Tells of Amazing Discovery Which Keeps Hens and Chicks Free From Vermin

Few Drops of Liquid in Drinking Water Does It—No More Dusting, Spraying or Greasing

"I have used your remarkable Lice and Mite Remedy with fine results," writes Rev. G. R. Mente, Methodist Parsonage, New Washington, Ohio. "Mentioned this at a Farmers' Institute a few weeks ago. Consequently, farmers by the dozen have been after me ever since to find out where and how they could get it. It has put a stop to the poultry losses in this community. You are a great benefactor to poultry raisers."

LICE AND MITES GO LIKE MAGIC



No Wonder She Doesn't Lay or Set

This remarkable new discovery which Rev. G. R. Mente used is Imperial Lice and Mite Remedy. Just a few drops occasionally in the fowls' drinking water makes Lice, Mites, Ticks and all vermin go like magic. No more disagreeable and unsanitary dusting, spraying, greasing or dipping. Equally good for Chickens, Turkeys, Ducks, Geese and Pigeons. Fine for baby chicks and makes them healthier, sturdier, and grow faster.

All poultry raisers know that sickly, lice-infested hens cannot lay or hatch good hatches. Vermin sap the very life and strength of hens and baby chicks. Stop these losses now. Guaranteed not to affect eggs or flesh of fowls in any way. Also a splendid egg tonic and blood purifier. Costs but a trifle, on money-back guarantee of satisfaction.

WHITE DIARRHEA REMEDY FREE
(Regular $1 Size Package)

At last a sure treatment for this dread disease. No muss. No fuss. Comes in condensed tablet form to be dropped occasionally in chicks' drinking water. Raise every chick hatched. Economical to use. Be prepared. These remedies should always be on hand.

SEND NO MONEY. Just your name and address to Imperial Laboratories, Dept. 6809, Kansas City, Mo., for one regular, full size $1 bottle of Imperial Lice and Mite Remedy (double strength), and they will include free of cost a regular $1 box of Imperial White Diarrhea Remedy. Pay postman only $1 and few cents postage on arrival. Or a large size Trial Package of either one of these remedies for 50c.

If you have a large flock, this Special Introductory Offer also applies on a double quantity of both remedies—two regular $1 bottles of Lice and White Remedy and two regular $1 packages of White Diarrhea Remedy $4 no additional saving—all for $2.75. Simply specify that you be sent the regular $4 value for only $2.75. Readers risk no money, as Imperial Laboratories are fully responsible and will refund the cost on request any time within 30 days.

Community Refrigeration Proves Success

How Butte County Farmers are Saving on Butcher Bills

SEVERAL hundred Sacramento Valley ranchers have succeeded in eliminating meat middlemen, insofar as the former's retail business is concerned, by doing their own butchering and keeping the meat in private boxes in central cold storage plants, from which it is taken out as needed for home use.

By O. H. BARNHILL

IT goes against the grain like a crosscut saw striking a knot for a farmer to sell meat to a butcher and then have to buy it back at double the price. Why should it cost as much to cut up an animal as to produce it? he demands.

"If you farmers don't like to do business with us, then do your own killing and cutting," advises the city carver of steaks and chops. A good many of them are doing that very thing, but lack of refrigeration facilities puts a big crimp in their butchering operations.

A few years ago H. A. Eames, superintendent of a cold storage plant at Chico, helped solve the problem of saving a large share of the farmer's meat money by renting them ice boxes.

"Let's furnish farmers with freezing facilites, just as banks rent them safety deposit boxes," suggested Eames. "Then ranchers can kill their own beef and pork, cut it up into convenient sizes for cooking and store it in our ice boxes, taking home a choice chop or a juicy steak whenever they or one of their neighbors come to town."

PLAN FINDS FAVOR

The plan found favor with the owners of the icy institution, but when the Chico butchers heard of it they blew up with a loud noise, denouncing the project as unwise, unfair and impracticable. With gleaming cleavers upheld by brawny arms they declared their business was threatened, calling upon high heaven to witness the injustice of this latest usurpation of their inalienable rights.

Two hundred boxes, each capable of holding 100 pounds of meat, were fitted up and offered for rent at a penny a day—$3.65 a year. Two hundred farmers promptly leased the boxes and filled them with produce, mainly fresh meat. Each box was fitted with a lock and key, rendering the refrigerators as private as a family refrigerator.

The project was such a complete and immediate success that it was soon found necessary to install 270 additional boxes to take care of the increasing army of rural customers. The new boxes were made to hold 125 pounds and were rented at $4 a year. The price was later raised to $6 a year, at which price most of the 470 boxes have been rented.

TOWN PEOPLE PARTICIPATE

Eighty extra large boxes, three feet square and holding 500 pounds each, are rented for $30 a year by big ranches, hotels, boarding houses and other large users of fresh food. Townspeople decided they had just as good a right to save meat money as had the farmer, even if their doing so resulted in less business for the butcher.

The large boxes have a maximum capacity of 20 tons of meat and the smaller ones 27 tons, a total of 47 tons. When it is considered that the contents of these boxes are constantly being removed and the space filled with new supplies, the magnitude of the enterprise can be appreciated. If all the boxes were rented at the prices mentioned they would yield the cold storage company a gross annual revenue of more than $5000.

Before the box idea was adopted space in the cooling room was first rented to farmers, but this proved unsatisfactory, because of the time consumed in waiting on customers and on account of the contamination which resulted when various kinds of foods were kept in the same room, unprotected. The purloining of a leg of pork by one of the patrons brought matters to a head and led to the installation of lock-and-key boxes.

VARIOUS PRODUCTS STORED

Butter, eggs, fruits and vegetables are stored, as well as meats, enabling farmers to enjoy fresh vegetables and perishable fruits out of season—the same as the city man—and to sell surplus dairy and poultry products when the latter are high-priced.

A temperature of 20 degrees is maintained in the room where the box goods are stored. This apartment is entered through a cooling room, which is supplied with blocks for cutting up meat and is kept at about 35 degrees. It is while here carving carcasses into convenient portions for cooking that the farmer fully realizes that he is his own butcher.

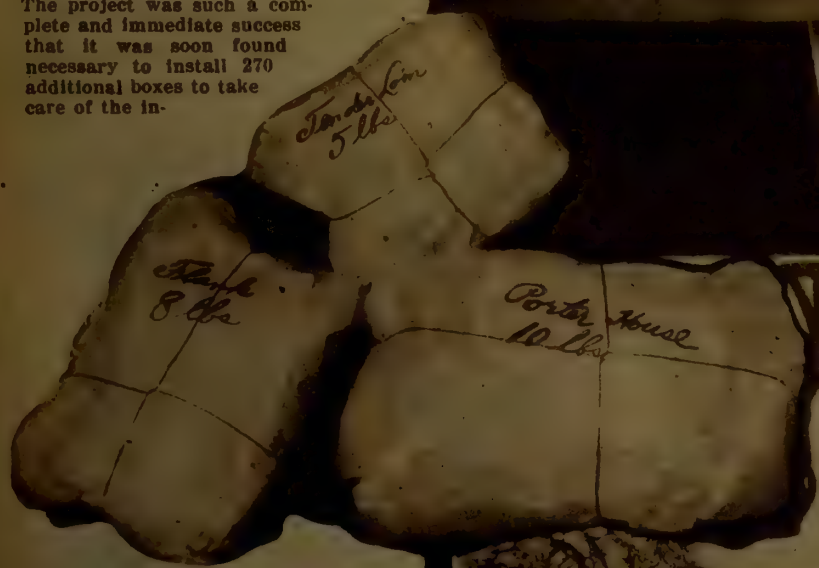
Each piece of meat is wrapped in two thicknesses of paraffin paper, tied and marked with the number of pounds it contains and the kind of meat—chuck steak, pork chops, spare ribs, etc. Above the door of the box room the State Game Warden has affixed this sign: "It is unlawful to store game killed out of season." The farmer smiles when he reads this sign, knowing he holds the key to the situation, as it were.

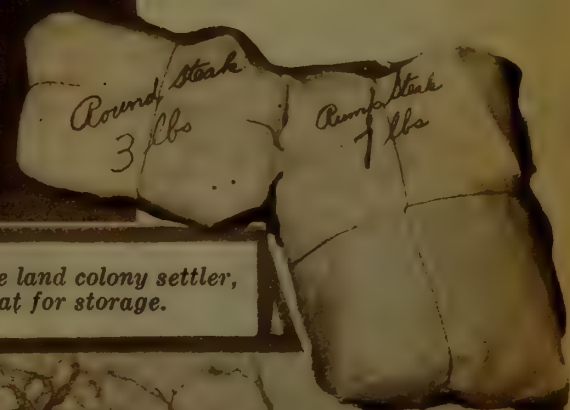
Autos and good roads have made possible the success of Mr. Eames' plan. Some farmers bring meat thirty miles to place it on ice in Chico.

FARMERS BUILD PLANT

The success of the Chico idea led the ranchers in the Durham district, eight miles south, to erect a refrigerator plant of their own. The latter was constructed according to plans obtained by George Kreutzer, superintendent of the State land colony at Durham. Kreutzer came from Australia, where the middle name of many farmers is "Co-op" and *(Continued on Page 13)*

Rev. Loeffel, a State land colony settler, preparing meat for storage.





Community refrigeration plant at the Durham State land colony. Settler taking out a package of meat, which was prepared in the cutting shed in the rear.

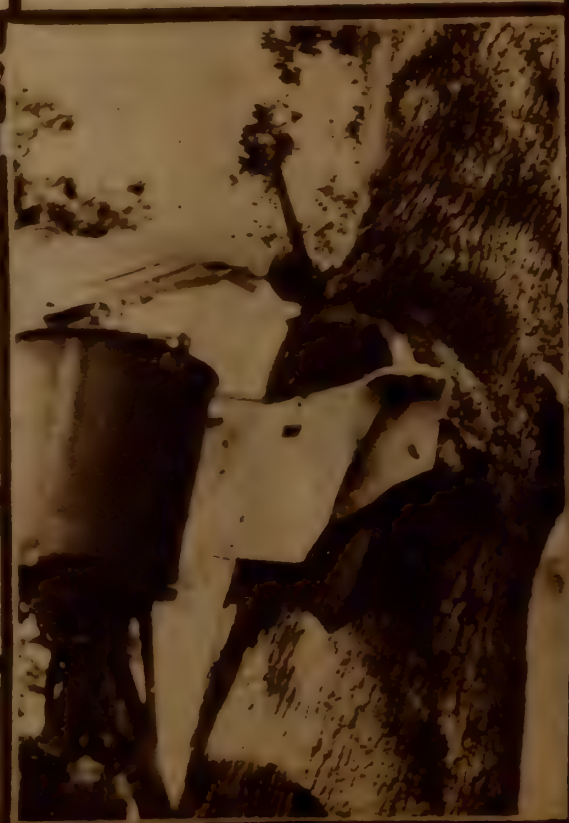
Intelligent Surgical Treatment Often Saves th

Here are the tree surgeon's "instruments." Not all of them, however, are necessary for simple "operations."

This shows the effect of a common fault in pruning — leaving a hub which encourages rotting. With the hub sawed away the condition of the wood beneath is shown clearly. A job for the surgeon.

As in ordinary concrete work, reinforcement often is necessary. This operator has just arranged the wire bracing which will make the job permanent.

The filling of a tree cavity resembles the dentist's treatment of a tooth. First the decayed portion is removed; then disinfectant and waterproofing compound are applied.



Next the "filling" of cement or asphalt compound is inserted. The tree "dentist," however, uses a shovel instead of a delicate instrument of torture.

The illustration above indicates how the job should look when the filling is completed. The canvas shown at the left has been removed, the cement having "set" sufficiently to stand alone.

THE decaying tree, like a "bad" tooth, frequently may be saved by cleaning, disinfecting and filling the cavity. Many ordinary tree ailments may be cured by simple surgical treatment.

Of the many causes of injury to trees, this article will discuss only four of the most common: Sun scald, blight, crown gall and pruning injury.

It is not unusual to find one or more trees in the orchard with a long canker extending from the ground level up the trunk for 12 inches or more. This canker in the worst cases generally shows the bark has sloughed off, leaving the wood exposed to the elements. Before discovery, it may have checked, or may show a multitude of holes made by borers.

It may be noticed also that in practically every case this injury is located in such a position that the direct rays of the sun will fall upon it from 2 to 3 o'clock in the afternoon.

To allow such conditions to continue will be most disastrous to the tree in a short time. The wound should be scraped clean, removing all loose bark or decayed materials, after which the borers must be destroyed. This often can be accomplished by inserting a broom wire into the hole, and forcing it in until the insect is crushed.

The injured portion of the tree next should be treated with some antiseptic. Bordeaux paste is used by some, while others prefer mercuric chloric (1-100). After this treatment a good application of lead paint is applied as a preservative and to inhibit the entrance of wood rotting fungi. If the vigor of the tree has not been too badly impaired the new bark gradually will encircle the tree, covering the injury.

BLIGHT CONTROL POINTERS

Blight control is one form of tree surgery. When "blight" is mentioned it is generally understood to be pear blight. There is no cure-all (or "only" cure) for this disease; it is bacterial in nature and travels most readily where the greatest amount of sap is available (on new, succulent growth). Since blighted twigs show up conspicuously during early summer and can

By LEWI

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Lives of Injured Fruit Trees and Ornamentals

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extra strain gives way at the weakened point. Much unnecessary loss would be avoided if care were exercised, but many trees may be saved if observed before the fatal day and treated properly.

The cost of saving large diseased trees varies with the size of the tree and amount of work, which makes it hard to estimate accurately in advance, but most trees will warrant the expense.

For filling cavities, concrete is used where there is no swaying and a plastic mixture, such as asphaltum and sawdust, where there is likelihood of swaying movement.

REMOVE DECAYED WOOD

In treating a cavity the first thing to be done is to remove all decayed wood and provide for drainage to remove any moisture which may collect. Shellac around the bark over the cambium (or inner layer) to protect drying and burning. Disinfect the entire wound carefully and thoroughly with mercuric chloride (1-100). Next the wound must be water-proofed. Creosote with asphaltum, mixed to the consistency of paint, makes a good water-proof compound. Two coats should be applied.

The reinforcement next is placed over the front of the cavity. No. 14 wire, with one and one-half inch staples, usually is heavy enough for reinforcing. If the filling is to be solid, a canvas cover is tacked over the lower portion of the cavity to retain the concrete, which is made of one part cement and one and one-half parts of one-half inch rock, mixed well and tamped into place. When set sufficiently to remove the canvas, it is "grouted" with a mixture of one part cement and two parts sand. Now, paint over the entire surface, using white lead.

For the plastic filling, the operations are practically the same excepting the preparation of the filling material. This is of sawdust, sprinkled with hot asphalt until just colored, after which it is "firmed" into the cavity.

Some of these remedies may appear at the outset rather costly, but many of our productive trees as well as the ornamentals would be saved for posterity if only a little time and money were devoted to their treatment.

Left—A badly crotched tree, showing how drainage is secured. Right—Inarching saved this gophered tree. More and more orchardists are resorting to this method to prevent losses from tree injury. The "operation" may be performed by any one who has witnessed and studied it.

A pear blight wound prepared to withstand the elements. Blight control demands the knife.

Pear blight scarification work that was successful. Earlier treatment would prevent much blight injury.

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A pepper tree which has been prepared for fillers. Where there is danger of swaying and splitting, a plastic compound is used instead of the hard cement.

Inarching to save a blighted pear tree, the trunk of which has been killed. Right—Making an airtight job by application of grafting wax.

The Metamorphosis of a Citrus District

Above is the land as the developers found it. Below is shown the same tract just ten years later.

By GOODMAN GOODMANSON

Photographs by the Author

THE transformation of 3500 acres of desolate, barren land where the coyote and cottontail reigned supreme—disturbed only by an occasional sheep herder or grain grower—into the green groves of orange, lemon and avocado trees which constitute the Yorba Linda district (Orange County), constitutes one of the most interesting industrial romances of Southern California.

Ten years ago a company of pioneers undertook to subdue these formerly bare hills, valleys and tablelands, which extend north from the Santa Ana River to the Puente Hills, thirty miles southeast of Los Angeles. They paid—or contracted to pay—$150 to $350 an acre for soil which needed years of labor and much expensive improvement to pay dividends on this valuation.

Twenty-eight miles of water mains were laid to carry life-giving fluid from the lower part of the tract to two cement-lined reservoirs situated in the higher portions. Booster and lifter pumps move a practically unlimited supply of water to the thirsty young orchards, which are responding with bounteous crops of first-class fruit.

TREES BEAR BIGGER CROPS

The crop last year from 2600 acres amounted to 400 carloads of lemons and 140 of oranges, a total of 540 cars. This was an increase over the previous year, in spite of the January, 1922, freeze—a record said to be unequaled by any other citrus district in Southern California.

The Yorba Linda citrus crop is handled by the California Fruit Growers' Exchange and the Mutual Orange Distributors, both of which maintain large packing houses on the tract. For 1922 Yorba Linda oranges an average f. o. b. price of $5.66 per hundred pounds was obtained by one of the associations. This is asserted to be the highest price secured for California oranges last year, making two records won by Yorba Linda over the older competitors.

In addition to being one of the most frost-free localities in the United States, Yorba Linda is in the oil belt, the big Chapman gusher being located just west of the tract. This well began spouting liquid mineral wealth March 11, 1919, and since then many Yorba Linda orchardists have received handsome oil bonuses.

OIL AND ORANGE PROFIT?

As an indication of the profits which are being made in the orange and oil game in Southern California a young professional man from Los Angeles, whose sole assets consisted of a few hundred dollars and plenty of determination, tackled a 10-acre tract of Yorba Linda land ten years ago. He stayed on the job year after year, meeting payments on the $3500 purchase price with money earned outside, until recently he sold his orchard for $40,000.

The success of Yorba Linda has largely been due to the progressive community spirit of the orchardists, who have from the first maintained a strong Chamber of Commerce, which contains a number of members who devote a large share of their time to working for the general good.

The assessed valuation of the Yorba Linda district has increased from $330,000 in 1916 to $1,851,000 in 1923. The population is estimated at 1500, which is served by a modern village, where there is a public school employing eight teachers and attended by 200 pupils.

Freeing Walnuts From Worms

By HARRY STINER

Pest Control Specialist, California State Department of Agriculture

IT seems difficult for the average walnut grower to realize that the walnut codlin moth and the old, familiar apple worm are one and the same and that the control measures used for the latter will not produce the same results in walnut orchards.

At harvest time most of the last brood of moths are in the walnuts, in the larval stage, fully developed and ready to crawl out and find some soft, cozy place for the winter. These larvae are to form the nucleus of next summer's infestation and every one destroyed will reduce future losses proportionately.

Worms which emerge from the nuts before being picked up will secrete themselves among the leaves and rubbish on the ground or under the rough bark on the trees. The orchard should be plowed—not disked—as soon after harvest as possible and the trees banded to catch the worms crawling up and down the trunks.

A few larvae find a soft place in the seams of the field sacks while on their way to the drying yards; many others, crawl out on the drying trays. Some of them get into the cracks of the trays, while the rest fall to the ground. If the trays are elevated two or three feet and the space beneath kept free from debris, the birds and chickens will take care of the worms that drop. Biddy's value to a walnut grower as a worm eater often far exceeds her egg production profits, when it is considered that it is possible for one pair of larvae to infest, through their progeny, over 1000 nuts.

After the nuts have been taken away, the trays and field sacks should be dipped in water at 150 degree F. for five minutes, and all racks, buildings and other things used in handling nuts, or in close proximity to them, should be thoroughly sprayed with oil or steam.

From the beginning of harvest each fall until the following May no sacks which have contained walnuts should be allowed on or near the premises which have not been thoroughly sterilized at the place where they were emptied.

All packing houses and dealers in walnuts in Southern California either possess or can easily obtain from the State Department of Agriculture an approved method of treating sacks, and failure to do so is an infringement of the law.

Oregon Coast Apples

LAST winter the writer had the pleasure of sampling some extra fine winter apples grown by Frank Moore on his Curry County (Ore.) ranch. The Newtowns and Spitzenburgs were equal in every way to those grown in the famous Rogue River Valley. Some unnamed varieties were especially pleasing to palate and eye.

Mr. Moore's ranch is located on the banks of the beautiful Chetco River, only a few miles from the ocean, in the extreme southwestern corner of the State. Interior orchardists are of the opinion that climatic conditions on the coast are unfavorable to the growth of high quality apples, but Mr. Moore's experience indicates that the finest kind of apples may be grown in that locality.

Potatoes and tomatoes are also grown by Mr. Moore and sold at Brookings, where one of the largest and best equipped sawmills in the country is located.

PAUCITY OF PICKLES

The production of pickling cucumbers fell off 42 per cent the past year, drouth being the chief cause. The total crop was estimated at 2,600,000 bushels, of which Michigan produced the largest amount — one million bushels.

Agricultural Leaders of the Pacific West

VII—CARLYLE THORPE

General Manager, California Walnut Growers' Association

FEW men engaged in the growing or marketing of a farm crop grown in the Pacific States, have packed as many resultful activities into ten years as Carlyle Thorpe has crowded into the past decade.

Born in San Francisco and educated in Los Angeles, he was working in the Farmers' and Merchants Bank of Los Angeles when he was 16, and before he was 21 was cashier of the Farmers and Merchants Bank in Santa Paula. Today he handles a business which runs close to $11,000,000 a year.

CARLYLE THORPE

The crop sold by him each year represents more in actual dollars than the capital stock of many a metropolitan bank, and the persons who are directly or indirectly dependent upon his business ability for their prosperity are more numerous than the depositors of some of our largest financial institutions.

LOCAL EXPERIENCE FIRST

Mr. Thorpe enjoyed a brief, but notably successful career as manager of the Santa Paula Walnut Growers' Association and then became manager of the California Walnut Growers' Association. Since he took charge of its business about ten years ago the increase in business each year has been once again as great as its total during his first year with the central organization. When he took the reins, the annual turnover was about $1,000,000. Today it is between $10,000,000 and $11,000,000 a year.

One of the biggest accomplishments of the association, under Mr. Thorpe's management has been the improvement of quality by careful grading. Today the California walnut competes with the imported walnut on a quality basis only. If it undertook to compete in price alone, the effort would prove ruinous, as foreign walnuts are sold for about half the price of the California pack. Scientific grading methods have made it possible for the association to take whatever crop nature happens to hand it and grade it in such a manner that the consumer gets what he calls for in the market place—a uniformly satisfactory product.

GRADING IS ESSENTIAL

Careful attention to grading has made it possible for the association to develop a consumer demand which keeps pace with increasing production, although production has become enlarged in recent years at an enormous rate. The industry, under Mr. Thorpe's management, has been made reasonably profitable over a large number of years; that is considered one of the reasons why steady expansion is justified.

Tremendous quantities of low grade walnuts are taken out of the annual harvest by culling methods. It used to be almost impossible to dispose of poor quality walnuts at any price. Cracking methods have been developed in recent years which convert culls into hand-sorted, vacuum-packed meats ready for the housewife.

The poorer grades of meats, which once were used as chicken feed, are to be made into walnut oil for use in the fish canning industry. Even the lowly walnut shells are turned to account; they are converted into charcoal used in the manufacture of poultry and stock foods.

By unusual sales methods and careful administration the association, under Mr. Thorpe's management, has enjoyed perhaps the lowest selling cost of any food distributing organization in the country.

DIFFICULTIES ARE SURMOUNTED

In 1920 it was the only organization which was able to market its entire output of a non-perishable product before April 1 following, without reducing its opening prices. During a period of business depression, such as that which followed the World War, it was able to dispose of all stock on hand at its opening prices which were profitable to the producer.

During 1921 a campaign instituted by Mr. Thorpe, which brought the Panama Canal into sharp competition with transcontinental railways, resulted in one of the sharpest railway rate declines ever known, and saved the walnut growers of California approximately $800,000 a year in transportation charges. A large proportion of the association's crop that year was shipped to Atlantic seaboard points by boat.

Mr. Thorpe made a trip to the Orient and to Europe last year for the purpose of studying foreign walnut competition at point of origin. He gathered on that trip many ideas which already have been put to good account by members of the association.

The California Walnut Growers' Association owns its own general offices and occupies a building that cost more than $300,000. It was the first co-operative farm crop marketing organization in the country to erect its own office building.

Co-operation Pays Dairymen

(Continued from Page 3)

silos got a black eye in this region, due to their being filled with a poor quality of silage—corn which contained much water and little grain. At that time there were no farm advisers to point the way to a better silage crop. Marin and Sonoma counties now have very efficient farm advisers—M. B. Boissevain and H. A. Weinland and their able assistants—who are doing good work in the introduction of better feed and livestock. Some silos now are filled twice a year—the first time with vetch and oats, the second with corn fodder.

"Since our institution was organized the average production of butterfat of our members' cows has increased from 156 pounds to 185 or 195 pounds. This increase has been due mainly to culling out poor cows, which were 'spotted' by the butterfat test, and to better feeding.

"Our better-bull campaign has resulted in the addition of 200 purebred sires to our herds in the past three years. This important improvement has not yet had time to show up in higher production of butterfat.

"There is still much work to be done in improving the quality of our dairy stock. Outsiders are surprised to learn that most of our milk cows are Shorthorns, which is a beef breed. TB testing is not general but should be.

"Our dairymen are mostly Italian Swiss, who for centuries have been accustomed to certain ways of producing milk and cream and do not readily adopt new and improved idea methods.

"As an example of what can be accomplished here, however, Arthur Purvine milks forty Jerseys, which average 400 pounds of butterfat, or more than twice the common yield. His best cow has a record of 750 pounds, which shows that even his herd could be materially improved.

"The poultry industry here enables our members to buy mill feed at San Francisco prices. Grain is shipped in by the train and barge-load, as we have both rail and water transportation and are near the great grain farms of the State."

"Where do you sell you butter?" asked the Eastern farmer.

"Twenty per cent goes direct to retailers. The balance is sold to San Francisco wholesalers."

"Why not let the retailers take all of it and thus save the middleman's profits?"

"Easier said than done," returned Hopkins. "One of the worst features of the San Francisco butter business is the operations of certain jobbers.

"We contemplate joining a State marketing association of butter-makers, which, we hope, will enable us to obtain better prices."

It costs a dollar to feed a squirrel.
It costs two cents to kill him.
LET'S KILL HIM!

CALCIUM CYANIDE WILL DO IT

Its use is simple—merely insert from 1½ to 2 ounces (a large spoonful) of flakes in every opening and cover the hole securely with a shovelful of earth. In contact with the moisture of the earth it generates Hydrocyanic Acid—an extremely poisonous gas, which diffuses quickly throughout the burrow, and which no animal can withstand. There is no storage or handling problem with

AERO BRAND CALCIUM CYANIDE

It is non-explosive, non-inflammable, and is shipped in tight metal drums. 100 pounds will treat 800 to 1000 holes.

Prices F. O. B. Azusa, California

25-pound drums.....19c per pound
100-pound drums.....18c per pound
200-pound drums.....17c per pound

TERMS—Remittance with order; or sight draft with bill of lading for freight shipment; or by express C. O. D. Advise where shipment is to be made and whether by freight or express.

Write for further information or prices in carload lots.

ACCO
The perfect ammoniate
Atmospheric nitrogen
1907

AMERICAN CYANAMID COMPANY
P.O. BOX E 5
AZUSA, CALIFORNIA

Barren Cows Can Be Made Profitable

Don't send them to the butcher. They can be made to raise calves and produce milk in paying quantity. Barrenness simply means that the cow's genital organs are too weak to function properly.

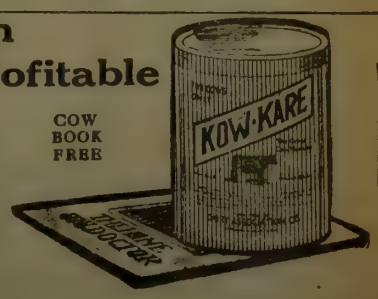
Kow-Kare, the great cow medicine, acts directly on these organs and the digestion, correcting the serious disorder. D. B. Thomas, Knightville, Utah, writes us:

"I had a valuable Jersey cow eight years old that had had seven calves. Something went wrong with her after her last calf came, so that for two years she failed to become with calf. Fed her some of your Kow-Kare last Jan. and she was all right the first serving, and long before I had given her the whole package of your Kow-Kare that I purchased."

Mrs. Harvey Ray, Homer, Ill., writes: "The registered Shorthorn cow I wrote you about last year, and which I treated for Barrenness, under your directions, dropped a fine Bull calf Jan. 2nd. Less than one can of Kow-Kare did the work."

Hundreds of others tell us every year of making valuable producers from cows that seemed hopelessly barren.

COW BOOK FREE



Kow-Kare is equally valuable in treating Abortion, Retained Afterbirth, Scouring, Bunches, Milk Fever and Lost Appetite. Thousands of dairymen use Kow-Kare one week each month to keep up the milk yield during the winter months.

Let us mail you, free, our valuable 32-page book, "The Home Cow Doctor." Kow-Kare is sold by feed dealers, general stores and druggists. We will send either the $1.25 or 65c size prepaid if your dealer is not supplied.

DAIRY ASSOCIATION CO., INC.
Lyndonville, Vt.

Wholesale Distributors of Kow-Kare and Bag Balm for California
GERMAIN SEED CO., Los Angeles, Calif.

In Answering Advertisements, Please Say: "I Saw It in ORCHARD and FARM"

FARMERS' CLASSIFIED MARKET PLACE

CLASSIFIED RATES

60 cents a line (average 7 words). For white space, cuts or display type, most is computed according to total space occupied by advertisements.

Advertisement must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

POULTRY

PROFITABLE POULTRY AND CO-OPERATIVE ELECTRIC HATCHERIES. Thousands vigorous chicks, turks, ducklings every week from unforced, high winter egg-producing 180-290 egg White, Brown, Buff Legs; Barred, W. Rocks, Reds; Anconas; Minorcas; Brahmas; Wyandottes; Andalusians. They clear money laying abundant high-priced winter eggs. Customers after trial say: "Rather pay $15 your trapnested Brown Legs than $12 some others"; "After 4 years with 5700 your chicks (Legs., B. Min.) want 1500 again"; "Raised 94 Reds out of 100, on road 74 hours." Price, quality, profit right; chicks, turks ready. Write Box O, 13 N. Fair Oaks, Pasadena, Calif.

BABY CHICKS

The kind that live and thrive, lay and pay. We hatch from purebred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 12½c; Reds, 16½c, Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELEC-CHICK HATCHERIES Dept. "L," Burbank, Calif. References: State Bank of Burbank.

CERTIFIED White Leghorn Quality Chicks at Utility Prices. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.50 per 50; $12 per 100. Special prices 500 and 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 Seventh St., Petaluma, Calif.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 346, King Road, San Jose, Calif.

WHITE LEGHORN baby chix from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: April, $12.50; May and June, $12. Safe arrival full count live, strong chix guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 476 Sixth street, Petaluma, Calif.

WHITE LEGHORNS Chicks and hatching eggs from individually selected, orchard range birds. An unusually alert, vigorous egg-laying strain of real merit. Progressive poultrymen demand the best. Surprisingly low prices; ask for them. CURTIS WHITE LEGHORN RANCH, Route 2, Box 29, Gardena, Calif.

BABY CHICKS from good stock, well mated. REDUCED PRICES April, May and June. White Leghorns, R. I. Reds, Barred Rocks, White Leghorn pullets 8 weeks old and older. Safe arrival guaranteed. The J. H. STUBBE POULTRY RANCH AND HATCHERY, P. O. Box 67C, Palo Alto, Calif.

HANSON'S Pedigree S. C. W. Leghorns. Over 200 egg flock average for 6 years. Over 221 egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalogue. J. A. Hanson, Corvallis, Oregon.

BABY CHICKS—R. I. Reds. Utility stock. Large, dark birds; grow into broilers fast and are heavy layers. White Leghorns from selected breeders. Capacity 50,000. Attractive prices on large orders. Also booking orders for 10 and 12 weeks old W. L. pullets, any quantity. Anderson's Hatchery, Modesto, Cal.

BUFF LEGHORNS ONLY!

BABY CHICKS, $16 per hundred. Don't buy chicks until you get my free circular. MRS. W. T. WHEELER, Berkeley, Calif., Rt. 1, Box 496-E.

BABY CHICKS—Hatching eggs from Hoganized flocks, fully matured breeders. Barred Rox, R. I. Reds, Minorcas, Brown and White Leghorns. Safe arrival and satisfaction guaranteed. TOBENER HATCHERY, Route 2, Box 306, San Jose, Calif.

WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

CHICKEN FEED CUTTER — Only $8.50. Hundreds used. Prepaid anywhere. Write for Feed Cutter catalog. ARNOTT & CO., Inc., Wholesale Implements, 112-118 S. Los Angeles St., Los Angeles.

BROWN LEGHORN PRIZE STOCK BABY CHICKS & EGGS. GREAT OPPORTUNITY TO QUALITY BREEDERS. WE OWN CREATOR, INGOMAR, FIREFLY—BEST ON COAST. CASA DE ROSAS, CARMEL, CAL.

SOMETHING GOOD in WHITE LEGHORN CHIX—Best strains at reasonable prices. All popular varieties, hatching each week. LINGO-DELL RANCH, Eleventh and Verdugo Sts., Burbank, Calif.

BABY CHICKS—Leading varieties, standard bred, vigorous, heavy-laying stock. Lowest prices. Best quality. Post paid. Illus. catalog free. Superior Poultry Co., Windsor, Mo.

BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

BROWN LEGHORN baby chicks, $16 per 100. Poultry Equipment Co., Burbank, Cal.

POULTRY

MR. AND MRS. POULTRY FARMER—

The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than those we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been Hoganized. Prices for April are as follows:

	50	100
White Leghorns	$6.00	$11.50
Rhode Island Reds	9.00	18.00
Barred Plymouth Rocks	9.50	18.50
Anconas	9.00	18.00
Brown Leghorns	8.00	15.00
Buff Orpingtons	9.50	18.50

May we not have your order again this year? Conkey's Buttermilk Starting Food will raise healthy chicks.

ANSEL W. ROBISON,
1196-98 Market st., San Francisco, Calif.

P. S.—WE ARE THE PACIFIC COAST AGENTS FOR BUCKEYE INCUBATORS AND BROODERS. SEND FOR CATALOG.

TURKEYS, DUCKS AND GEESE

CARMEL MAMMOTH BRONZE TURKEYS. BEST IN CALIFORNIA; GOLDBANK-COPPER KING STRAIN; BABY TURKS AND EGGS. WONDERFUL FOUNDATION STOCK AT RIGHT PRICES. ORDER NOW. Casa de Rosas, Carmel-by-the-Sea, Calif.

HART'S MAMMOTH BRONZE TURKEYS and eggs. Albert M. Hart, Clements, Calif.

KODAKS, CAMERAS, SUPPLIES

FREE
EASTMAN CAMERA
Have your Kodak finishing done by experts.
Winstead Photo Finishing Co.
Box 116, Los Angeles, Cal.
"We put the snap in snapshots."
Write for our new price list and how to get the free camera.

FREE—Send this ad and five names of persons owning kodaks and we will develop and print one roll or six negatives FREE. Sunset Co., 200 Granger Bldg., San Diego, Cal.

FARM LAND FOR SALE

THE CHARLES WEEKS SYSTEM OF INTENSIVE POULTRY AND BERRY FARMS.
ONE ACRE AND INDEPENDENCE;

The Fine Art of Earning a Comfortable Living on One Acre in California. For those who desire to dwell in sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles. Write for literature.
CHARLES WEEKS, Owensmouth, Calif.

FARMS WANTED

WANT to hear from owner having farm for sale. Give particulars and lowest price. JOHN J. BLACK, Chippewa Falls, Wisconsin.

PLANTS AND BULBS

SWEET POTATO PLANTS—Hardy, field-grown plants. Vineless Yam our specialty; higher sugar content than Nancy Hall; one-half the vine, finer appearance. We also offer Nancy Hall, Georgia Yam and Yellow Jerseys. Better plants at lower prices. Write for quotations in various quantities. STONE & STEVENSON, 410 Security Bldg., Los Angeles.

GIANT WINTER RHUBARB PLANTS—Now $1 per dozen. F. R. Walker, Puente, Calif.

CIGARS AND TOBACCO

KENTUCKY NATURAL LEAF TOBACCO—Chewing: 5 pounds, $1.75; 10 pounds, $3. Smoking: 5 pounds, $1.25; 10 pounds, $2; 20 pounds, $3.50. Send no money. Pay when received. FARMERS' CO-OPERATIVE TOBACCO UNION, Paducah, Ky.

HOMESPUN TOBACCO—Chewing: 5 lbs., $1.75; 10 lbs., $3; 20 lbs., $5.25. Smoking: 5 lbs., $1.25; 10 lbs., $2; 20 lbs., $3.50. Send no money; pay when received. CO-OPERATIVE TOBACCO GROWERS, Paducah, Ky.

MISCELLANEOUS

WOOL SCOURED AND CARDED
Have your own wool made into Batts, Comforters and Mattresses. Old wool bedding made new. Write for prices and shipping tags. CRESCENT BATT AND BEDDING CO., Stayton, Oregon.

IMPLEMENTS AND TRACTORS

USED FARM IMPLEMENTS—Harrows, Cultivators, Plows, Tractors, Tractor Tools. Save half price. ARNOTT & CO., Inc., 112-118 S. Los Angeles St., Los Angeles. Between First and Second Sts.

ORCHARDS AND FRUIT LAND

ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate; fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 03, Publicity Committee, Paradise, California.

SITUATIONS WANTED

HORTICULTURIST wants position. Married, 30 years old, one child; considerable orchard experience; expert pruner; can do grafting and budding; good dried-fruit man; expert in wire-bracing of fruit trees; understands spraying and all orchard operations; 3 years' experience teaching practical orcharding to university men. Salary and shares preferred. Available July 1. Address Box X, ORCHARD and FARM.

HELP WANTED—Instruction

RAILWAY MAIL CLERKS—Start $180 mo.; expenses paid. Specimen examination questions free. Columbus Institute, H-7, Columbus, Ohio.

HEMSTITCHING, Picoting attachment. Fits any mach. Artistic work. Illustration, descrip., B. Krafft, Box 896-OF San Fran., Cal.

FARMS FOR SALE

State Inspected and Approved California Irrigated Lands

NOW OPEN FOR SETTLEMENT to experienced farmers only. In tracts of 40 acres or less. Located in the heart of Fresno County, with a population of 125,000.

If you are a REAL farmer, with $5000 capital or credit, or have dairy stock or farm equipment for development, we can locate you on 40 acres of this land on a cash payment of only $1000. Balance 13 years at 6%. Applications for these tracts of 40 acres or less WILL BE ENTERED IN THE ORDER RECEIVED.

These rich, irrigated lands are suitable for deciduous fruits, grapes, vegetables, alfalfa, hogs and poultry. Especial opportunity now for dairymen. Good roads, modern schools, churches, railroad and auto bus transportation. Creamery being built now.

SECOND WEALTHIEST AGRICULTURAL county in the United States. Home of the famous Sun-Maid Raisins, where improved farms sell up to $2500 an acre. Center of successful CO-OPERATIVE MARKETING.

Write for free descriptive literature to W. B. JONES, First National Bank, San Joaquin, Fresno County, Calif.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

BEES AND HONEY

BEES AND HONEY—Beekeepers' price list free or instruction booklet explaining fully for dime. Spencer Apiaries, Sawtelle, Calif.

LIVESTOCK—Horses

REGISTERED Percherons. Write for information. H. G. Learned, R. 4, Stockton, Calif.

GRAPESEED OIL—NEW PRODUCT

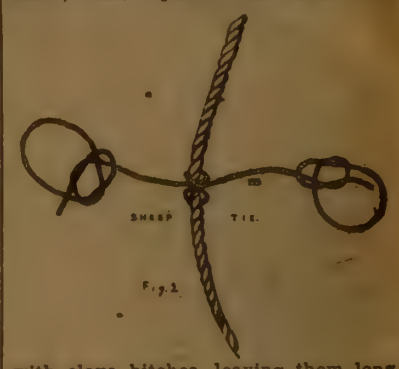
Trials have been made by a co-operative mill at Nimes, France, to extract oil from grape seeds. In France the oil extracted from grape seeds, it is claimed, varies from 15 to 17 per cent when the seeds are dried, and from 10 to 13 per cent when wet. The oil extracted is green if the seeds are treated as soon as the grape gathering is completed, but brown if the seeds are three or four months old at the time of extraction. The solvent used for extraction was trichloral ethylene.

How to Tie Sheep

WHEN hauling sheep in a wagon, it is necessary to tie each one in order to prevent their bunching together at one end of the rack.

Any good wagon box made be made into a sheep rack by attaching extra side boards to raise the sides and ends, making a box about three and one-half feet high.

A good way to hold sheep in place is to stretch a large rope endwise in the wagon rack, from the top rail, down through the middle, and to attach small, short ropes to this leader rope



with clove hitches, leaving them long enough to tie one sheep at each end.

A clove hitch is made by winding the small rope twice around the large rope and passing both ends under, so that they point in opposite directions. This knot will not slip and it is easily untied. See illustration.

Tie the sheep around the neck; use either the bowline knot or the common horse necktie. A bowline knot is tied as follows: First make a small, open loop, leaving end enough to go around the sheep's neck. Then thread the free end through the small loop, over the main rope, under the first turn of the small loop and over the second turn, so that the end lies parallel with the main rope of the neck loop. This tie also is shown in the drawing.

—HERBERT A. SHEARER.

Pacific Coast to Be Silk Center?

DEFINITE steps have been completed for the production and manufacture of silk in Northern California, according to Guy Wilkinson, president of the Seriterre Silk Company of Oroville (Butte County), who appeared before the industrial advisory committee of the Sacramento Chamber of Commerce recently.

Wilkinson has been a student of the possibilities of silk culture in California for the last six years, and during that time has brought to a high state of cultivation 150,000 mulberry trees near Oroville, according to the report made by him at Sacramento.

Financial support of Wilkinson's project has been assured to the extent that he will be able to install the necessary "cocooneries" and laboratories on the Oroville property.

OUTPUT IS CONTRACTED

Cheney Brothers, who are reputed to be the leaders in the silk market of the United States, have contracted for several bales of the Oroville product in order that they may determine the exact quality that can be produced here.

In the event that the silk is of the high standard that it is believed it will be, the sale of the future output of the Seriterre Company will be assured, Wilkinson said.

Cheney Brothers have been in recent personal conference with Wilkinson, and also with Mrs. E. M. Cheesewright, treasurer of the company, regarding the proposed silk-producing concern. Wilkinson and the Cheney Brothers will attend a meeting of the United States Silk Commission, to be held in San Francisco next week.

SPECIAL ADVANTAGES CITED

Oroville and Northern California offer every climate and soil advantage for the production of silk, according to Wilkinson and others who have become interested in the project.

The low humidity and the absence of thunder storms are mentioned as being among the chief advantages of the section, while the soil is said to be especially adapted to the raising of mulberry trees.

Cocoons that are grown in a damp climate produce silk that is of an unusual gloss, but has little strength or resistance, it is said.

Labor problems involved in the production of silk in Northern California have been tentatively solved, with the result that it has been practically proven that the production costs of the local plant will be no hindrance to successful management of the proposed project.—M. T. RICE.

Wheel Carries Mail

THIS old wheel carried the mail for the family many years in a perpen-

dicular position and is still doing duty in a horizontal manner.

It is very convenient for the rural carrier, where there are several boxes grouped together, necessitating only one stop. It is handy, also, for the farmer, as he can stand still and turn the wheel or sit in his "flivver" and bring his box to him, thereby saving time. The wheel is fastened so that it revolves upon the spindle, and while not beautiful, is much more sightly than half a dozen posts. Try it.—M. K. MARSHALL.

SPANISH GRAPES SOLD HERE

Spanish grapes retailed at 40 cents a pound on the Los Angeles market in February, while thousands of tons of good California grapes rotted on the vines last fall.

SPERRY
"Save the Babies"
BABY CHICK FEEDS
"Every Dealer Everywhere"

Why I Like My Little Farm

Palo Alto Colonist Depicts Joys of Independence on Small Acreage Devoted to Intensive Production

By EDNA WOLVERTON

[Is the "little lander" on the right track after all? Is true happiness to be found on the tiny farm? This question bobs up perennially in California. Here's the answer of one who has tried it for six years.—The Editor.]

UPON coming to California from the Rocky Mountain region six years ago, we traveled extensively, looking for a suitable place to locate, where we could remain permanently.

Finally we settled at Palo Alto, joining the Weeks poultry colony which then had been established only a few months and which consisted of some twenty families. Our choice of location was governed by many considerations, including proximity to a good town, assurance of market demand for our produce, educational advantages and pleasing environment.

We purchased four acres and immediately set to work erecting buildings, and improving our little farm. As we had been accustomed to managing 160 acres, this tract seemed very small to us. We were told we had bought more land than we needed and subsequently discovered this to be the case!

The Wee House on the Wee Poultry Farm

It did not take us long to learn the rudiments of intensive poultry production. We had competent instruction and could observe the methods of those who knew the business.

After two years, when we had developed a fine, healthy flock of laying hens, we decided to sell our four and one-half acres and buy a smaller place.

Again we looked the country over and again we came to Palo Alto, finally buying one and one-half acres two blocks from our first home.

We built a small but comfortable home, and now have 1250 hens and pullets, which bring us a cash income large enough to assure us of a comfortable living.

In this little "play home," my husband and I can work together as never before. We both enjoy caring for the chickens—and then what a pleasure it is to plant all the growing things and watch their development into fine fruits, vegetables or flowers.

We find this little farm keeps us plentifully supplied with the necessities of life; and as for "independence"—any day we wish we can have a vacation, enjoying a holiday trip to the beach or the hills, or a shopping tour to the city. We do not have to ask the "boss," for we are our own masters.

While we are taking a holiday the white hens go on working just the same, so that our income never stops. Added to all of this comfort and contentment is the wonderful educational environment, giving our son every opportunity for getting all the education he may desire. Yes, we like our little farm!

OLD CASING FOR SHOE SOLES

For resoling worn work shoes nothing can beat a piece of old auto tire casing. It will not look as nice as sole leather put on by a shoemaker, but it will last longer and will stand very hard wear. Rubber will not stay on quite as well as leather; therefore it is advisable to use nails with large heads and clinch them well, inside. Since tire casings cost nothing, using them to replace shoes means a considerable saving.—TULARE FARMER.

PLOWSHARE SHOE SCRAPER

In muddy weather few things will serve better to scrape the mud off one's shoes before going into the house than a worn-out plowshare. Bolt it to a block or other solid place at the foot of the steps and it will prove a convenience which the housewife will appreciate.—TULARE FARMER.

USED PIPE AND CASING FOR IRRIGATION PURPOSES
All Sizes in Stock.
Standard and Screw Casing.
PACIFIC PIPE CO.,
203 HOWARD ST.,
San Francisco, Calif.

TREES and SHRUBS
FRUIT TREES budded from bearing orchards: Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince; Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Dewberries, Logans, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines; Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.
Salesmen everywhere. More wanted.
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HAMLEY
SADDLES are better!
To the true horseman this 160 page book is more interesting than fiction. It's free.
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Pendleton, Oregon
Box 56

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80 page Land Clearing Book illustrated in colors. Written by land clearing experts. Explains the different methods and tells when each is best. Write today for free copy. New low prices and easy terms on latest model Stump Pullers.
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The New BULLETINS

BOTH interesting and helpful are the following bulletins issued by the United States Department of Agriculture. Any one of these may be obtained free of charge by addressing the Division of Publications, U. S. Department of Agriculture, Washington, D. C. Order by number.

Cost of Using Horses on Corn Belt Farms 1298
The Corn Earworm 1310
Quack Grass 1307
Control of the Common Mealybug on Citrus in California 1309
The Saidy Date of Egypt 1125
The Freezing Temperatures of Some Fruits, Vegetables and Cut Flowers 1133
Commercial Control of Citrus Melanose .. 259
Length of the Dormancy Period of the Sugar Beet Nematode in Utah 262
Cost of Milk Production on 48 Wisconsin Farms 1144

CALIFORNIA CIRCULARS

The following bulletins have been issued by California Agricultural College and will be sent free upon request. Address Director Agricultural Experiment Station, Berkeley:

Results of Rice Experiments in 1922 354
Agriculture in Cut-Over Redwood Lands. 350
Further Experiments in Plum Pollination. 352
The Peach Twig-Borer 355
The Control of Wild Morning Glory 256

Community Refrigeration

(Continued from Page 7)

much success in organized agriculture has been attained.

A portion of the Durham plant is used to chill about 1000 gallons of milk daily for nearby dairymen, who bring their product here to have it prepared for retailing to Chico customers.

The meat room contains 120 individual lock boxes. Some have a capacity of 300 pounds of meat and rent for a dollar a month—$12 a year—while others hold only half as much and cost users $6 per annum. The temperature is kept at about 19 degrees by a machine which handles ammonia by what is known as the direct expansion system. This apparatus has a capacity of four tons and is regulated by a thermostat, which throws it into operation when the temperature rises above 19 degrees or falls below 18.

"This automatic feature is a great convenience," declares Kreutzer. "It renders unnecessary a night operator and has never failed to produce the desired temperature."

Slabs of cork dipped in tar were used to line the walls on the inside. This material is considered much superior to wood, because it is less apt to absorb moisture. The spaces between the six-inch studding were filled with rice hulls, which are said to make a better non-conductor of heat than sawdust. A layer of waterproof paper was placed underneath the outside covering of shiplap. The double layer of cork slabs, each three inches thick, was covered with a half inch of cement plaster.

The cold storage plant cost $2700, and is rented to farmers for $270 a year, which pays 5 per cent on the capital invested and 5 per cent depreciation. The ice machine cost $4000, and was paid for by selling stock to farmers, who own the apparatus.

"The plant is paying its way," states Mr. Kreutzer. "No dividends have been declared, because we prefer to allow the users to keep the profits by furnishing cheap service."

Tulare County farmers are planning to build at Porterville a cold storage plant similar to the one at Durham, the success of which has attracted widespread interest among meat growers in other sections.

Fixing Farm Wages

THE following farm wage scale was recently adopted by the San Joaquin Valley Fruit Growers' Association: Ranch labor, $1.75 to $2 a day and board; married ranch hands, $70 to $90 a month and house; tractor men, $3.50 to $4.50 a day. While the wages named are said to be somewhat lower than those paid in the past, they are claimed to be higher than workers received in other parts of the State.

CHINESE DRINKING MILK

Sweetened, diluted condensed milk is becoming a popular beverage in the Swatow district of China. Excellent fresh water buffalo milk is available, but the natives do not use it for either drinking or cooking. The animals are kept for work purposes.

Proven New Way Keeps Chickens Free From Lice

Amazing Discovery Revolutionizes All Lice Killing Methods. Mineralized Water Keeps Birds' Lice Free. No More Dusting or Spraying.

Permanent freedom from lice and mites is now assured every poultry raiser. Thousands of poultry raisers, for the first time, are keeping their flocks permanently free from these pests without dusting, spraying, greasing, or doing any work themselves. The use of a scientific discovery perfected last year has revolutionized all commonly accepted methods for keeping poultry free from lice and mites. No other method as sure, easy and quick has ever been found.

Wipe Out The Death Causing, Profit Taking Louse.

These blood sucking, profit stealing pests every year actually kill millions of chicks and almost wipe out egg production in many flocks. Thousands of satisfied users quickly proved the amazing power of this discovery and now refuse to be without it.

Fails to Find Louse in Six Months

J. Franklin Briggs, Lynn Haven, Fla., says: "Ever since I started using Lice-Go six months ago, I haven't found a louse in my flock. It's easy now to keep my birds clean—and I get more eggs and better chickens."

Saves Baby Chicks

"Every year until now I have lost many baby chicks from lice. Since using Lice-Go, I have never lost a single chick. It's results are amazing."—M. Johnson, Milwaukee, Wis.

Doubles Egg Yield

"One package of Lice-Go got rid of all the lice in my flock, so I gave the second package to my neighbor to use on his badly lice-infested chickens. Not only did it drive away all the lice, but his egg yield jumped from 17 eggs a day to 46. Weak, sick birds were quickly toned up and began to lay for the first time in months."—J. Fairholme, Cedar Rapids, Iowa.

RESULTS GUARANTEED

Hundreds of thousands of satisfied Lice-Go users are now reordering in larger quantities than ever. They refuse to be without it. It's easy to give. Simply drop a Lice-Go tablet in the birds' drinking water. The minerals taken into the bird's system come out thru the oil glands of the skin and every louse and mite quickly leaves the body. It is guaranteed to help the hatchability of the eggs, and cannot injure flavor of eggs or meat; is harmless to chicks and does not affect the plumage. A few days' treatment at the start and then a little added to the drinking water each month is all that is necessary.

So confident is Mr. Hick that Lice-Go will rid your flock of every louse or mite that he offers to let any reader of this paper try Lice-Go without risking a penny.

SEND NO MONEY

Send no money—just your name and address to Chas. M. Hick, Dept. 643, 1018 S. Wabash Ave., Chicago, Ill. A card will do. He will send you two large double strength $1.00 packages. When they arrive, deposit only $1.00 and postage with the postman. If you are not absolutely satisfied after thirty days' trial your money will be refunded immediately.

Don't hesitate to accept this offer as it is fully guaranteed. Two big Chicago banks say that Mr. Hick will do exactly as he agrees without question or argument.

Patents Write today for free instruction book and "Evidence of Conception" blank. Send sketch or model for personal opinion. CLARENCE O'BRIEN, Registered Patent Lawyer, 1011 Southern Building, Washington, D. C.

How to Build a Farm Garage

THERE is so much machinery on a farm that some kind of machine shop is absolutely necessary. When planning the garage is a good time to think about future repair jobs, and to build accordingly.

Farming is four-fifths mechanics. If you don't believe this, just try to lay out a week's work without using any tools or machines.

Here is a farm garage that is 16 feet wide and 24 feet from front to back. It is built with a concrete wall and a concrete floor that is thick enough to hold up the tractor without flinching.

There should be a forge, anvil, drill press and bench vise, and enough hand tools to do all the repair work that is entailed.

The small tools should include taps and dies to cut threads on bolts ranging in size from ¼-inch to ¾-inch. The taps should be selected to cut American standard threads as used by the manufacturers of farm machinery. The set must include tap wrenches. No man can turn a tap with a monkey wrench. Each tap size should include a bottoming tap. In repairing farm machinery you may want to cut a thread clear down to the bottom of a stud hole.

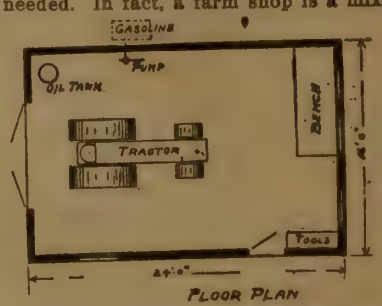
Pipe cutting and threading tools also are necessary. Get a pipe cutter with three wheels and dies to thread pipe from ¼-inch to 1-inch. Equipment should include a pipe vise and two 18-inch pipe wrenches. Pipe taps are handy to have, but a farmer can get along without them.

Twist drills are the most useful bor-

FARM GARAGE

ing tools for farm use. Get the square shank drills, each 1-32 of an inch in size to 1-16 to 3-8 inch. Have two bit braces, one with a 3-inch swing for the small bits, and one with 5-inch swing for the large bits. Get the best bit braces made; they are the cheapest and you get a dividend in satisfaction every time you use one. A few good boring bits are necessary. Get the double twist, "Jennings" patterns.

Not many blacksmith tools are needed. In fact, a farm shop is a mix-


GASOLINE
PUMP
OIL TANK
TRACTOR
BENCH
TOOLS
24'-0"
FLOOR PLAN

ture of all trades and it is impossible to make a sharp distinction between the machine and the blacksmith departments. A machinist's heavy hammer works well on the anvil and the blacksmith's tongs are useful when working at the vise.

A handy tool to have in any department in a pair of "snips." They should be heavy enough to cut number 18 galvanized iron. The list must include tools for working wood, iron, sheet metal, leather and paint.

—H. A. SHEARER.

More Effective Dusting

An even uniform flow of dust is of first importance. Trees and vines must be completely enveloped for best results. Through new features of construction a constant uniform flow is achieved with

"BEAN"
Power Dusters

The material is completely pulverized by thorough agitation in the Hopper and again in the Blower. Simple construction insures long life and freedom from delays in the field. For use with your own engine or built complete in two sizes for orchard and vineyard work. Send the coupon.

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Please send me full description of Bean Dusters for.....orchard work.....vineyard work.

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Made in one piece of heavily galvanized steel with riveted seam, insuring durability.

Also manufacturers of Riveted Steel Pipe Well Casing, Corrugated Galvanized Culverts and Tanks.

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CASE ORCHARD DISC HARROW

BUILT to stand the strain of severe soil conditions. Frame is exceptionally well made of best quality steel. Reinforced at points of greatest strain. Special chilled ring bearings. Discs are covered with metal shields. No projecting cups or levers to catch in low-hanging branches.

This harrow will work up close to trees, shrubs and fences. Built in 5, 6; 7, 8, and 9-foot sizes, with 18-inch discs. Write for illustrated folder. Address

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LIVESTOCK WEIGHING RACK
BOLTED TO THE SCALE PLATFORM
FARM SCALE

Livestock Scale

A FARM livestock scale must have a solid concrete foundation, and convenient lanes and gates to handle the animals easily. Also there must be a pen to hold the animals on the weighing platform.

The drawing shows a scale platform and enclosure fence with gates at the ends to let the animals in and out. It is braced against crowding, and the uprights are bolted to the weighing platform with angle braces. The overhead cross-over timbers are 10 feet above the floor, braced at the upper corners to keep the sides of the enclosure plumb.

It is not practical to roof this device, for the reason that the scale would have to support the roof, as well as the scale pen.

But the scale must be housed in some way. The weighing mechanism is too delicate to be left out in the weather. And the shelter should be of permanent and attractive construction.

—HERBERT A. SHEARER

Cracked Acorns for Fattening Turkeys

EVERY fourth year in the hills is acorn year, it is said, and last fall saw a bountiful crop on "mush" or Valley oaks, and white oaks. As we were not yet prepared to keep hogs on our little new ranch, I decided to gather all the acorns I could for my turkeys.

Upon observation I found the turkeys ate the long, slender mush oak acorns eagerly, either cracking them or swallowing them whole, but rejected the large round acorns of the white oak.

Accordingly I wasted no time on the long acorns, leaving them for the turkeys to dispose of at their leisure. But on sunny afternoons I gathered boxes and bags and barrels of the round ones, which I stored in a shed until November 1, when I began my acorn campaign.

About one o'clock every afternoon when the turkeys were idling about, I took a bucketful of acorns and a hammer, and went out to a large stump in the pasture, whither all the poultry followed me.

The stump was just the height of my kitchen table. On it I mashed each acorn with the hammer, and knocked it off on the ground. I planned to feed just what the turkeys would clean up, but I found that chickens, ducks and guineas ate as greedily as did the turkeys.

The cracking took very little time—half an hour daily—and helped to accustom the birds to being close about me. Even now when the fattened birds are gone, the rest of the flock rally round the stump at the same time daily, and I expect to keep up the cracking as long as the acorns hold out.

Besides giving variety in their food, this acorn feeding helped stretch the grain ration perceptibly, quite an item on a new ranch, where usually all feed must be bought during the first year.

The acorn feeding did not seem to affect the appetite for the corn fed at bedtime, and all the birds gained in weight perceptibly during the fattening period.

Their flesh was juicier than that of turkeys fed solely on corn or other hard grain, and the commission merchant to whom I shipped a few gobblers at Thanksgiving has written me several letters, asking for more as good as those.

The turkeys would not have eaten the round acorns, for they could not crack them themselves; therefore, besides reducing the strain on my purse, I have the highly virtuous feeling which comes from utilizing successfully a home product that otherwise would have gone to waste.—MRS. E. MURPHY.

Pack Earth Around Roots

A READER of ORCHARD and FARM expresses appreciation of the advice recently given in our columns regarding the importance of packing the earth firmly around the roots of a tree when it is planted. This knowledge, he says, would—if received in time—have saved him 4000 expensive walnut trees, which died because they were planted according to the instruction of the dealer from whom they were purchased, who advised leaving the dirt loose around the roots.

Peter Henderson, old-time nurseryman, used to tell about a woman who purchased of him a number of rose bushes. When the bushes were planted, the earth was left nice and loose around the roots. The woman's husband, who weighed 300 pounds, accidentally stepped on one of the bushes after it was planted—"and that was the only one that lived," reported the customer.

Scores Clutch Riders

RESTING the foot against the tractor clutch pedal wears the throw-out and the clutch bearing on the crank shaft, warns Prof. L. J. Fletcher of the agricultural department of the University of California. "Keep your foot off the pedal when not releasing or engaging the clutch," he advises. "It may be more restful to park your foot on the pedal than to let it hang in space, but this practice often causes considerable noise, and a grabbing clutch, and results in loss of oil."

Easy Now to Stop White Diarrhea

Poultry Raiser Saved Her Chicks After All Other Medicines Failed. New Tablets in Drinking Water Quickly Did It.

"Used your wonderful tablets and saved my chicks, after all other kinds of medicine failed," is the remarkable statement of Mrs. John Urbanovsky of Ord, Nebraska. "Send me three more packages each of White Diarrhea Remedy and Lice and Mite Remedy."

Save
Every
One

Poultry raisers will be glad to learn there is a sure, guaranteed treatment for this dread disease which every year wipes out more chicks than all other infectious conditions combined. Easy and simple to use.

Imperial White Diarrhea Remedy, as this wonderful discovery is known, comes in condensed tablet form, to be dropped in chicks' drinking water. It will stop your White Diarrhea losses—double, treble, and even quadruple your poultry profits for the season.

Raise every chick hatched. Sure prevention as well as treatment. We guarantee it. Costs but a trifle for enough to keep the average broods free from this plague all season.

LICE AND MITE REMEDY FREE
(Regular $1 Size Package)

Lice, Mites, Ticks, Fleas, Blue Bugs and other pests positively will not stay on fowls where Imperial Lice and Mite Remedy is used occasionally in drinking water. Guaranteed not to affect eggs or flesh of fowls in any way. A splendid egg tonic and blood purifier. Makes baby chicks grow faster. Be prepared. Both of these remedies should be on hand at this season of the year.

SEND NO MONEY. Just your name and address to Imperial Laboratories, Dept. 9289, Kansas City, Mo., for one regular, full size $1 package of Imperial White Diarrhea Remedy, and they will include free of cost a regular $1 bottle of Imperial Lice and Mite Remedy (double strength). Pay the postman $1 and few cents postage on arrival. Or a large size Trial Package of either one of these remedies for 50c.

If you have a large flock, this Special Introductory Offer also applies on a double quantity of both remedies—two regular $1 bottles of White Diarrhea Remedy and two regular $1 packages of Lice and Mite Remedy at an additional saving—all for $1.75. Simply specify that you be sent this regular $4 value for only $1.75. Readers risk no money as Imperial Laboratories are fully responsible and will refund the cost on request any time within 30 days.

YOUR GARDEN of FLOWERS

by Helen Temple

THE most decorative addition to the exterior of any house is that of well built, properly planted window-boxes. Such containers, with bright, attractive flowers, trailers and ferns, add to a house as trimming adds to a gown, and almost any house with window-boxes "looks like home."

The house as well as the gown, however, loses the desired effect if the "trimming" is chosen indiscriminately. Window-boxes must not be allowed to dry out. Withered plants and flowers in window-boxes or hanging baskets are disgraceful and ugly.

The most satisfactory soil for window-boxes is one which is rich as well as porous. We find a mixture of old leafmold and sand to be very satisfactory for all exposures. A layer of gravel and small stones must be provided for drainage in the bottom.

Keep the window-box moist at all times, watering thoroughly three or four times a week. Loosen the soil occasionally and provide food, either in the form of well rotted manure or a commercial fertilizer recommended for potted plants. It must be remembered that window-box plants are practically prisoners and cannot reach out for food and water as do those in the open ground.

PLANTS FOR SUNNY BOXES

Window-boxes in sunny situations are very attractive when planted with smilax, petunias, heliotrope, trailing geraniums, pansies, nasturtiums, begonias, coleus or oxalis. The begonia and coleus do not succeed in a windy, unprotected location; therefore we must plant them in a protected spot. The oxalis rosea has been the most satisfactory window-box plant in my experience. It is constantly in bloom and is almost immune from all varieties of pests. The leaves and foliage are a bright, clear green, while the blossoms, which are borne on long stems above the foliage, are deep rose-pink. I recommend it very highly, especially to the busy housewife, for it is unnecessary to reset or renew the boxes for two or three years. In this length of time, the bulbs begin crowding one another and cause stunted flowers and leaves.

OTHER VARIETIES OF OXALIS

The Oxalis Ortgiesi is commonly known as the Golden Star flowered variety and, as the name implies, the blooms are brightly golden and have the shape of stars. The summer-flowering Oxalis may be had in four varieties, among which is found the Dieppi (white and rose), the Lasandria, which is rose-pink with distinctive cut leaves, and the ever-blooming shamrock, which produces a great abundance of bright pink blossoms all summer, and has the true shamrock leaves.

HOW TO GROW THE COLEUS

The coleus is one of our most easily rooted plants, yet it is very susceptible to neglect and fungus diseases. As a bright foliaged plant and one with few ornamental rivals, the coleus has not many equals. Being soft-stemmed, however, it is attacked by aphids, especially during the season of sluggish growth. New plants should be started three or four times a year by rooting the cuttings in wet sand or water.

For window-boxes, the large leaved coleus interset with the Trailing Queen coleus and Mikado Rex begonias makes a combination wonderfully effective.

The coleus must be grown in a sunny, well-protected situation and the soil must be moist at all times. If this plant becomes infested with plant lice or aphids, spray with "Black-leaf 40" or a weak sulphur solution.

HELIOTROPE, GERANIUMS AND NASTURTIUMS

The country is fairly bristling with gray houses, large and small; in fact, 1922 seemed to be a "gray paint era" in many sections. Heliotrope in shades of violet, blue and purple blends into the color scheme of these new gray homes so nicely that we can ill-afford to pass it up for something "just as good." Heliotrope has been improved with the years and yields panicles of bloom three and four times as large and fine as formerly. The Mammoth Blue and Lilac throw out trusses more than ten inches across in a short time from seedlings. The seedlings should be set out this month.

Window-boxes with heliotrope must be kept very moist, as drouth at the roots causes dry rot to attack the leaves, which fall off in a short time. being a half-hardy perennial, this plant should be pruned severely in the fall. In the frost sections, it is lifted and potted for the winter, when it is pruned, after which it blooms freely as a house-plant.

Trailing geraniums and nasturtiums are so well known in California that we hardly appreciate their sturdy beauty. Many of the finest homes, however, are flaunting these plants in their window-boxes. Nasturtiums are so easily grown, yet so effective, that the busiest of housewives can find time to plant them and later to feel gratified with the results.

One may purchase named varieties, thus avoiding a collection of undesirable specimens. The double nasturtium is a novelty, very fine for mixing with variegated-leaved, single sorts. The double does not seed and therefore is not very well known.

Among geraniums, we find a wide range of new varieties especially suited for the sunny window-box. The bright pinks, reds and salmons are very effective against the dark green and brown bungalows or the old-time white cottage, alike. Geraniums are started from slips or seed, the former method being most widely used.

PETUNIAS AND PANSIES

Briefly, the pansy and petunia often are grown in the same bed outdoors, therefore, the window-box offers identical treatment. When the pansy begins to deteriorate in early summer, petunias commence growing and flowering. Many gardeners set petunia seedlings in the protection of the resting pansy plants, thus providing protection during their infancy. Pansies are too well known and widely grown to need description, while many gardeners are practically unacquainted with the new petunias. The old-fashioned petunia has been improved into wonderful specimens of doubles and singles in frilled and ruffled giant blossoms of beautiful colorings. Petunias, used as vines in window-boxes, are unusually fine if not mixed, but one variety being planted in each box. Like the pansy, the petunia prolongs the blooming season if the blooms are picked before they wither.

(Sometimes it is necessary to place window-boxes where they do not receive much sunshine. Plants for shady locations will be discussed in the next article.)

Woman's Rights in the Garden

EVERY woman has a right to a garden, especially the woman on the farm. If I were a farmer's wife I'd have a garden or fight. It would not be a little, old, weedy corner garden, either, but a nice, big, clean piece of land, the best on the farm, fenced hog and chicken tight, plowed and harrowed by the men folks the first thing in the spring.

Above all, a woman is entitled to good, first-class garden tools. What have you in that line, sister? Show 'em up! Just as I thought—a rusty old hoe, a rake with several teeth broken out and a loose handle; an old butcher knife or a spade that isn't fit for posthole digging.

You plant the seed by hand in a row made with the corner of the hoe or the end of the rake handle, stooping as you work, and closing the row with your foot. The result looks like sin, but it was the best you could do.

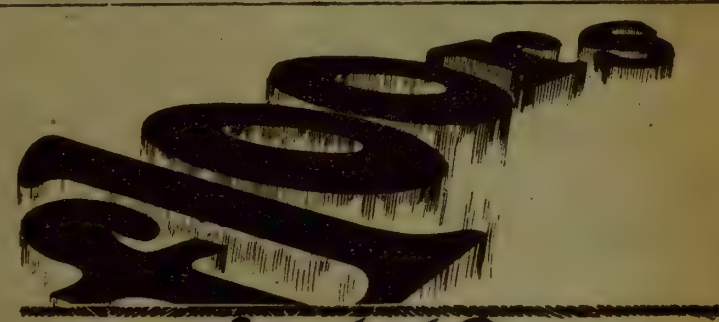
Do the men folks plant corn that way? They used to, but that was a long time ago. Now they have expensive two-row machines with seats, so they can ride, even if they have to go in debt.

But when it comes to paying a few dollars for an up-to-date garden seeder and cultivator, which will do the work ten times as fast and good as by hand, why, the average farmer will squeal like a "stuck hog."

"Can't afford it—all foolishness—Mother never had nothing of that kind—it wouldn't work anyway—women don't know anything about machinery."

All right, brother. I hope when you get yours in the hereafter it will be humping your back over a rusty old hoe in a weedy, cloddy, crooked-row garden with a sunbonnet over your head and the thermometer 97 in the shade.

Honest, sister, if you don't throw away that old hoe and get one with wheels this year I'll think you haven't the spunk of a mouse. If your old man won't let you have the money, don't feed him any garden sass until he comes across. Starve him to it. You shouldn't be compelled to ask him for money, anyway, for you helped earn it and it's half yours.—HENRY FIELD.



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Yet painting floors is an important element often overlooked when refinishing interiors.

Treat your floors as a part of the house. See that they are well protected with Mathew's In-Or-Out Floor Enamel or Mathew's Treadover Floor Paint. One gallon covers approximately 300 square feet, two coats, insuring a durable surface that amply protects. Three coats are rarely necessary. The coating dries over night. You can walk on it after twelve hours.

The Mathew's Service Department will gladly help you select a floor paint harmonizing with your walls and woodwork.

Consult the Mathews Dealer

or write Dept. O. F., 219-221 So. Los Angeles St., Los Angeles
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Order
Husky Baby Chix Now
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STRONG, vigorous little White Leghorn chix, having the ideal combination of pedigree and vitality, *chix that will grow, thrive and produce*—can be ordered here now!

These little huskies are produced, without forcing, from accredited hatchery flocks that have unlimited range 365 days in the year. Males are pedigreed, with a record by sire's dam of from 240 to 297 eggs per year.

Privilege of inspection, guarantee of live delivery full count. Prices per 100—April, $12.50—May and June $12.

Let us tell you WHY May and June are ideal months to start raising chix. You'll be interested. Write today!

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Pioneer Hatchery
450 Sixth Street, Petaluma, California
ACCREDITED BY SONOMA CO. FARM BUREAU

Cleared Up Bad Abortion

Don't give up the abortive cow as lost until you have given Kow-Kare a chance. We receive yearly hundreds of letters telling of complete recoveries through the use of Kow-Kare. Here is one from Joseph E. Frank, East Earle, Pa:

"Early in the spring I had a cow that was affected with Abortion which had taken a bad start, so I sent for a veterinary but the cow kept getting worse and did not eat hardly anything for two weeks and the doctor said she would die as she was so weak she could not stand up any more and he could do nothing for her so I went and got a box of Kow-Kare and gave it according to directions and in three days she was on her feet and eating real good. Today she is as good a cow as you can find. So I must say that Kow-Kare saved her and will others just the same, as this was a very bad case when I started."

Not all abortion is curable, but usually it is the result of a badly run down condition of the genital organs. It is these organs and the digestive functions that Kow-Kare rebuilds. Its medicinal aid is without an equal in the treatment of Barrenness, Retained Afterbirth, Scouring, Bunches, Milk Fever, Loss of Appetite—all of them resulting from impairment of the genital and digestive functions.

No cow should go through calf-birth without the support of Kow-Kare. A tablespoonful twice a day for two weeks before and after will accomplish wonderful results.

Send for free book "The Home Cow Doctor." This fine 32 page treatise will give you scores of money-making and money-saving tips on the care of cows.

You can find Kow-Kare at general stores, feed stores and druggists. If your dealer is not supplied, we will mail postpaid on receipt of price.

DAIRY ASSOCIATION CO., INC.
Lyndonville, Vt.
Manufacturers of KOW-KARE and BAG BALM

FREE BOOK

Wholesale Distributors of Kow-Kare and Bag Balm for California
GERMAIN SEED CO., Los Angeles, Cal.

Auto Trades Need Men

Jobs Open for Mechanics, Electricians, Salesman-Demonstrators, Garage Foremen, etc.

Earn Big Pay---$35 to $100 Week

W. Paul Briggs,
National Graduate

You Can Duplicate This Man's Success!

Salary $4000.00 a Year

Portland, Ore., Sept. 19, 1922.

Mr. J. A. Rosenkranz, President,
National Automotive School, Los Angeles.

Dear Mr. Rosenkranz:

At the beginning of my third year with this company I want to thank you for the big part the school has played in helping me to a success in automobile work.

I am now Assistant Sales Manager and will make $4000.00 this year, which is more than I would have made in three years at my former work as an accountant. I make the value appraisals for this company on used cars that are turned in on trades and feel that the complete training I received at National was the foundation for the job I now hold. There is a big field in the Used Car Appraising for well trained mechanics.

I consider your training was worth five years' ordinary shop experience to me in quick advancement.

Please give my best regards to all the instructors. Yours very truly,

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Marion Hudson Reid built this ignition shop on his nerve and National Training. Now clears more than $65 a week from this small service station.

ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

APRIL 29, 1923

FARM NEWS AND VIEWS

Why Mortenson Believes in Berries

AVERAGE gross returns of approximately $1000 an acre have caused Charles E. Mortenson of Lodi (San Joaquin County) to concentrate upon the production of Cory Mammoth Thornless blackberries. His intensive, diversified little farm is devoted also to walnuts, almonds, poultry and other specialties, but the blackberries, he asserts, are most profitable.

Typical specimens are shown in the illustration. The "Cory Thornless" has a flavor resembling the wild berry, and is gaining in favor because of its great size, heavy yield and thornless quality, making harvesting easy.

Mr. Mortensen markets the fruit in ¾-pound baskets, 20 to the crate. He profits also by a ready demand for plants, for which he receives up to 25 cents each, depending upon the number sold. In large quantities, they bring about one-third this figure. Berry profits largely built the comfortable home and other buildings shown below, says Mortenson.

"Mammoth blackberry plants," says this successful grower, "should be set in rows, preferably running north and south, in order to give uniform exposure to the sun. Another advantage of this plan is that pickers may work on the shady side of the rows both forenoon and afternoon, keeping the containers in the shade.

"Plants usually are set six feet apart, in rows 8 to 10 feet apart. They should be trellised."

Big Drake Makes Ideal Pet

"IT IS easy," writes Mrs. M. J. Flickinger of Calexico (Imperial County), "to teach a hen to roost upon one's arm, but to train a big 10-pound Muscovy duck to do it is a more difficult matter." And just to prove that she has accomplished the trick, Mrs. Flickinger sent the editor the photograph above. Incidentally, it should be added, the drake has received yeast regularly. Our subscriber also feeds yeast to her young chicks, having lost only 5 out of 53 raised this year with a fireless brooder, she states.

Once Down and Out, Now Poultry Superintendent

HIS right arm amputated at the shoulder as a result of a tractor accident, Clarence Wheeler found it difficult to get permanent employment. In fact, he finally became discouraged and despondent and was an object of charity.

Then the rehabilitation division of the California Department of Vocational Education secured a position for him upon a poultry ranch. He proved an apt pupil, and, despite his serious handicap, is now employed as superintendent of a large poultry farm at a salary of $250 a month.

There are in the rural districts of California many others who, because of injury, disease or physical defects, find it difficult to make a living. Any such person of employable age and sound mind, who is anxious to get ahead and who will co-operate to the best of his ability, may receive vocational instruction and thus become a useful, self-supporting citizen.

California Breeder Gets $1000 for Ram

THE purchase of a Rambouillet ram for $1000 from Bullard Bros. of Woodland (Yolo County) by L. N. Marsden, pioneer breeder of Parowan, Utah, was a recent important event in local livestock circles. The buyer was assisted in his selection by Professor R. F. Miller of the University Farm.

This ram, shown above, was sired by the noted Butterfield "Ted" and is closely related to California State Fair and Chicago International winners. The fact that this Utah stockman, who is surrounded by famous Rambouillet flocks, came to California to select his stud sire is regarded as indicative of the good reputation enjoyed by local breeders. The Bullard Bros. firm is recognized as one of the most successful and progressive engaged in the purebred sheep business in California.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
APRIL 29, 1923

Let Us Spray—and Outwit the Codling Moth

Heavy Losses From Wormy Apples and Pears Can Be Prevented by Proper Attention to Time Tested Spraying Rules

By GEORGE P. WELDON

Contributing Editor of Orchard and Farm Pomologist, Chaffey Junior College of Agriculture

FEW places where apples are grown are free from the codling moth, which has followed this fruit until its distribution is limited only by that of its favored hosts, the apple and the pear.

Spain is said to be the native home of the codling moth. No more serious pear and apple pest has become generally distributed throughout our country. Control measures are an absolute necessity for profitable culture of these fruits. The apple is somewhat more subject to codling moth infestation than the pear and is protected with greater difficulty, yet the grower of either fruit cannot be neglectful of his spraying work and secure clean fruit which can be sold at a profit.

GEORGE P. WELDON

Since the codling moth is of such common occurrence, there are few other insect pests which have been subjected to such close study and few regarding which the fine points of its life history are better known. Like all moths, this one has four distinct stages: Egg, larva, pupa and adult. In the winter time it is found only in the larval, or—more popularly called—worm stage.

NATURE PROTECTS MOTH LARVAE

By scraping away loose pieces of bark from the trunk of an old tree, which bore wormy fruit the previous season, codling moth larvae can be located in their winter quarters. Nature has protected them from their enemies in an effective manner, as each larva lives alone in a little house of silk, known as a cocoon. This house is practically impervious to moisture, a fact which is important in connection with the application of sprays. No contact spray has been found which will penetrate the codling moth cocoon and kill the enclosed larva.

The pupal stage is passed within the cocoon. Moths begin to appear when apple trees are in bloom, although many of them do not emerge until some time after the fruit has set. The little egg of this moth is laid by itself on either the fruit or foliage.

Any orchardist who has normal sight can learn to find codling moth eggs. They are flat, circular in shape and about the diameter of a pin head. The color of the egg is creamy white when first laid. As the embryo develops within, a conspicuous pink ring gradually forms and becomes darker in color as the egg reaches maturity.

WORMS HIDE IN FRUIT

The little larva after hatching from the egg possesses an instinct to locate a hiding place. If on a leaf, it immediately hunts a fruit upon which to feed. Its natural hiding place is the calyx or blossom end. Hence most of the early-season larvae begin to feed in the calyx end of the apple or pear. This point in the life of the codling moth history is important, since it gave the first clew to the present successful methods of control.

Approximately three weeks' time is occupied by the larva in feeding within the fruit when the change to the pupal stage takes place. This latter stage lasts for about three weeks and a new generation of moths puts in its appearance in the orchard.

The complete life cycle of the codling moth covers a period of about seven weeks during the summer season, as follows: Egg, one week; larva, three weeks; pupa, two weeks; adult, one week. There is plenty of time for more than one brood to develop. In most parts of the country there are two full broods; in other places there are three broods, the number depending upon climatic conditions and length of the season.

SUBJECT ALWAYS INTERESTS

While volumes have been written on the control of the codling moth, the subject is one that always interests the grower of apples or pears. Sometimes the man who thinks he has learned everything that needs to be known in order to control this pest finds that he is mistaken, when something goes wrong and harvest time finds his fruit badly infested.

While there are several factors that influence the results of spraying, the time of application is of utmost importance. The rule is to apply the first spray when practically all the blossoms have fallen. This rule is a good one, but subject to modifications, because of local climatic or seasonal conditions.

The most favorable kind of bloom for spraying is when the flowers all come out at approximately the same time and then drop at about the same time.

FURTHER APPLICATIONS NEEDED

In some parts of the country blooming is so irregular that it is impossible to find a time when the majority of the little fruits are in the right stage for spraying; a condition which makes necessary the application of two or more sprays, whereas, more regular blooming would mean only one application.

The important fact to bear in mind in connection with codling moth control is that already touched upon that most of the first-brood larvae enter the apple by way of the calyx or blossom end and poison placed within the calyx will kill them. Therefore, the grower should make every effort to spray so thoroughly that no calyx cup is left without its portion of spray.

COAT FRUIT WITH SPRAY

The apple closes its calyx about ten days after blooming, so that quick action may be necessary and two or three sprayings desirable in cases of irregular blooming. If worms are abundant and the orchardist has a condition which would result in the loss of half or more of the fruit if he neglected to spray, at least three applications are desirable.

After the calyx applications have been made, a spray to coat the small fruits should be applied about three weeks after the last calyx spray, this to be followed by another application in two weeks. Usually these three or four sprayings are sufficient, but in very bad cases of infestation still others may be necessary.

The best spray to use is arsenate of lead, either in the paste or powdered form. The paste contains about 50 per cent of water and should be used at the strength of six pounds to 100 gallons of water; the powder is free from water and only half of this amount need be used.

Failure to control codling moth often is charged against the arsenate of lead, which in practically every case is good. In this day of State and National legislation affecting the purity of insecticides, there are few manufacturers who, even though they were disposed to be dishonest, would take chances on selling an article that did not meet legal requirements.

CLOSE APPLICATION NECESSARY

Failure to get results in spraying for codling moth often is due to faulty application. The man who is intrusted with the important job of putting the spray on the trees should be a man who is interested in the work and will keep his mind on what he is doing.

Spray can kill only those worms which eat it and whenever an apple or calyx cup is missed there is a chance for a larva to mature and for a moth to emerge which, if a female, may lay as many as 75 eggs for another brood.

Irrigation Troubles Ahead!

THE calculations recently made by Dr. I. D. Batchelor of the Citrus Experiment Station with reference to the amount of irrigation water required to make up for the deficiency in rainfall shows that in most sections, using a stream of 10 miners' inches per acre, it will require fifty hours' run on each acre to make up for the shortage of rainfall this year as compared to last.—R. W. H.

Melon Covers Short Weight

SHIPMENTS of cantaloupe covers to protect the crop now growing in the Imperial Valley were found to be 10 to 12 per cent short weight. F. W. Waite, county horticultural commissioner, made the discovery and as a result the paper companies will make good the shortage, saving growers about $8000.

Orchardists Are Going Into Partnership With Bees

Willing Workers Formerly Regarded as Pest—Now Recognized as Friends of Fruit Growers

By A. H. HENDRICKSON

Assistant Professor of Pomology, Deciduous Fruit Station, Mountain View, Cal.

FRUIT growers who bid against each other for the use of colonies of bees during blossom time were the subject of a recent news item. Earlier in the season a leading apiarist stated the demand for bees for orchards was approximately 2000 colonies for Sonoma County, 1500 for Sutter County and 500 for the Newcastle section in Placer County, besides inquiries from many other places.

These figures only deal with bees as handled in quantities by experts, but there is in addition considerable demand upon local apiarists.

This sudden demand for bees, which a few years ago were often looked upon as more or less of a pest, is accounted for by the increased production of fruit in orchards where bees have been pastured. Phenomenal increases in yield in prune, plum and cherry orchards are attributed largely to the work of these insects.

It has been well known for years, in a general way, that bees carried pollen from blossom to blossom and that, as a rule, this resulted in larger crops. As early as the seventeenth century, Thomas Andrew Knight pointed out the necessity for cross-pollination; later Darwin mentioned this need, and the means used by nature to secure cross-pollination and prevent self-pollination.

NATURE'S BALANCE UPSET

In California, where orchards first were planted, excellent crops generally resulted; then fruit acreages increased and yields in many cases decreased. In the scramble for planting more land, at least one important factor was forgotten or left unheeded. As new orchards were planted and more land cleared, the native wild bees were pushed back farther and farther into the remaining forests. Meanwhile when new trees came to bearing age, not enough pollen-carrying insects were present to distribute the pollen effectively.

Varieties usually were planted in large blocks of one kind, which blossomed at the same time and thus added to the uncertainty. When one considers that a mature prune tree, for example, may produce from 50,000 to 75,000 blossoms, and that there are 75 such trees to an acre and in some sections, as in the Santa Clara Valley, there are actually thousands of acres of trees all in blossom at the same time, some idea of the magnitude of the honey bees' job in visiting each blossom may be secured.

At first the grower was unwilling to admit the possibility of short crops being due to lack of bees. He attributed it to various causes and, at least in one case, seemed rather disappointed that some new malignant disease could not be discovered on his trees.

EXPERIMENTS AFFORD PROOF

In 1916 and 1917 the University of California demonstrated in a prune orchard in the Santa Clara Valley that the bee was an important element in the distribution of pollen from blossom to blossom and from one tree to another. Tents of white mosquito bar were erected over prune trees just before the blossoming season. At the proper time a colony of bees were placed in certain of the tents, and later were removed near the end of the blossoming season.

All insects were excluded carefully from the other tents. Observations of other trees in the orchard were made. In every case there was a remarkable increase over the average for the orchard in percentage of fruit which set on the trees under the tents in which the bees were kept. But on the trees from which all insects were excluded, practically there was no crop.

In 1921 and 1922 the same experiments were repeated in Placer County, where certain varieties of shipping plums were reported as decreasing in yield from year to year. The data secured from these tests were as convincing as the earlier ones in the Santa Clara Valley. The orchard in which the trees were located was visited by hundreds of growers, who were anxious to see for themselves what bees could do.

The practice of keeping bees in deciduous orchards during the blossoming period is steadily increasing. In every case where the experiment is tried reports indicate that the crop has been increased, provided the weather was favorable at blossoming time. The season of 1922 proved to be an exception in some districts, because the weather was cold and rainy, and as a consequence the bees remained in the hive most of the day.

DEFINITE FIGURES COMPILED

Usually it is difficult to get accurate figures on crop production, but a few cases will show the beneficial results. In one large orchard of 180 acres of French prunes, the production was 344 tons of dried prunes in 1916. The following season 115 colonies of bees were used and the yield increased to 432 tons, an increase of nearly 100 tons which largely could be attributed to bees.

In another case, with a seven-acre cherry orchard, the average yield was about 17 tons of fruit. By the use of 15 colonies of bees, the yield was increased to 49 tons the first season, 51 tons the second and 47 tons the third.

In a third orchard of approximately 30 acres of French prunes, the owner kept 30 colonies of bees. About half of this number were kept up near the front part of the orchard and the remainder on a ditch back at the rear. During the summer the crop indicated plainly where the bees had worked. In the immediate vicinity of each group of bees, the trees were carrying a full load, while in the center of the orchard approximately midway between the bees, there was a strip of trees with a crop that was decidedly light.

INTERPLANTING AND BEES

Another important consideration is the necessity *(Continued on Page 11)*

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The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

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Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

LET US NOT "KID" OURSELVES

With the introduction into California of almost every new crop is advanced the claim that it is "practically free from pests and diseases." Many will recall how this assertion was made in connection with the fig, the avocado and other fruits.

Experience has shown, however, that with the increase in acreage of almost any crop, troubles develop which may become as serious as those affecting the older and better known soil products. Let us not "kid" ourselves; rather, let us be prepared to do valiant battle when the occasion arises. Agriculture is one long war against natural enemies. Very few plants or trees are exempt. We're making progress, but we have yet to find the fool-proof, insectless, disease-free and always-profitable bonanza so loudly proclaimed by enthusiastic promoters!

CALIFORNIANS ENTERPRISING AND ENTHUSIASTIC—"You Californians are such an enterprising and enthusiastic lot," remarked Secretary Henry C. Wallace, head of the United States Department of Agriculture, to the editors of ORCHARD and FARM, during a recent visit to the Pacific West, "that I should like very much to spend a great deal more time in your wonderful State than is available."

Secretary Wallace was especially impressed with the remarkable results achieved by California farmers along the lines of co-operative marketing and intensive cultivation. It is generally acknowledged that selling is the biggest end of the farming industry, and that the orange, raisin and prune growers of California were the first to find a satisfactory solution of the marketing problem, their methods now being followed by other farmers in many parts of the United States.

Intensive farming, rather than extensive, is the watchword of modern agriculture, and in no other place are greater yields secured than in California, where $1000-per-acre crops are not uncommon.

Why shouldn't we be enthusiastic, Mr. Secretary?

BETTER MEAT INSPECTION NEEDED

While the primary purpose of food inspection is to protect the people's health, producers and dealers indirectly are helped by the increased confidence of the public in their goods. The temporary loss and expense are more than offset by the larger sales which result.

Meat packers should bear this in mind when considering the demand for more rigid inspection of flesh foods. It is said that more than half the meat consumed in the United States comes from slaughter houses which are not inspected by Federal officials. The latter are required by law to place the stamp of Government approval upon cattle carcasses which are infested with tapeworm, "if the infestation is not excessive or the meat watery." Carcasses of animals infested with gid bladder worms are passed after the infected organ has been condemned.

Animals affected by "tumors, abscesses or suppurating sores" are passed "if the lesions are not of such character and extent as to affect the whole carcass." Animals affected with carcinoma (cancer) and sarcoma (a kind of malignant growth) are passed if these diseases do not "involve any internal organ to a marked extent nor affect the rest of the body."

If carcasses infected with tapeworms, bladder worms, tumors, abscesses, suppurating sores, cancers and malignant growths are passed by Federal inspectors, what is the probable character of meat not so inspected?

"What's New?"—Keeping Abreast of Agricultural Progress

Delhi Wants 300 Holsteins

THE Delhi State land colony is in the market for 300 Holstein cows, according to Dr. Elwood Mead of the State Land Settlement Board. The Delhi settlers have decided upon the Holstein breed, and if the desired animals cannot be obtained in California a representative will be sent to Wisconsin to procure them.

Testing Spray Irrigation

DECLARING that overhead irrigation, if successful, would be a great boon to backyard gardeners and to some truck gardeners, experiment station officials are testing at the University Farm the spray system of watering plants.

In order to prevent the crusting of the soil, the water is applied at night, using an automatic device to insure proper distribution of the spray without personal attention. A heavy straw mulch is also being tried, for the purpose of preventing the evaporation of moisture.

Fewer Eggs Held in Storage

DURING the first week of April there were only 150,000 cases of storage eggs in New York, Boston, Philadelphia and Chicago, compared to 483,000 at the same time last year. The decrease is attributed to the severe weather which the Eastern and Middle States experienced early in spring.

The March price of eggs in San Francisco was 25 cents, an increase of 1 cent over last year. The March price in '14, '15 and '16 was 20 cents, and in '13 only 18 cents.

Holsteins Bring High Prices

AT THE 1923 guaranty sale of the California Holstein-Friesian Association, held at Tulare April 7, 39 females and five bulls sold at an average price of $665. The top price, $2500, was paid by W. J. Higdon and Sargent Brothers to the Santa Anita Rancho for Anoakia Pontiac Beets 2d. The Kern County High School paid $1050 for two cows.

C. L. Hughes, secretary of the Holstein association, regards the high prices paid at this sale as an indication of revived interest in purebred cattle and a decided upward trend of prices.

White Leghorns Losing Out?

BOTH the first and second places in the Southern California egg-laying contest at Pomona were won during March by dual-purpose breeds. S. J. Foote's Plymouth Rocks stood first, with an average of 25 eggs each, while Rhode Island Reds belonging to Hoover Brothers made the second best record.

"In addition to their heavy laying proclivities, the winning breeds are much more valuable for meat than White Leghorns," points out a prominent poultryman.

Delicious Leads Oregon Apples

THE Delicious is the highest priced apple grown in Oregon, according to a survey recently completed by the experiment station at Hood River. For the past six years this variety has sold at prices averaging $1.10 for the poorest grades to $1.80 for extra fancy. Winter Banana was a close second in prices, selling for $1.02 to $1.75. Ben Davis was the tail-ender, bringing producers only 69c to 86c a box.

The Delicious far out-yielded all other varieties of winter apples, bearing 710 boxes per acre, while the Banana yielded only 385, and Newtown and Spitzenburg, the two leading varieties in that district, bore only 264 boxes per acre. Gravensteins yielded 332 boxes.

The highest yields came from ten-acre orchards, thoroughly sprayed and annually pruned, in which cover crops of clover, vetch and alfalfa were grown. The growing of these crops increased the average yield in the district from 215 boxes to 314 boxes per acre, a 50 per cent gain.

Investigating Livestock Buyers

THE recent study of the books of all commission companies at 23 of the larger livestock markets of the United States by the Department of Agriculture revealed irregularities that shippers consider grave and which the Government is endeavoring to correct.

"It has been quite a general practice," quoting from the department's report, "for commission men to use funds belonging to shippers for their own use during the time the checks were in transit. The firms used this money in any way they saw fit, and the shippers to whom it belonged knew nothing of any unusual risk, so long as the firm remained solvent.

"In case of failure the man in the country sometimes found it difficult or impossible to get his money. Recently six firms on five markets failed, with shippers' claims aggregating more than $100,000. All these failures were due to using shippers' money for personal use or speculation.

"On one of the larger Western markets six firms were found to be making improper account sales. They were fined a total of $1600, and one of the firms retired from the market.

"On another large market it was found that commission men had been giving 'rakeoffs' to managers of co-operative shipping associations, making out bogus sales slips which did not show the amounts actually paid by buyers for livestock."

Gives Army Eleven Horses

ELEVEN thoroughbred horses from the famous Santa Anita Rancho (Los Angeles County) recently were donated by Mrs. Anita M. Baldwin to the remount service of the United States Army. One of the four stallions in the gift was Norito, by Emperor of Norfolk. The former was a favorite of "Lucky" Baldwin, who bred the animal. The latter won the American Derby, the Sheridan and Drexel stakes, all three-year-old events.

Mite Causes Cattle Scab

IN ORDER to stamp out sarcoptic cattle scab in California, the disease having been introduced from Nevada in the spring of 1922, 35,000 infected or exposed animals were dipped, under the direction of J. P. Iverson of the State Department of Agriculture. As a result of energetic and efficient measures taken by State officials, the disease mentioned does not now exist in California.

Sarcoptic is an nuusually severe form of cattle scab, and is caused by a mite or parasite which does not yield to ordinary treatment.

Breeds Blight-Proof Tomato

A NEW tomato, which is claimed to be wilt-proof, partly immune from blight, a heavy yielder and a good shipper, with heavy foliage that will withstand sunburn, has been developed by Prof. J. R. Standige of Scottsdale, Ariz., high school teacher of agriculture.

For five years Professor Standige has been breeding this wilt-proof tomato, having started work when in charge of a 115-acre garden for a large copper company during the World War. Only a limited number of plants are available for experimenters.

Pullet Lays at Four Months

"IT IS very unusual for a pullet to begin laying before five months of age," writes James Dryden, commenting upon the performance of L. Dexter Barnard's Santa Barbara pullet, which began laying at the age of four months.

"In my observation, pullets have laid at four months, and I have had reports of birds which laid before they had attained that age. Just what the record for earliness is I could not say.

"Early laying is a sign of good egg capacity and also of special feeding, but it is not advisable to force pullets to lay too early."

Market Outlook Encouraging

"HOG prices look lower for the early half of the year, with good prospects for a slight advance and a steady market during the late summer and early fall," says a recent report of the United States Department of Agriculture, "with increased supplies and declining prices at the close of the year. It is probable that the South will be a heavy buyer of Northern pork and lard next fall.

"The outlook for wool appears to be favorable for a year or two at least. The demand for dairy products is fairly good, but production is heavy and increasing. The cotton situation is strong from producers' standpoint."

Remarkable Camera Reveals Mysteries of Insect Life

THE illustrations in rotogravure, on Pages 8 and 9 of this number of ORCHARD and FARM, were made possible through an ingenious invention of G. L. Goodmanson, staff photographer.

G. L. Goodmanson with his "microscope camera" at work in the State Insectary, Whittier.

Secrets of insect life hitherto hidden to all except the scientist with his high power microscope are revealed. Tiny pests, scarcely visible to the naked eye, which cost the fruit growers and farmers of California millions of dollars, are displayed in true detail, together with their enemies and the enemies of these enemies.

One is reminded of the famous saying of Jonathan Swift:

"So, naturalists observe, a flea
Has other fleas that on him prey;
And these have smaller still to bite 'em;
And so proceed ad infinitum."

The "battle of the bugs" is magnificent—and seemingly endless. The entomologist finds in a far corner of the world a beneficial insect which bids fair to conquer some dangerous pest. But soon the problem arises of finding means of protecting the friendly "bug" from the natural enemies which threaten its destruction.

Sometimes discouraging, but always fascinating, is the work of the earnest group of men who are giving their lives to the study of entomology. Perhaps it would be only fair to say that the farmer's debt to them never can be paid.—*The Editor.*

Bee Notes

By J. D. BIXBY SR.

HOW TO REMOVE HONEY

Save yourself a lot of misery by doing this job in the middle of a warm day—never at night. Bees sting far worse after sundown than at any other time. Bees fly on a sunny day; when the weather is cold, cloudy or dark, they crawl and sting.

J. D. BIXBY SR.

Use a good bee-smoker, smoking the entrance lightly with two or three puffs. If there are other hives close, smoke these also, especially if they are on the same bench or other support. Remove the cover, smoke the bees down out of the super, separate the latter from the hive and stand it on end across the hive.

The remaining bees can nearly all be smoked out and will run down into the hive. Take the super into some room where the few bees left can fly onto a window or screen door and be let out.

Don't smoke the honey more than is necessary. The smoke odor will disappear from honey in a few days.

If you have a bee-escape—an implement made for the purpose—slip it under the super of honey when first loosened from the hive; then replace the cover carefully, to prevent robber bees from entering. Leave the super until next morning, when all the bees will be found to have escaped.

CAN WE CO-OPERATE?

In spite of their previous more or less unsuccessful attempts to co-operate, California apiarists still favor the idea of a mutual marketing organization. At a meeting recently held at San Bernardino two plans were presented: one was to place the honey crop of the State in the hands of one man, who should deliver it to a firm which guaranteed to handle the product at a price satisfactory to the producers, for a period of years; the other was to form a stock company to provide funds for the purchase of "distress lots" of honey within prescribed district, or advancing money on same.

The first plan was presented by the Los Angeles delegates, the latter by the Riverside apiarists. Neither was adopted, but committees were adopted to work out, if possible, a satisfactory method.

ODOROUS ONION HONEY

A Sacramento Valley rancher writes: "Good-by to a honey crop for this year. All the swamps which formerly gave us honey in dry years have been drained and plowed up."

Cheer up, neighbor. We now have deciduous fruits, asparagus, celery, carrots, onions and other vegetable seed crops that yield honey on this same cultivated land to offset the loss of weed honey.

Onion honey, too! Yes, tons of it. It's odorous, but fine for sweetening chewing tobacco and shoe blacking. Hoarhound honey makes excellent cough syrup.

LOOK OUT FOR ANTS

Ants should be carefully guarded against, especially the Argentine variety, which often is a serious pest. One queen breeder lost more than half his nuclei and young queens within two weeks after moving his 350 "nukes" to what he thought an ideal location, destroyed by these foreign pests.

The latter can be gradually exterminated by using the remedies and appliances advocated by the State University. Distillate of the cheapest grade is good remedy to apply under the hives, but don't use it where bees must travel.

SECURING HOME HONEY

One of the very best methods of securing a home supply of honey in nice shape for the table is to provide the standard shallow supers with frames about five inches deep. Sheets of foundation are furnished, but no wires. When the combs are filled and sealed the super can be removed, after the bees have been driven out by light smoking. The honey is ready to be cut in any sized cakes desired.

HELL FOR SIX WEEKS

An Eastern reader asks what I think of "migratory" beekeeping, as conducted on the Pacific Coast. Hell for six weeks and heaven the balance of the year.

'There Ain't No Such Animal'

This Applies to the So-Called "Gentle Bull"—Better Be Safe Than Sorry

By M. B. BOISSEVAIN

Agricultural Extension Service, University of California

DAIRYMEN and others who breed cattle should take a lesson from the accident which recently befell Mr. A. Giacometti of Sonoma County, who was killed by one of the bulls on his farm.

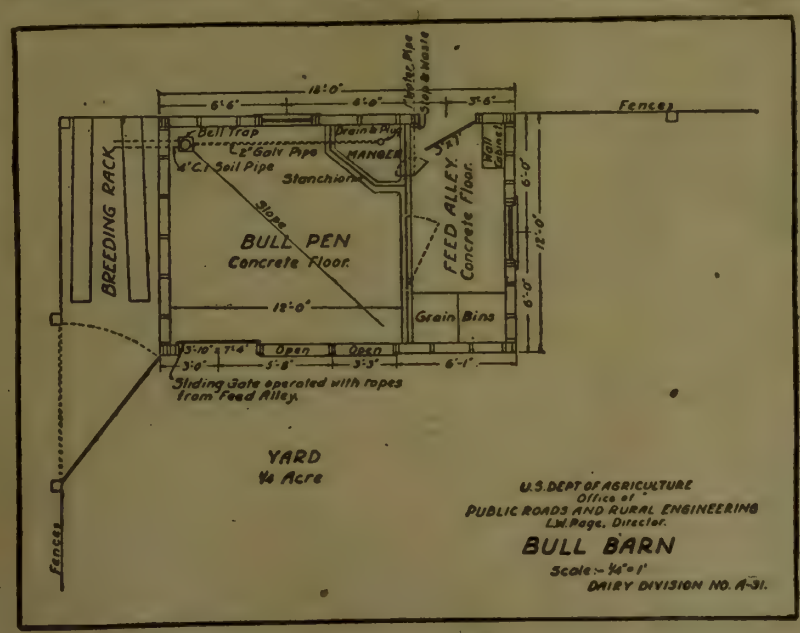
An adage says, "Every bull is a good bull until he is bad"; it applies to all bulls. No one knows when the most "gentle" one may become vicious. Many of the best males do become hard to handle. Trouble should be avoided not by getting rid of the bull, but by keeping him under conditions which will prevent his injuring any one.

There are different methods of handling bulls to keep them safe. The Dairy Division of the U. S. Department of Agriculture has developed a plan for a "Safe Keeper's Bull Pen," an outline of which is shown here.

A manger and heavy stanchion should be built in the outside corner of the bull barn next to the feed alley. A sliding gate or door closes the barn from the yard and should be operated by ropes from the feed alley. This enables the caretaker to close the animal in or out of the barn without entering.

ARRANGEMENT OF GATES

A breeding stall or crate should be built at the opposite end of the barn from the feed alley, and the outside of the stall should be in line with the fence. From the fence to the corner of the bull barn there should be a gate which may be opened out against a strong post on the outside corner of the breeding stall. The animal to be bred is put in the stall, the gate then is opened flush against the post at the corner of the stall, putting the animal to be bred in the pen with the bull. When the service is completed, the gate is closed from the outside, and the bull is back in the pen. The cow then may be removed safely from the stall. The whole breeding operation has been completed without any risk to the attendant.



SUGGESTIONS ON FENCING

The Dairy Division of the U. S. Department of Agriculture makes the following suggestions in securing safety in fencing the bull pen: "It is essential that the fence of the bull yard be secure. It must be so made that the bull can never get through for the first time, because after he has penetrated it once, it will be difficult ever to make a fence that will hold him. The fence should be so constructed that he cannot get his head over, under or through it. If it is built so that the bull cannot make a start at tearing it down, it will not have to be so strong as it otherwise would.

"If the fence is built of rails or bars, they should be placed about six inches apart, so that the animal can see through, with the highest rail five or six feet high, and the lowest one twelve inches from the ground. This will permit a man, in case of need, to roll under and escape.

It is well to bore holes through the rails for the spikes, in order to avoid splitting. It may even be desirable to bore through the posts also, and fasten the rails on with bolts. Where rails are not available, five 2 by 6-inch planks may be bolted to the fence, six inches apart, with the lowest one twelve inches from the ground. This will make a satisfactory and good looking fence.

"Another durable, safe, and attractive bull fence consists of 8x8-inch concrete posts set in the ground about eight feet apart, with five horizontal bars made of 2-inch gas pipe running through the posts.

"A good fence also may be made of barbed wire, with the posts placed about ten feet apart and seven or eight strands of wire.

"A quarter of an acre or more should be fenced in for a yard. With such an arrangement, the bull usually will take considerable exercise, and having a full view, as with the gas pipe or wire fence, he becomes accustomed to seeing people, and is less likely to develop an ugly disposition.

"Where a high board fence encloses the bull yard, a mound in the center often will save the fence from wear and tear. The bull soon learns that he can see what is happening outside by standing on the mound, and refrains from molesting the fence."

A fence which the bull can see through is preferable to a tight board fence. It not only keeps the bull in better humor with the outside world, but if the pen is where the cows can come up to it, it often makes it possible as well to detect cows ready to be bred.

More detailed plans of the construction of this bull barn and pen may be had by writing to the Dairy Division, U. S. Department of Agriculture, Washington, D. C.

HANDLING THE BULL

Every bull should have a ring put in his nose when he is from eight months to a year old. As a calf, he should have been halter broken and taught to lead. When his nose has entirely healed, the ring should be used in leading him, by means of a staff.

A good, strong bull staff should be on every dairy farm. It should be used always when the bull has to be led out. Leading a bull by a limp rope is "flirting with death." Such practice is the cause of most accidents with these animals.

A third precaution also should be taken: The bull should be dehorned. If this was not attended to when he was a calf, it can be done at any season of the year when the flies are not bad.

The real value of a bull is not known until his daughters come into production. This necessitates keeping him until he is five or six years of age at least. The older bulls, too, are the harder ones to handle as a rule. But no fears need be had if all these precautions are observed.

Power Pointers

By WALTER H. GARDNER

DEEP TILLAGE BOOK READY

The first complete book on deep tillage has been compiled by the C. L. Best Tractor Company. Some time ago Mr. R. C. Force, the vice president of this company, tried to find an authoritative work on this new technic. With the exception of certain pamphlets and catalogs issued by manufacturers of deep tillage tools and certain articles in ORCHARD and FARM and other papers, it was discovered that there was in existence no adequate treatise on this subject.

WALTER H. GARDNER

It was decided a carefully compiled volume would be of interest and value to farmers everywhere, and nearly a year ago work was started on a careful compilation of all available data. Letters were sent to the manufacturers of deep tillage implements; to the various farm papers; to agricultural countries throughout the United States and in Mexico; to writers who had investigated the subject; and the accumulated material finally has been boiled down to a 40-page booklet that covers the various phases of subsoiling, chiseling and deep tillage. This company generously has subordinated its own propaganda; the booklet is sufficiently wide in interest and editorial in tone that ORCHARD and FARM may freely help in its distribution. The title of the publication is "Subbing the Soil." Anyone who is interested may secure a copy by writing to the editor of ORCHARD and FARM.

WHAT IS MARL?

In the Santa Clara Valley there is a prehistoric clam bed, where the shells of age-old sea animals (if you can call a clam an animal) were collected in the distant day when the ocean covered this area. These shells have been slaked and highly decomposed, and they now furnish a source of lime in a condition of the highest solubility. This marl is now obtainable commercially and is being used in northern and central California to mellow heavy soils, to stimulate crop yields, to free plant foods, to counteract excessive acidity.

There is a somewhat similar source of material in southern California, where it is being mined as "decomposed marine shell." Much attention has been given to the benefits of using this lime in the last few months. There are many farmers who follow the subsoil blade with a liberal application, it being pretty well proved that heavy soil thus is prevented from running together when rain or irrigation water again come to pack the soil.

DRY PLOWING HINT

Long weeks of dry weather forced many farmers in the State to resort to various expedients to get their work done. Coops Brothers of Sonoma tried to plow their pear orchard and vineyard in early March. They found the ground too hard for a plow or double disc, and even for a spring-tooth harrow; therefore, they bought a deep tillage cultivator and tried that. Then they found the cover crop was too heavy to cultivate with a standard implement, and took out every other tooth. Even with a small tractor they were able by this method to break up the ground so that they could double disc it.

IS PLOW SUPERFLUOUS?

Many farmers now declare that it isn't necessary to plow! The heavy chisel stirs the soil without turning it up, and that frequently seems to be sufficient. Crawford Bryan owns a pear orchard that he cultivates with a 9½-foot deep-tillage disc. He disked it three times last year at different angles and this year will probably go over it four times. He reports an appreciable increase in his last year's crop, for his conditions seem to favor this farming method.

Better Sire Dream Comes True

Vision of Improvement Results in Purchase of Improved Stock by California Dairymen

By H. A. WEINLAND

Sonoma County Farm Adviser

THE successful purebred dairy bull campaign, recently conducted in Sonoma and Marin Counties, which resulted in the introduction of more than 100 high-class sires, was the outcome of a dream which originated in the minds of Sam H. Green of the California Dairy Council and W. B. Hopkins, manager Petaluma Co-operative Creamery.

The plan of action was very much like that used in Humboldt County to put over a similar project. After selling the idea to the representatives of the dairy interests, Noel Negley, State dairy specialist, was secured to manage the campaign. Farm Advisers H. A. Weinland of Sonoma and M. B. Boissevain of Marin served as lieutenants within their respective territories.

Selling the idea of better bulls was accomplished by holding meetings, not only in the dairy sections of the county.

[This is the inside story, told by one who took a prominent part in the work, of the remarkably successful better-bull campaign recently waged in Marin and Sonoma counties, telling just how the project was organized and carried to final victory, and supplements R. P. Royce's article, which appeared in ORCHARD and FARM. See illustrations on page 15.—THE EDITOR.]

but also in the towns of the district. At these meetings the value of the dairy industry to the district was brought out, as well as the importance of purebred bulls to the improvement of the business. At each of these meetings a number of salesmen were secured—forty-five altogether. Each one pledged himself to visit a definite number of dairymen and encourage them to purchase purebred bulls.

HOLD SCRUB BULL FUNERAL

In order to popularize the purebred sire propaganda, a scrub bull funeral was held at the County Fair at Petaluma. In order to secure a victim there was held a public mock trial of a scrub bull, who was represented as the leader of a gang of robbers who had cheated the dairymen of the two counties out of valuable returns for their labor.

The unfortunate animal was in charge of Sheriff Boyes of Sonoma County. Superior Judge Emmett Seawell occupied the bench, while Farm Adviser Boissevain led the prosecution, presenting vital and convincing statistics showing why such bulls should be condemned and replaced with purebred.

Several witnesses testified against the scrub bull, after which Farm Adviser Weinland made an impassioned appeal for the animal's life, basing his claim on the beauties of the bull's hide, the large calves he produced and the protection he had been to dairymen from silo agents.

A jury of twelve dairymen rendered a verdict of guilty and a sentence of immediate death was pronounced and carried out. Afterwards the bull's head and stuffed hide appeared in an appropriately decorated hearse before the grandstand. Sam H. Green then recited a humorous parody on Marc Antony's oration over the dead body of Caesar.

TRAINING BULL SALESMEN

The training of salesmen was accomplished by providing them with a handbook setting forth an imaginary conversation between a salesman and a dairyman in regard to the purchase of a purebred sire, bringing in all of the arguments (Continued on Page 14)

HOME-FARM HAPPENINGS

By ONE OF US

NEGLECT CAUSES LOSS

A part of a barrel of bordeaux paste that we had left over will be no good for another season; last year we lost 100 pounds of arsenate of lead paste. "Your own fault," say the spray manufacturers. True, but on a ranch where you are trying to do as much as possible with a few men it is easy to neglect fussing with a mess of spray dope to keep it from "going bad."

We bought 100 pounds of casein, which came in a paper sack inclosed in a grain bag. We lost some by putting too much in some batches of winter spray and too little in others. What was left over was weighed out in 1½-pound packages, ready for spring and summer use.

Hundreds will have to learn all the little kinks and kicks of spraying as we have—by hard experience. By taking advantage of what we think were our mistakes others may be saved some money and a lot of grief. Spraying must be done—if profitable crops of fruit are to be produced—whether we like it or not.

Thorough spraying for the past four years has resulted in our pear crop being almost entirely free from worms.

LAND LEVELING IMPORTANT

It is a mighty serious mistake to plant trees on land before it is so leveled that an abundance of water can be applied any time the crop or orchard needs it. The added cost of labor in irrigation will more than pay for the work if done at the beginning, to say nothing of the difference in crop over a period of years. That's one "Never again" we are firmly resolved about—never to plant any permanent crop on land not perfectly leveled!

On river bottom land the "big basin" system is the one we have found best adapted to our conditions. Running water in furrows and down checks requires more attention and labor, and unless great care is used to see just how deep penetration has been secured the water may be turned off a particular area before it is sufficiently wet, and this happens very frequently. The best way to tell if the water is down is to use a sharp steel rod. This will go down easily as far as the water has penetrated, but will stop at the dry ground. However, we find that the big basin can be filled a foot or more deep, thoroughly soaking the ground, which fits our conditions best.

OVERFEEDING "BUM" LAMBS

We have been mighty lucky this season in the matter of "bummer lambs"—to date have just one. The ewe died and the lamb was a big, husky one, so that it is not much bother to raise on a bottle. One of our neighbors has lost several "bottle" lambs, and, as near as we can figure it, the cause has been overfeeding.

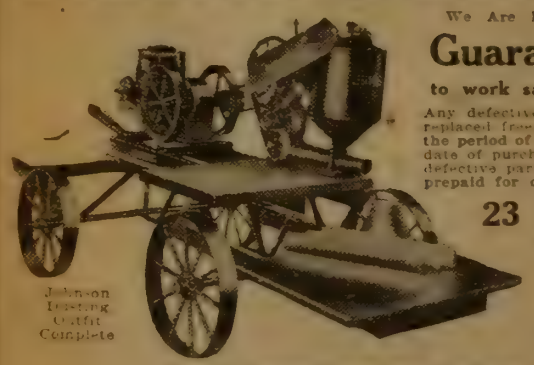
He has fed little lambs as much as a quart of milk a day. A lamb will take this much when it gets older, but our experience has been that about a pint a day, with feeding intervals about two hours apart, is about right. If a lamb gets just a little milk, and gets it often, the artificial feeding will most nearly approach nature.

At the University of Wisconsin, Professors Carlyle and Kleinheinz conducted an experiment to determine the amount of milk a ewe gave a lamb in 24 hours. The lambs in the experiment were weighed before and after each nursing, which was practically every two hours during the 24-hour period. I remember this distinctly because I was assistant chambermaid in the sheep barn at the time.

It was found that ewes gave young lambs practically a pint a day. If a ewe had twins she gave twice as much. If a ewe had twins and lost one, the milk flow was accommodated almost immediately to the one lamb. Such things make one marvel at the wonderful provisions of Nature.

At the same time an experiment was conducted with pigs—and it was found that sows gave pigs just about a pint of milk a day apiece. But folks without a lot of patience should not try to raise "bum" lambs on a bottle.

Johnson Dusters for Better Work



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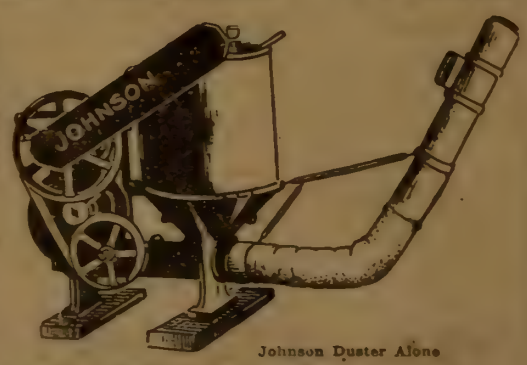
Any defective part will be replaced free of charge for the period of one year from date of purchase, providing defective part is sent to us prepaid for our inspection.

23 Years' Experience in Building Dusting Machines

Exclusive Features These are all patented.



Johnson Duster Alone

Valve to Regulate Feed, Feed Regulator, Flexible Joint connecting discharge pipe with Duster. Agitator that is positive and accurate. Other Special Patented Features.

JOHNSON REX DUSTING OUTFIT

A Powerful, Light Weight Dusting Machine
Weight of Duster Alone, 725 lbs.; Complete, 1200 lbs.
Drive Pulleys Should Make 600 Revolutions Per Minute
Capable of Treating 50 Acres of Orchard Per Day

The Johnson Rex Dusting Outfit is a practical Appliance especially adapted to commercial orchards. Every feature and improvement in **Johnson Dusters** have passed the experimental stage. Enough material can be carried on the outfit for one-half day's dusting and the ease and simplicity of the dusting method inspires thorough and timely applications, which in the end are the real secrets of success.

DESCRIPTION

Hopper holds two bushels (about 100 pounds or more of dust). Duster mounted on skids which are bolted to the truck, operated from rear end. Flexible joint in discharge allows wide radius. Operator has positive and quick control of the feeding, opening or closing the feed valve with one hand, while directing the application with the other. The belt shifting lever is also within easy reach. Ten feet of 4½-inch pipe with flexible joint and all necessary equipment is furnished with each duster.

PRICES (Delivered)

Complete—Truck, Duster and 3 h. p. Engine	$434.70
Truck and Duster without Engine	252.00
Duster only	140.00

JOHNSON JUNIOR DUSTING OUTFIT

A Wonderful Addition to Power Dusters
Weight of Duster Alone, 150 lbs.; Complete, 700 lbs.
Drive Pulley Should Make 600 to 700 R. P. M.
If You Need a Power Duster—This is the One You Want

Johnson's Junior Dusting Outfit is the result of a demand for a power duster at moderate cost that would take care of orchards and groves of average size. One man can thoroughly treat from thirty-five to forty acres per day. It will deliver dust to the tops of the highest trees. The outfit is low and easily transported through the orchard. Weight 700 lbs. complete, making it always possible to protect your trees regardless of soft condition of your ground.

DESCRIPTION

Johnson Junior Duster has patented adjustable feeding and delivery principles. Hopper holds five packs or about 50 pounds or more of dust. Discharge handled from platform and can be directed instantly to cover any portion of the tree. Weight of discharge supported by a spring, making pipe easy to handle. Ten feet of 3½-inch pipe with flexible joint and all necessary equipment. Truck is steel construction, metal wheels, wide tires. Well braced, capable of carrying considerable weight.

PRICES (Delivered)

Complete—Truck, Duster and 1½ h. p. Engine	$262.65
Truck and Duster without Engine	170.00
Duster alone	90.00

"NEUTRAL" SULPHUR

for RED SPIDER and MILDEW
only $3.50 per 100 lbs.
Large quantity prices upon application

RED SPIDER

Our neutral brand will control red spider at a lower cost to you than any sulphur marketed. Fineness is what you want. Our "Neutral" has it. Do not be misled. Come in and examine our "Neutral" brand. See for yourself. There is no lime in our "Neutral" brand. It is not necessary.

VINEYARDISTS

Our "Neutral" brand is just what you have been wanting for mildew. It is ground to such fineness that it is dusted. There is no loss when you use our neutral brand.

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We are distributors for the Walnut Growers Spray Mfg. Co.'s Nico Dust products, including their Nico Dust and Nico Sulphur Dust.

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Nico Dust (including Nico Dust Spray Chart) .....
Name .....
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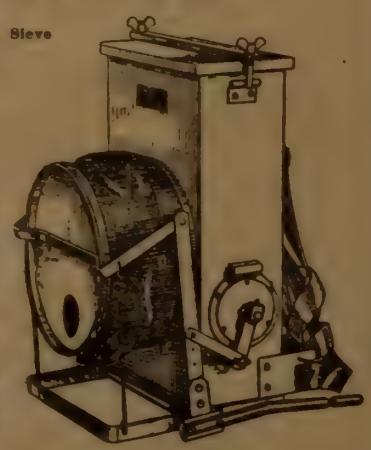
KNAPSACK DUSTER

All Dust Spray Machine—Adjustable Sieve

No Cogwheels to Slip or Wear

Only $17 Each

For SULPHUR and NICO DUST



Has no equal. It is impossible to express our opinion as to its efficiency. This reliable nmachine has no equal in the application of dry insecticides and fungicides. Applies any kind of dry insecticide, arsenate of lead, Paris green, dry Bordeaux, sulphur, sulphur-nicotine, hydrated lime and nico lime and nico dust.

Light in weight, convenient to carry. Fits on the shoulders like a knapsack, leaving the hands free to operate same with minimum effort. An even flow of dust is assured. Flow can be regulated as desired. Gives an ample dust-cloud. Has a strong air force. Easy to operate. Will not choke or clog. Well constructed. Peerless in its performance. Quality maintained throughout.

The NICO-DUST SPRAYER is a one-man machine. It is small in weight and cost, but big in action. It is easy to operate and capable of accomplishing an enormous amount of work. It can be filled and put into action in a few moments, always dependable and ready at critical times.

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Capons Prove Profitable—Sacramento Valley Farm Woman Has Remunerative Side Line

By LEWIS Y. LEONARD
Agricultural Extension Service, University of California

CAPONS are perhaps the most interesting and profitable product of the Knudson ranch, near Routiers (Sacramento County), Cal. And this despite the fact that the owners, Mr. and Mrs. Hans Knudson, believe in diversification, having cows, horses, hogs, bees and fruit as well as chickens.

Mrs. Knudson, as indicated by the accompanying illustrations, has charge of this department of the farm business, and is an expert operator.

Typical capons. They are useful for hovering chicks, and their meat is considered by many epicures equal to that of the turkey. Meat breeds are preferred for caponizing.

Instruments used in caponizing. Cost about $5 for complete set.

Capons usually are marketed at 8 to 10 months, weighing 8 pounds or more.

The operation is performed for the purpose of increasing the size of market birds and the quality of the meat. An ordinary rooster may sell for about 50 cents as compared with $3 to $5 for a capon (or unsexed male). The cost of raising such a bird is slightly less than that of raising a hen!

A capon of any of the American breeds, under ordinary conditions, can be made to weigh a pound or more for each month it is kept, up to 10 months. It is not profitable to sell a capon after it is eight months of age, at which time it should weight not less than eight pounds. After the birds are caponized, they should be kept long enough to receive the full benefit of the operation.

MOST PROFITABLE PRODUCT

Capons are the most profitable product of the poultry business. About one-half of the birds hatched each year are male birds; consequently the capons may represent half the volume of business.

With every breed, the proper time to caponize is when the comb and wattles are just turning from pink to red; this is very important. Another thing equally important is getting the cockerels ready for the operation. They should be confined in a coop with a wire mesh bottom, set up off the ground a few inches so that the droppings will fall through. Give them no food or water for 36 hours, as this time is required for Nature to empty the crop and intestines. Keep them in a dark and quiet place.

Select "meat breed" cockerels between six and eight weeks old, weighing between one and two pounds.

The bird is suspended in a three-sided frame, or the "Benoy Bow." At one side of the frame or bow is a cord which is looped around both wings; fastened at the other side is a cord which is looped around both feet and then drawn taut until the fowl is held in an outstretched position. The frame or bow is fastened to a table or box, placed where there is good light.

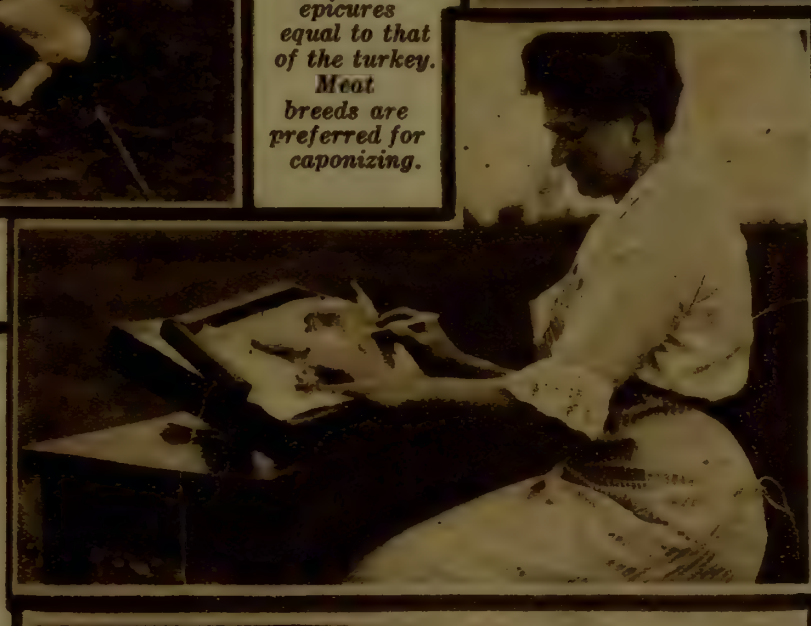
Now pluck a few feathers away from just in front of the hip joint. Sit in front of the bird, so that the breast is towards you, and by feeling, locate the last two ribs, which are next the hip joint. Watch the bird as it breathes; the location of these ribs thus is more easily seen.

When sure of the location, insert a very sharp knife by pressing down hard until the knife enters about three-fourths of an inch down in between the ribs, up near the back; then draw the knife down to the turn of the ribs, which is about one and one-half inches. Bear in mind that the knife must not be withdrawn until the incision is completed.

Now insert the "spreader," which has been dipped, like all instruments used in the course of the operation, in a lukewarm solution of disinfectant, consisting of three drops of creolin to one glass of water.

It would be cruel to use cold instruments on the bird.

With the "tearing hook," a small hole is broken in the thin skin or membrane which covers the intestines, when soon the reproductive organ, located up against the backbone, is seen. It is a small, yellowish object, the size of a navy bean, with a blue artery just back of it and sometimes attached to it. Care must be taken not to cut or tear this artery, or the bird dies.



Above, bird on stretcher. Below, incision completed.

PROCEED WITH CAUTION

Next insert the "remover" with loops held tightly together, pushing the intestines back and out of the way with this instrument when necessary. You will be able to see through the loop of the remover when you have it in the right place. Open the remover just enough to let it pass over the reproductive organ, then allow it to close slowly. When you have the organ to be removed inside the loop of the remover, turn it half way round and back once or twice; this will loosen the organ. Then twist the remover round and round to the left until the organ comes to the surface of the incision and out. If it still holds fast to the fine cord which is twisted by the turning, cut it off about one inch from the organ. It is best to twist them out without cutting, as the latter sometimes causes a slip.

Now remove the spreader, unfasten frame or bow from table, turn it on opposite side, refasten and repeat the operation. Do not sew up the incision, for when the bird is released, it will be up under his wings. Give each fowl some bread soaked in warm milk immediately after operation; he will eat heartily. Then put him in a coop provided for the purpose, as it would not do to put capons with other fowls, and they should not be allowed to crowd. The birds must not be exposed to drafts, or they will catch cold.

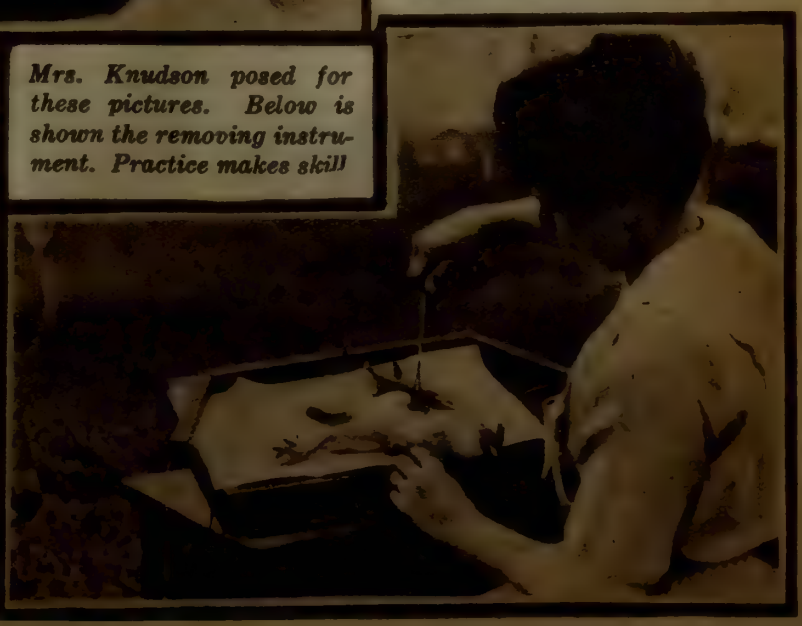
Every morning remove the scab, letting out all air which accumulates during the night. If the incision is healed under the scab puncture it; the air must be removed. This will have to be done as many days as necessary until no air appears, when the work is completed and you have a capon. The work is not as complicated or tedious as it may seem from the description.

Feed lightly, but in the usual way. Sour milk is by far the best drink for them. When eight months old or over, each capon will brood 20 baby chicks. They are the best brooders, and will fight anything from a hawk to a bull terrier. However, they must become accustomed to sitting on the ground or upon a straw-covered floor in order to hover chicks.

NURSE RAISES FINE TURKEYS

There is more money in raising turkeys than in taking care of sick folks, and the work is more interesting, in the opinion of Mrs. A. J. Gambonini, Marin County dairyman's wife, who formerly was a professional nurse. Mrs. Gambonini's poultry operations threaten to rival her husband's milk industry. She has purchased a $100 tom turkey and covered the yards to protect the young birds, and is trapnesting the hens.—KATHLEEN RODD.

Mrs. Knudson posed for these pictures. Below is shown the removing instrument. Practice makes skill



State Introduces Insect Allies to Fight on S

Amazing Battles of "Bug W
Lenses of Orchard and

By HARO

Assistant Entomologist, Bureau of

(Editor's Note—Under the capable direction of Harry S. Smith, Entomologist, State Department of Agriculture, the work in biological control of pests and diseases has advanced rapidly during the past year. The laboratory specializing on citrus pests has been moved from Alhambra to Whittier, and is in charge of H. M. Armitage, who is assisted by Harold Compere, author of this article.)

ONE of the functions of the Bureau of Pest Control of the California State Department of Agriculture is the work of introducing from abroad beneficial insects.

Most insects are attacked by other species especially fitted by nature to prey upon them, and in a great many cases the beneficial species are so highly specialized that they cannot exist without a specific kind of insect to serve as their food. Many of the serious insect pests of California were accidentally introduced many years ago without their attendant destroyers. In a new environment, and unhampered by their enemies, many of them increased to excessive numbers and are the cause of considerable loss to the farmers of California today.

The first step in the effort to bring about the biological control of an introduced insect pest is to locate its native home, or to find some locality where its natural enemies occur. The next step is to introduce these natural enemies and get them established or acclimated.

There are, however, many other factors which enter into a combination influencing plant and animal life, all of which have a direct bearing on natural or biological control. In various parts of the world there exist countless numbers of parasitic and predacious insects, many of which undoubtedly would thrive and do good work in California.

As an illustration, there are at least forty or fifty parasites which are recorded as wor in various par in California w taining only ab

The red scal ness such a n parasitic destr or so parasit foreign countri

These examp complete; futu ably will bring many more h this time are spects the field untouched. W paratively sim ing and intr species into th fail to control have as well lem of learning artificially in sults.

Biological co with many goo not be empha the work shou regard to its appointment a sult.

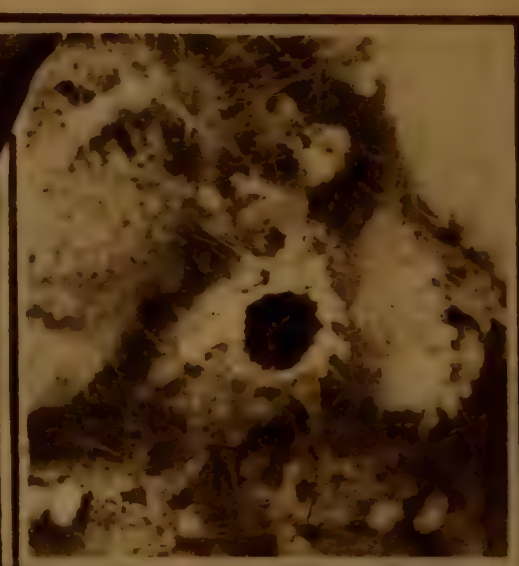
For example, many citrus gr fumigation, al fective in ma black scale inf tations. Not t attack of "sec destroy its larv

The "eusem illustration at ondary insect.

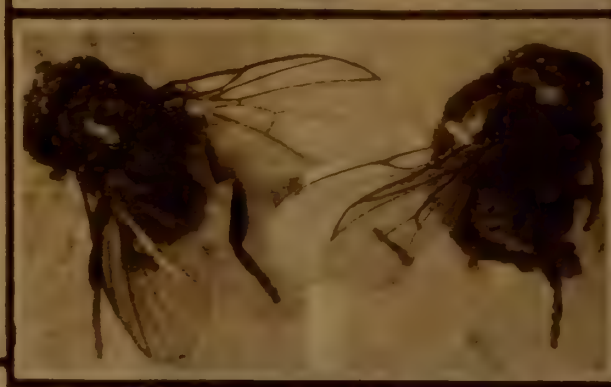
SECONDARY

The photogr approaching th egg laying. A with her ante ondary will tak and extrude he two to five m

Above, the cottony cushion scale, which at one time threatened to destroy the citrus industry. It was reduced almost to a rarity by the introduction of two natural insect enemies from Australia. One of the most spectacular and successful "bug battles" ever waged.

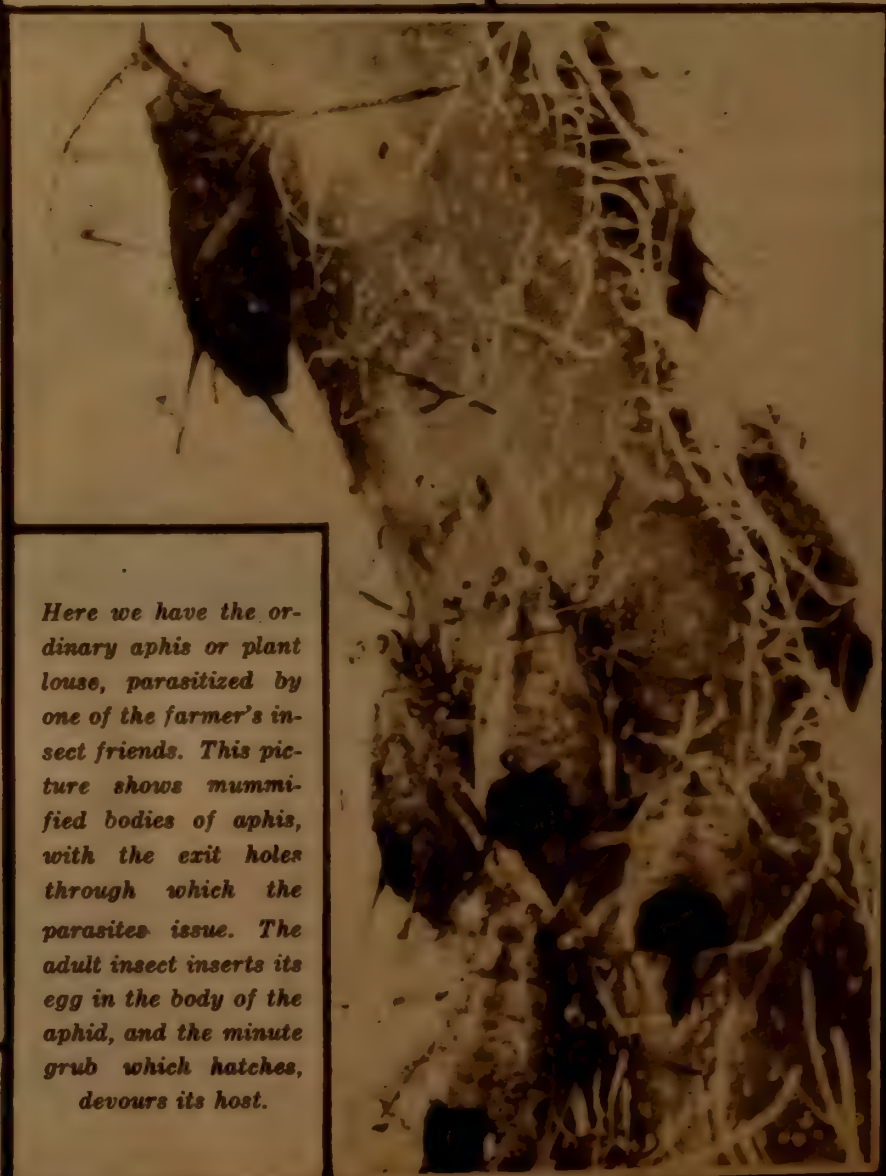


Above is shown the exit hole of the Lestophonus in the body wall of a cottony cushion scale.



Above is shown the Lestophonus, introduced in 1888, which with the Vedalia, conquered the dread cottony cushion scale.

These are "lady birds" (Scymnus binaevatus) feeding upon mealy bug eggs. These friends of the farmers also consume scales and aphis. They destroy great quantities of eggs and larvae.



Here we have the ordinary aphis or plant louse, parasitized by one of the farmer's insect friends. This picture shows mummified bodies of aphis, with the exit holes through which the parasites issue. The adult insect inserts its egg in the body of the aphid, and the minute grub which hatches, devours its host.

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# of Farmers in Winning War on Plant Pests

''' Revealed by High Power
n's Microscope Camera

OMPERE —

rol, State Department of Agriculture

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be effected through the body wall of the scale. The ovipositor then will be inserted its full length, the parasite using this long slender instrument as a probe, working it in all directions in an effort to locate the primary inhabitant of the scale.

When an Aphycus larva is located the ovipositor will be inserted into its body and an egg deposited. Normally only one egg is laid to each Aphycus larva. The egg hatches within two days and a minute maggot or larva issues. The secondary larva immediately commences to feed and very shortly consumes the entire contents of the first larva which it almost entirely replaces, leaving only the delicate skin and teeth, or mandibles, of the primary as evidence of the cannibalistic orgy.

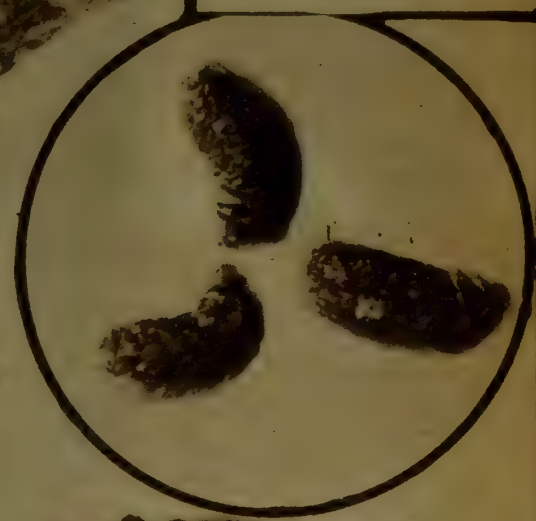
In the larval stage the growth of the secondaries is extremely rapid, sometimes becoming full fed within three days. Their more rapid development enables them to increase at a faster rate than do their hosts, the primary parasites.

MANY SECONDARIES DISCOVERED

This is a wise provision of nature to perpetuate the race of secondaries, but it works against the interests of the farmers. So far, in Southern California, six or seven species of secondaries of the black scale have appeared on the field of battle and are doing their best to check the activities of Aphycus Lounsburyi!

The origin of some of these secondaries has been determined. Before the introduction of Aphycus they were living on the native parasites of the oak-scales, or other scales of little economic importance. With the advent of Aphycus an abundant supply of food became available for any secondary fitted by nature to utilize this type of insect as a host. With unlimited quantities of food to satisfy their appetities, it did not take long for some of the rare secondaries to become very abundant.

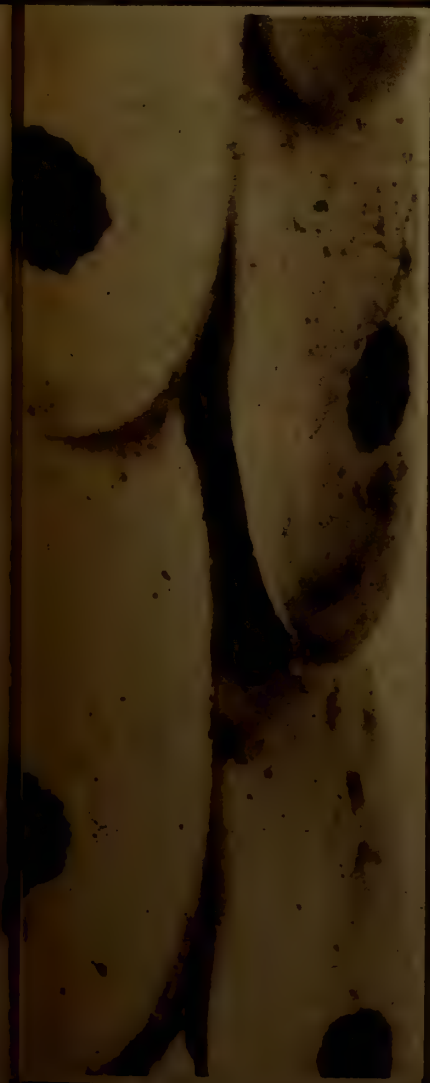
Below are shown larvae of the beneficial aphycus, removed from the scale upon which they have been feeding.



Left, a secondary parasite approaching black scale to search for pupae of the beneficial aphycus, which it destroys.

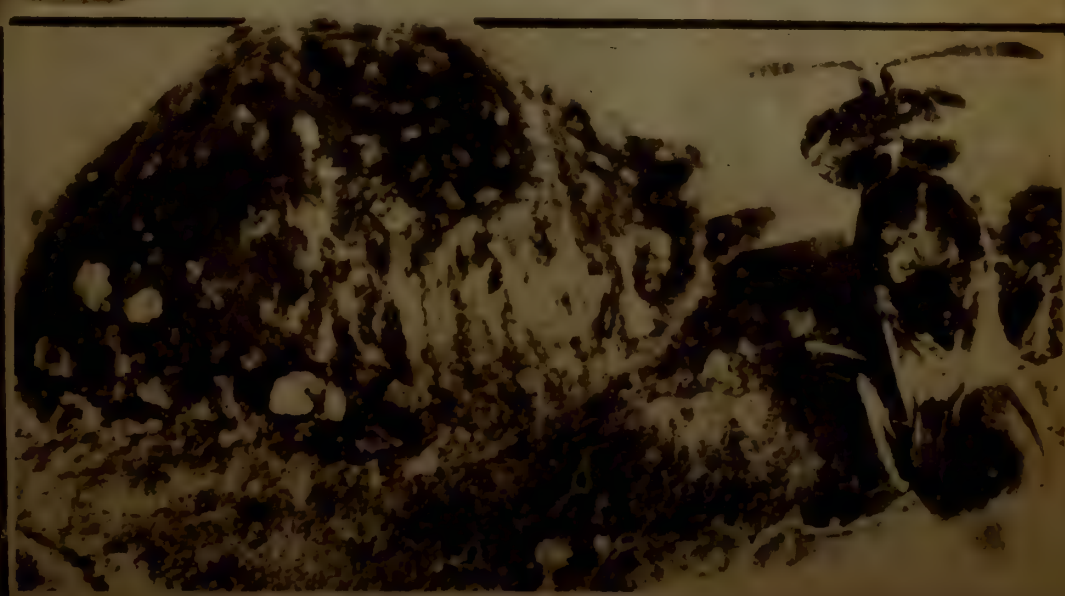
The larva above is that of the Scutellista cyanea, which destroys the eggs of the black scale. It has one serious failing, however, in that it becomes "full fed" before consuming all of the black scale eggs, leaving some undevoured which later hatch, causing reinfestation.

The black scale at the left is turned upside down with the under coat torn away to reveal the pupae of the beneficial Aphycus Lounsburyi, inhabiting the body of the pest. Unlike Scutellista, shown above, which feed under the scale, externally, the aphycus is an internal parasite, actually living inside the body of its host.



eggs, destroyed by a parasite
d prevents the katydid from be-
ious pest in California.

To the right is shown a new enemy of the black scale, Lecanobius Cockerella, recently introduced. The large object is a scale, which it is about to attack.



From Race Horses to Certified Seed Potatoes

WHEN the California State Legislature passed an anti-gambling bill, about 15 years ago, E. D. McSweeney, Los Angeles County rancher, was touched in a tender spot—the pocket-book. No, he wasn't in the "book-making" business, nor betting on the races, but he was raising fast horses, which—unfortunately—Golden State gamblers had made one of their chief instruments.

During the palmy days of horse racing, McSweeney sold animals for enormous prices, William C. Whitney paying him $8000 for one mare. He got out of the business the best he could, but when the books finally were balanced he hadn't a dollar left to show for many years of hard labor.

Working "out" for $1.50 a day, he finally managed to save a small "stake," which was used to buy a team of horses. Two old racers, one weighing only 800 pounds and the other but 950, were purchased for $80.

When McSweeney announced his intention of going into the teaming business folks laughed at him. "Why, man alive!" they expostulated, "those little rats aren't strong enough to pull the hat off a man's head. Of course they are speedy, but it takes a draft horse to pull a load over the road."

"I'll show you people something," promised the former breeder of blooded stock. "Size isn't always a measure of strength. Quality counts. I know what these horses can do. They're full of pep, vim, vigor and vitality. The same muscle which will take a horse over the road in record time is able to pull big loads."

With two more horses of similar size, making a four-horse team, three-ton loads of hay were hauled over oiled, unpaved roads for long distances.

"My horses worked 16 hours a day," related their erstwhile owner. "But in spite of the big loads they pulled, whenever they were turned towards home they threw up their heads and broke into a trot."

Most of the team work consisted of hauling hay from the Puente meadows to Pasadena and Los Angeles. Starting during the summer season at 2 o'clock in the morning, he performed the hardest work during the cool of the morning, while other teamsters were asleep. The little race horses ate as hard as they worked, consuming large quantities of strengthening grain. When they became overheated they were drenched with cold water, the evaporation of which rapidly cooled them.

E. D. McSweeney's beautiful farm house near El Monte, built with the proceeds of certified seed potatoes.

The grower of Shamrock brand of certified seed potatoes and a few sacks of his product, which commands premium prices. Left, type of low-branched central stemmed walnut trees being grown on the McSweeney farms.

BUYS GOOD POTATO LAND

After seven years of hay hauling, McSweeney bought 17 acres of good land near El Monte. That was seven years ago and the price paid was $600 an acre. That tract was part of a 140-acre farm which formerly he had rented for raising race horses. When he arrived there from the Livermore Valley, near Oakland, 25 years ago, the land was valued at only $100 per acre.

Hay, watermelons and other crops at first were grown, then potatoes. Having learned by experience on the road and race track what good breeding would do for horses, McSweeney decided the same principle profitably could be applied to vegetables. From a Los Angeles seedsman, therefore, he purchased a quantity of pedigreed seed potatoes, paying twice the price asked for ordinary stock.

It was a dry year, and a field planted with common seed yielded only 70 sacks per acre. The "blooded" potatoes, however, yielded 175 sacks per acre, a very profitable crop, which paid for the extra seed cost many times over.

GROWS FANCY SEED STOCK

Seeing the great advantage of using better seed potatoes, Mr. McSweeney began to produce them, improve them and boost them to his neighbors, just as he had advocated pure-bred horses. Most other growers were easily convinced, becoming good customers for the higher-priced spuds. Jap farmers, however, remained unresponsive to the gospel of good potatoes.

"The year I raised 70 sacks to the acre with common seed and 175 sacks with specially selected tubers," related McSweeney, "Japs on adjoining land grew only 30 sacks to the acre. Not only do they refuse to use the best seed, but they and the dealers to whom they sell have proved the greatest obstacle in securing laws for the eradication of potato diseases. Thousands of acres of good potato land has been infested with the destructive nematode by Jap growers, in spite of our inspection laws, which are not sufficiently stringent."

Seeing the possibilities of seed potato growing, McSweeney rented a 500-acre farm near Pasadena, paying a rental of $12,000 to $15,000 a year for five years. On some of the land he grew seven crops in three and one-half years. The humus content of the land was maintained by adding straw, while fertility *(Continued on Page 13)*

Let Walnut Orchards Feed Citrus Groves

By J. ELIOT COIT

STRIKING comparisons between fertilizing results in citrus and walnut groves are given in the 1922 report of the California Agricultural Experiment Station, pages 70 and 71. (Obtainable from the director, Berkeley.)

It is shown that in the case of an old and declining orange grove at Arlington applications of nitrogenous and humus-forming materials, such as dried blood and manure, produced very striking effects in increased growth, better color of foliage, and increase in production. Increases in yield continued to be evident for several years after the special fertilization had been discontinued.

On the other hand, similar experiments in old walnut groves at El Monte and Santa Ana failed to show any effect whatever, even after four years of continuous applications. Neither did annual winter cover crops of melilotus show any benefit when measured in quantity or quality of walnuts. No suggestion is made as to why fertilization pays on citrus but is of no value on walnuts.

Inasmuch as no harm came from growing winter legumes in walnuts, the writer wishes to make the suggestion that walnut orchards be utilized as a source of humus for old citrus groves where the trees are too large to admit of cover crops.

Ten years ago the late Cyril G. Hopkins, noted soil scientist, after a survey of conditions in Southern California, advised citrus growers to acquire additional land and plant alfalfa sufficient to meet their fertilizer requirements. This suggestion has not been followed to any large extent, on account of the high cost of land and water in citrus districts.

Why not use the walnut orchards for this purpose? Not for alfalfa, of course, but for melilotus or purple vetch, which may be planted December 1, after walnut harvest is over, and harvested about May 1. This legume hay can be cut and stacked near the citrus grove, and applied to the land in the fall, when deep plowing is permissible.

If even half the walnut acreage should be used in this way, a large amount of legume hay would be available, and its effect would be to lower the present high market price of manure, bean straw and similar materials.

Medicine vs. Surgery for Pear Blight

By C. H. GODSHALL

BY the employment of a system of "medicinal" treatment, 90 to 95 per cent blight control was obtained in Northern pear districts during the last few years, according to Prof. L. H. Day of the California Agricultural Experiment Station.

Professor Day recently gave a demonstration in a section that suffered severely from blight last year, in some cases half the trees in an orchard being affected.

The method is described as follows:

First, prepare this mixture, or formula: 16 tablets cyanide of mercury, 16 tablets bi-chloride of mercury, dissolved in liquid composed of one quart water and three quarts glycerine.

Next, make a hoe-like instrument of an old file, about 15 inches long and 1 inch wide. Bend the end over to the shape of a hoe and sharpen on an emery wheel.

For treatment of blight canker on main limbs, trunk or even roots of the tree: Scrape off the outer bark as clean as possible. If the cambian has not been killed, the tree or limb can be saved 95 times out of a hundred. Paint over the scraped wound with the above formula. The glycerine mixture will penetrate and destroy the germ causing the disease, it is asserted.

Between treatments wipe off or submerge in the mixture all tools used in the operation.

Blight canker can be located by scraping slightly the outer bark. Underneath will show reddish splotches and a soppy or soggy condition. Dieback frequently is taken for blight. When in doubt treat as blight. Dieback is dry and dark brown underneath the bark.

If the blight has attacked small limbs or those that can be spared without disfiguring the tree, cut off clear back to the intersection of the next limb, at least 18 inches below the last sign of the disease.

Other suggestions for control of blight follow:

Do not summer prune pear trees. Do not cut off the water sprouts or suckers that start up around the crotch or base of the tree. This is new to most of us. Heretofore we were told to cut off all sprouts and suckers as soon as they show up.

Blight travels on an average of 2 inches per day. It always starts on the young, succulent growth. If we cut off the water sprouts, others will start right up again, especially if sprouts are removed early in the season.

If you have a water sprout just starting—say, three or four inches long when blight attacks it—only a day or two is needed for the blight to reach the main part of the tree or limb. If the sprouts and suckers are left on (to be removed during the dormant period of the tree), they reach a length of 12 to 18 inches or more. Now, if blight attacks these longer sprouts, it will not travel down to the main part of the tree for at least six to nine days or longer, giving the grower time to find it and cut it out before any damage has been done.

To control pear blight, one should make a weekly inspection of each tree after the blossoming period until the trees have entered dormancy. Whenever any evidence of infection appears, immediately cut off infected parts. Wash off tools with the formula given after each cut.

Pear blight is carried from tree to tree by grain or grass thrips, blister mite, bees and ants. We now know the more succulent the growth of the tree the more rapidly blight will work.

Orchardists and Bees

(Continued from Page 3)

for interplanting and crossing different varieties. Studies by the University of California indicatte that many of our stone fruits are self-sterile, or unable to set fruit with their own pollen. The same is true of apples and pears, although the Bartlett pear as grown in many sections is peculiar, in that it is able to set and maturne fruit, regardless of whether seeds are produced. In other sections, however, the desirability of interplanting even the Bartlett with some other variety, like the Winter Nellis, has been demonstrated repeatedly.

Considering the stone fruits more in detail, the experiments show that the Imperial and Robe de Sergeant prunes are self-sterile and the Sugar and French prunes self-fertile. (Why bees are needed for these varieties will be discussed later.) More than half of the blue shipping plums are self-sterile, as are all of the Japanese varieties, with two or three exceptions. All varieties of almonds and nearly all sweet cherries are self-sterile and require cross-pollination to set fruit. On the other hand, peaches and apricots to a large extent are self-fertile, or able to set fruit with their own pollen. This fact helps to account for the regularity in bearing of these fruits when given proper care.

In addition to this self-sterility of certain varieties, the situation is further complicated by the well-demonstrated fact that among almonds, cherries and Japanese plums, certain varieties are inter-sterile as well. This means that two inter-sterile varieties planted together will not pollinate each other, but will require a third variety for pollination purposes.

In the experiments carried on in Placer County it was found that two varieties of Japanese plums, the Gaviota and the Formosa, were inter-sterile as well as self-sterile. A mosquito bar tent was erected over a pair of trees and a colony of bees was enclosed in it at the proper time. In spite of the "high-power" work done upon the trees, in which every blossom was visited dozens of times, only two or three fruits were produced.

FLOWER CONSTRUCTION FACTOR

Furthermore, nature has used a construction of flowers in many of our common deciduous tree fruits that prevents, or at least makes difficult, fertilization by pollen from within the same flower. This is accomplished in several ways. One of the most common is found where the pistil, or female portion, of the flower is above the stamen, or male portion, with the result that the pollen cannot fall upon the former. Another is where the two parts do not ripen or mature at the same time.

Wind, although important as a carrier for certain kinds of pollen, such as that of corn or the walnut, has been proved definitely to be of little or no importance in distributing the pollen of our deciduous fruit trees.

Glass plates covered with vaseline were placed under trees and hung on poles near by. Careful microscopic examination at frequent intervals showed that not enough pollen is carried in this way to make it safe to rely on the wind as a carrier. In another experiment, several thousand blossoms were emasculated, leaving the pistil exposed. The petals were removed so that there was nothing to draw the bees. Insects were not attracted to these flowers; hence, if any fruit resulted it could be attributed to wind pollination. Only one fruit set, out of more than 7000 flowers. Such a small percentage would indicate it would be unsafe to rely on wind as a pollen carrier.

Taking into consideration all these factors, the only logical conclusion is that insects are necessary for the pollenation of deciduous fruits. As honey bees are the most industrious and reliable of these insects, they easily stand out among the orchardist's most valuable allies.

New Way to Rid Poultry of Lice

Rev. G. R. Mente Tells of Amazing Discovery Which Keeps Hens and Chicks Free From Vermin

Few Drops of Liquid in Drinking Water Does It—No More Dusting, Spraying or Greasing

"I have used your remarkable Lice and Mite Remedy with fine results," writes Rev. G. R. Mente, Methodist Parsonage, New Washington, Ohio. "Mentioned this at a Farmers' Institute a few weeks ago. Consequently, farmers by the dozen have been after me ever since to find out where and how they could get it. It has put a stop to the poultry losses in this community. You are a great benefactor to poultry raisers."

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If you have a large flock, this Special Introductory Offer also applies on a double quantity of both remedies—two regular $1 bottles of Lice and Mite Remedy and two regular $1 packages of White Diarrhea Remedy at an additional saving all for $1.75. Simply specify that you be sent this regular $4 value for only $1.75. Readers risk no money, as Imperial Laboratories are fully responsible and will refund the $ on request any time within 30 days.

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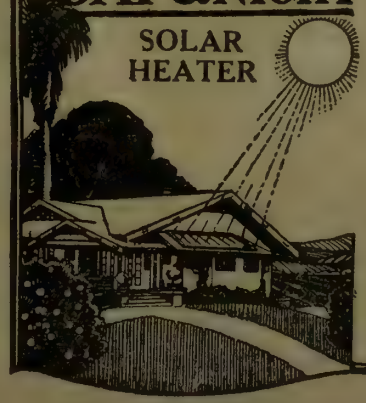

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PROFITABLE POULTRY AND CO-OPERATIVE ELECTRIC HATCHERIES. Thousands vigorous chicks, turks, ducklings every week from unforced, high winter egg-producing 180-290 egg White, Brown, Buff Leghs.; Barred, W. Rocks, Reds; Anconas; Minorcas; Brahmas; Wyandottes; Andalusians. They clear money laying abundant high-priced winter eggs. Customers after trial say: "Rather pay $15 your trapnested Brown Legs. than $12 some others"; "After 4 years with 5700 your chicks (Legs., B. Min.) want 1500 again"; "Raised 94 Reds out of 100, on road 74 hours." Price, quality, profit right. Chicks, turks ready. Write Box O, 13 N. Fair Oaks, Pasadena, Calif.

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The kind that live and thrive, lay and pay. We hatch from purebred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 12½c; Reds, 16½c; Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELEC-CHICK HATCHERIES, Dept. "L," Burbank, Calif. References: State Bank of Burbank.

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WHITE LEGHORNS—Chicks and hatching eggs from individually selected, orchard-range birds. An unusually alert, vigorous, egg-laying strain of real merit. Progressive poultrymen demand the best. Surprisingly low prices; ask for them. CURTIS WHITE LEGHORN RANCH, Route 2, Box 29, Gardena, Calif.

BABY CHICKS from good stock, well mated. REDUCED PRICES April, May and June. White Leghorns, R. I. Reds, Barred Rocks, White Leghorn pullets 5 weeks old and older. Safe arrival guaranteed. The J. H. STUBBE POULTRY RANCH AND HATCHERY, P. O. Box 67C, Palo Alto, Calif.

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FREE BOOK, "Chickens from Shell to Market, on application to COULSON COMPANY, Petaluma, Calif.

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POULTRY

MR. AND MRS. POULTRY FARMER—
The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than those we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been Hoganized. Prices for April are as follows:

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White Leghorns	$6.00	$11.50
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Barred Plymouth Rocks	9.50	18.50
Anconas	9.00	18.00
Brown Leghorns	8.00	15.00
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May we not have your order again this year? Conkey's Buttermilk Starting Food will raise healthy chicks.
ANSEL W. ROBISON,
1196-98 Market St., San Francisco, Calif.
P. S.—WE ARE THE PACIFIC COAST AGENTS FOR BUCKEYE INCUBATORS AND BROODERS. SEND FOR CATALOG.

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CARMEL MAMMOTH BRONZE TURKEYS. BEST IN CALIFORNIA; GOLDBANK-COPPER KING STRAIN; BABY TURKS AND EGGS. WONDERFUL FOUNDATION STOCK AT RIGHT PRICES. ORDER NOW. Casa de Rosas, Carmel-by-the-Sea, Calif.

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THE CHARLES WEEKS SYSTEM OF INTENSIVE POULTRY AND BERRY FARMS.
ONE ACRE AND INDEPENDENCE;
or
The Fine Art of Earning a Comfortable Living on One Acre in California. For those who desire to dwell in sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles. Write for literature.
CHARLES WEEKS, Owensmouth, Calif.

VISUALIZE this opportunity for a co-operative colony of "Johns and Marys." Address T. O. Heague, Klamath Falls, Ore., for details.

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CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

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ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate; fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

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SWEET POTATO PLANTS—Hardy, field-grown plants. Vineless Yam our specialty; higher sugar content than Nancy Hall; one-half the vine, finer appearance. We also offer Nancy Hall, Georgia Yam and Yellow Jerseys. Better plants at lower prices. Write for quotations in various quantities. STONE & STEVENSON, 410 Security Bldg., Los Angeles.

SWEET CLOVER seed. Grows to 8 feet. Sweet-scented white blossoms. 10c a package. Mrs. J. M. Mendenhall, Pleasanton, Calif.

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MARSH SEEDLESS GRAPEFRUIT TREES for sale—1000, absolutely clean, from selected stock; Ventura County. R. E. PIERCE, Oxnard, Calif.

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KENTUCKY NATURAL LEAF TOBACCO—Chewing: 5 pounds, $1.75; 10 pounds, $3. Smoking: 5 pounds, $1.25; 10 pounds, $2; 20 pounds, $3.50. Send no money. Pay when received. FARMERS' CO-OPERATIVE TOBACCO UNION, Paducah, Ky.

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WOOL SCOURED AND CARDED
Have your own wool made into Batts, Comforters and Mattresses. Old wool bedding made new. Write for prices and shipping tags. CRESCENT BATT AND BEDDING CO., Stayton, Oregon.

BEAUTY PACK made in your own home. Inexpensive, easily made. Price of formula, 52c. Address Box M, ORCHARD and FARM.

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BEES AND HONEY—Beekeepers' price list mailed to you. It's pure, just as the bees made it. 5-lb. pail, $1; 10-lb. pail, $1.75. Postpaid to 3d zone. Y. X. WILLIAMS, 38 Hester Ave., San Jose, Calif. Phone 3330-W.

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HEMSTITCHING, Picoting attachment. Fits any mach. Artistic work. Illustration, descrip., B. Krafft, Box 896-OF, San Fran., Cal.

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State Inspected and Approved California Irrigated Lands

NOW OPEN FOR SETTLEMENT to experienced farmers only. In tracts of 40 acres or less. Located in the heart of Fresno County, with a population of 125,000.

If you are a REAL farmer, with $5000 capital or credit, or have dairy stock or farm equipment for development, we can locate you on 40 acres of this land on a cash payment of only $1000. Balance 12 years at 6%. Applications for these tracts of 40 acres or less WILL BE ENTERED IN THE ORDER RECEIVED.

These rich, irrigated lands are suitable for deciduous fruits, grapes, vegetables, alfalfa, hogs and poultry. Especial opportunity now for dairymen. Good roads, modern schools, churches, railroad and auto bus transportation. Creamery being built now.

SECOND WEALTHIEST AGRICULTURAL county in the United States. Home of the famous Sun-Maid Raisins, where improved farms sell up to $2500 an acre. Center of successful CO-OPERATIVE MARKETING.

Write for free descriptive literature to W. E. JONES, First National Bank, San Joaquin, Fresno County, Calif.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land, deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

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REBUILT WINDMILLS, tanks, pumps, cylinders; surface irrigat. pipe all sizes, used, 8, 9 in., cheap. New galv. tanks, all sizes; large used redwood tanks. DEMMITT CO., 120 N. Main. Yards, 816 Yale. Los Angeles.

HUMAN HAIR GOODS

SWITCHES, Transformations, Bobs, Curls, Puffs, Braids, Wigs, Toupees, etc., sent on approval, cash or credit. Combings made up. Agents wanted. BROWN & BROWN, 523 E. Broadway, Suite 8, Long Beach, Calif.

Raises Big Turkeys

ALMOST any farmer's wife is proud of the flock of Thanksgiving turkeys which she raises all by herself. But to raise 116 bronze beauties, averaging 25 to 30 pounds at seven months, is an accomplishment for which Mrs. J. H. Arnold of Shafter, Kern County, deserves special credit.

The eggs were hatched by chicken mothers, in preference to turkey hens. The poults and the mother hen were put into a small coop and kept there for two weeks. The coop was covered at night and not uncovered in the morning until the sunshine was warm.

For the first two weeks the only feed given the poults was thick, sour milk mixed with finely-chopped onion tops. Plenty of water was kept before them all the time. When they were two weeks old crumbled cornbread was fed. Mrs. Arnold made the cornbread just as she would for her family. A dry mash was kept before them constantly from that time on. The mash was salted, as turkeys—like human beings— prefer appetizing food.

Sugar cane was cut while young and tender, run through a feed cutter and thrown to the birds, which showed a keen liking for this succulent feed. Dry alfalfa was given them as they grew older, also melons.

It used to be thought that turkeys must have plenty of range, but Mrs. Arnold's were raised in the yard. When sold for Thanksgiving trade at 35 cents a pound, live weight, the 30-pound birds brought the neat little sum of $10.50 each, netting the painstaking owner a handsome profit.—MAUDE A. JUMPER.

Turkeys Earn $100 Each

FROM five turkey hens and one tom Mrs. P. A. Jackson, Corning (Tehama County) orchardist, raised last year 145 birds to roasting size. Four of these were consumed by the family and the balance sold for $877, an average price of $6.22 each. The feed cost $265, leaving a net profit of $612, or better than $100 each.

Mrs. Jackson's hens laid 200 eggs up to April 1, when they were April-fooled into incubating 190, which resulted in a record hatch. These prize hens, with the assistance of the strutting gobbler, are on the job again this year, determined to beat their 1922 record. But why bother with $2 chickens when you might be taking care of $100 turkeys?—W. N. WOODSON.

Saving Shrubbery

STRANGE as it may seem, most owners of ornamentals do not realize the need of fertilizing annually shrubs, hedges and border plants. If they stopped to think of the amount of material which is cut from a hedge every twelve months they certainly would know that the supply of plant food must be replenished.

The condition of the root system is revealed by the appearance of the top and branches, for they indicate what is going on underground. If a shrub which has been planted a year has made no growth, the roots are probably in a hard ball which they cannot penetrate. Dig down and see what is the trouble; don't leave it to your gardener, for all workmen cannot be trusted.

Many hedges are ruined before they have been properly "fed" and watered. The watering which a lawn receives often is insufficient for the hedge or shrub border, which should be trenched and irrigated separately through the dry months, and well fed each season.

If shrubbery and hedges have been neglected when they come into your possession, fertilize with barnyard manure in trenches and water thoroughly. Cut back well, to allow the air to get in around the roots. Never allow the soil to harden and shut out the air. Mulch well with coarse fertilizer through the heat of the summer. Commercial fertilizer is good for quick results.

Thin out shrubbery; nip back the new growth often; fertilize annually; water well by irrigation; sprinkle often to keep clean and in good "breathing" condition. Strong, healthy growth will reward your efforts.—E. S. CALLAWAY.

Walnut Blight

WALNUT BLIGHT is a bacterial disease accidentally introduced into this country from Europe many years ago. It is much like pear blight, although caused by an entirely different bacterium.

It overwinters in lesions on the twigs, and, becoming active when the sap starts in spring, is easily spread to the new growth and young nuts by insects and other agencies.

Recently it has been discovered that the pollen dust from diseased catkins may be carried by the wind for long distances and cause infection of the female, or nut-bearing flowers. This results in what is known as blossom-end blight and is responsible for the serious dropping of young nuts, which occurs some seasons.

Spraying is of no use against blight, as the disease works inside the tissue, where the spray material cannot reach it. The only remedy lies in the selection of resistant varieties which bloom late or for some other reason are known to be little affected.—J. ELIOT COIT.

Concord Grape Boom

THE interest manifested in Concord grapes in Southern California can be called little less than a "boom." Extensive plantings are being made in the vicinity of Los Angeles. This Eastern fruit does not seem to thrive in the interior valleys, according to Robert W. Hodgson, Los Angeles County Farm Adviser.

The favorite variety seems to be the Pierce Isabella, Mr. Hodgson states; it has been called the "California Concord."

The Concord is well adapted to training on the trellis; in fact, should be trellised for best results, in the belief of experienced growers, and it is pruned with long canes. This grape seems to thrive under irrigation, and has been found to be very hardy under Southern California conditions. Some difficulty is experienced with mildew, but this is quite readily controlled by dusting with sulphur, Mr. Hodgson points out.

SELL MILLION CHICKS

Santa Cruz County hatcheries sell one million chicks annually, according to local statisticians.

SPERRY
"Save the Babies"
BABY CHICK FEEDS
Every Dealer Everywhere

Is Clean Cultivation Best?

By W. S. KILLINGSWORTH

A HEATED discussion easily can be started in some localities when the subject of clean cultivation in the orchard is mentioned, as there are to be found some prominent fruit growers in California who argue that such is unnecessary.

W. S. KILLINGSWORTH

However, it is gratifying to those of us who believe in clean cultivation that by far the greatest number of really successful orchardists follow this system.

It is our practice in the spring to plow the orchard before the ground becomes too dry, when the cover crop, consisting of volunteer cereals, alfileria, burr clover, other weeds and grasses, is sufficiently matured, when plowed under, to aid as a mulch and fertilizer. As soon thereafter as convenient, the land is harrowed both ways with a steel tooth harrow, well weighted down. Immediately following this we use a large single or a medium double disc, crossing the orchard as with the harrow.

Discing of the land both ways is kept up at intervals of ten days to two weeks until harvest time. The orchard then is harrowed both ways and "floated down," making it easy to pick the fruit and "truck" it through the orchard to the packing shed. When harvesting of the fruit is over, the orchard is disced and harrowed both ways to break the crust which has been formed by the constant tramping of pickers and teams.

The primary object is to loosen the soil in order that early rains can penetrate easily, benefiting the buds for the coming season.

We have yet to be convinced that non-cultivation is a means of producing better fruits and more tonnage. It may prove such for a limited time, but ill effects will come to light if it is continued indefinitely. The non-cultivating orchardist will argue there is no expense in caring for the soil; this we admit without further argument, but unless we can be shown that with this minimum expense there are practically the same returns, we still adhere to our opinion.

Now, with such hardy fruits as apples (and will go so far as to include many varieties of pears) the practice of non-cultivation is not so undesirable. As a rule, however, the fruit is smaller. On account of receiving less moisture, unless irrigated, it is firmer and will better withstand exposure to high or even low temperatures. But our knowledge of non-cultivated orchards where weeds and grass are allowed to grow at random, indicates there is danger of the trees being subjected to the ravages of field mice that girdle them near the ground.

This happens frequently during the fall and winter months when food is scarce and the mice are housed beneath the dead weeds and leaves around the bases of the trees. In years past our attention has been called to serious losses resulting from attacks by these pests. If done in time, bridge grafting may be resorted to and the trees saved, but even so, the mice will continue to attack the grafts, if weeds and grass are allowed to collect in the orchard and the rodents permitted to pass the winter in proximity to the trunks.

(Let us hear from an experienced "non-cultivator" who will present the other side of the argument.—Ed.)

Chinese Neglect Walnuts

AFTER an extensive investigation of walnut growing in China, C. A. Reed of the U. S. Department of Agriculture, reports that nowhere in the Flowery Kingdom are walnut trees grafted, sprayed or intelligently pruned. No effort is made to combat insect enemies, of which there are many. The only cultivation the trees receive is what they obtain when other crops grown between them are cultivated. But Americans might learn a lesson from the Chinese, thinks Mr. Reed, in planting walnut trees in small yards, along roads and streets, on steep hillsides and in other waste places.

McSweeney's Certified Seed Potatoes

(Continued from Page 7)

was furnished by irrigating with purified sewage water, which was rich in sulphate of ammonia.

POTATO SEED DETERIORATES

"In spite of all we could do to maintain the quality of our product by careful selection of seed, 'rougeing' out undesirable plants, controlling diseases and employing the best cultural methods, our stock gradually deteriorated," confessed the El Monte potato king. "Looking for a new location, I decided upon Temecula, 18 miles south of Lake Elsinore. Here I rented 1500 acres of the Vail ranch, which has proved to be ideally situated for potato production.

"Starch, which is the chief ingredient of potatoes, flows from vine to tuber mainly during the night, when the air is cool," McSweeney explained. "The altitude of Temecula, 1200 feet, and the conformation of the surrounding country seem to afford just the proper environment for potatoes, which do not 'run out' in that locality."

Twenty mules and a half-dozen tractors are employed in McSweeney's potato operations. When asked why he didn't use one kind of power exclusively, he replied: "Mules are the cheapest, when you have work for them the year around, but when you have 500 acres of potatoes to dig and 500 more to plant, all within two months and those the hottest of the year, how are you going to get the work done without tractors? It might be cheaper to hire them, if we could, but that is out of the question. The only way to make sure of getting the work done on time is to own and operate a sufficient number of tractors.

PESTS PRESENT PROBLEM

"We can control potato scab and rhizoctonia by treating the seed, and fusarium wilt by planting only clean seed, but we have found no effective means for keeping in check the nematode, mosaic and curlay dwarf disease, which are increasing," confessed McSweeney.

The fall crop of potatoes is the better for seed, he believes. The tubers are kept in cold storage, which costs 17½ cents per 100 pounds for the first month, and 7 cents for each succeeding month. White Rose is the variety grown and the fields are inspected by State officials, who certify to the high quality of the product. Mr. McSweeney is president of the Certified Seed Potato Growers' Association of California.

A few years ago an 84-acre tract near the home place was purchased, making a total of 101 acres, worth between $200,000 and $250,000. Building lots nearby are being sold for $1200 each and McSweeney expects his potato ground soon will be requisitioned for residential purposes. Therefore, he has planted part of it to walnut trees, with peach fillers. He believes high heading is a mistake, because a tree will not grow as well with the lower limbs removed. Limbs are left within two or three feet of the ground and the young tree tied to a 2x4 redwood scantling 12 feet long, which is set in the ground near by.

ADVOCATES CLEAN RACING

"No, I don't regret the passage of the anti-gambling bill, even if it did put me out of the race horse business," stated the successful spud grower. "Gambling on horse races, such as was practiced in this State in the past and is now carried on at Tia Juana, is a vice which should be prohibited by law. But the kind of horse racing they have in England and Ireland is the finest kind of sport and should be encouraged.

"Few people appreciate the food value of the potato," added the veteran producer, returning to his favorite topic. "In Ireland, where I lived until 20 years of age, I saw big, robust men in good flesh working steadily at hard labor on a diet of boiled potatoes and skim milk—nothing more."

Most Water at *Least* Cost

A big new improvement in pump construction—the Bean Electric Turbine. Pump, motor and starter built into a complete unit. Also furnished with Cover-it (as shown) if desired—a rainproof, fireproof sheet metal covering. Special motor and head construction reduces the number of bearings, insures perfect alignment, and adds increased efficiency. Motor and starter are permanently grounded and position of starter is most convenient for the operator. No column bearings to lubricate; hence, no lubrication troubles. Domestic wells are kept free from oil. Built to fit your domestic wells from 6" up; also larger sizes up to 15". Send the coupon.

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101 W. Julian St., San Jose, California.
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The "BEAN" Electric Turbine Pump

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Please send me full description of the Bean Electric Turbine Pump.
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Before you dig a new well try your old one with a Bean Electric Turbine. Small wells do big work with this highly efficient pump.

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"The Best Prune Possible"

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California White Leghorn Breeding Farms

English Bred White Leghorn Baby Chix—45,000

For the month of May, all April Chix sold.
Remember our Imported English Bred Leghorns mature in five months and will make excellent winter layers.
COME out to our ranch and see all our breeding stock on unlimited alfalfa range.
COME and see our tens of thousands checks, full of vitality as the result of breeding stock on free range.
ASK the Experiment Station at Davis, Calif., about the hatchibility, the livibility and the development of chix bred from breeding stock on free range. Ask any of the poultry experts of the big milling companies about our chix. Ask us for testimonials from hundreds of pleased customers about our chix.
BUY our baby chix and be convinced.
100 Chix....$25.00 500 Chix....$120 1000 Chix....$230
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death to weeds

Kills the roots

at Johnson Grass, Morning Glory, Bermuda Grass and other noxious weeds

Destroys the pest weeds that attack the roots of orchard trees.

Succeeds under adverse circumstances where ordinary methods fail.

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Write for information.

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[illegible] OF A HOLLOW BRICK [illegible]

[illegible] for "thermal [illegible]" [illegible] and [illegible] being [illegible] achievement [illegible] with [illegible] the health of [illegible] in certain [illegible] of the year.

[illegible] is a [illegible] of [illegible] [illegible] and [illegible] to build a house [illegible] wall as a [illegible] wall. A common brick is two inches wide, four inches [illegible] and eight inches long. They are laid [illegible] as shown in the [illegible] and "bond" [illegible] by having [illegible] and two [illegible] lengthwise.

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BUYING BETTER BULLS

A few of Le Barron's prize-winning Ayrshires at Valley Ford. An object lesson in the value of purebred sires.

Such sires as the one at the left were brought into Marin and Sonoma counties last year as a result of the better-bull campaign. The breeds preferred were: Holstein, Jersey, Guernsey, Ayrshire.

Signing up the hundredth bull. W. D. Hopkins (left), manager of the Petaluma Co-operative Creamery and a leader in the campaign, and Arnold Berry

A young bull being sold at auction. A total of 115 purebred bulls were brought into the district last year. The good results of better breeding will show in higher yields of butterfat.

Partial view of the Costati dairy farm, near Petaluma. This is one of the largest dairy farms in the Marin-Sonoma district.

MILK MADE THE DIFFERENCE--

THESE pigs are sisters; they are of the same age, and at weaning time were of the same size. After weaning, both were fed all the corn, oats and barley they would eat. The larger pig received milk every day, while this all-important food was withheld from the other.

This poor little runt, then, offers graphic evidence of the necessity for including vitamines in the diet, both of animals and "folks." For milk is rich in these essential substances.

Probably no recent scientific discovery has done more for agriculture than this disclosure concerning the vitamines contained in milk. It has stimulated the dairy industry and awakened the general public as never before to the value of the cow.

Thousands of undernourished, backward children have been put on the road to good health and good citizenship by the drink-more-milk campaigns.

The people of California, especially, are waking up to the importance of milk as an article of food, largely because of the activities of the California Dairy Council.

Persimmons Moved Successfully

THESE photographs were taken in the 55-acre persimmon orchard of J. A. Schoonover, near El Monte. The large trees are part of 144 which were moved 30 miles at the age of five years (from seed). No serious setback was observed and not a single tree was lost. Each tree had three to nine large roots which were severed, but no tap root. The roots were not balled, but the moving was done late in the day and the trees covered to protect them from the sun.

Mr. Schoonover is said to have the largest planting of persimmons in the State, and his trees have proved very profitable. They are of the Hachiya variety. One three-year-old tree produced 56 pounds of fruit. Most of his fruit has been sold at from 10 to 14 cents a pound.

A ten-year-old tree may produce as much as 500 pounds, he says, and the crop is likely to be heavy each year. It is possible to plant persimmons 15 feet apart each way, or 193 to the acre, he points out.

Mr. Schoonover believes persimmon growers should consider the drying qualities of the fruit. The Hachiya dries well, and may be used shredded or "krumbled" as breakfast food, in confections, and in other ways, creating a ready market for culls.

These trees have required no fumigation or spraying. The smaller trees are intercropped with Himalaya blackberries.

Whether driving stakes or a tractor, Miss Frances Cabibe enjoys farm life and farm work, as her pleasing smile clearly indicates. She dresses for the job and isn't afraid of sunburn or freckles. Who says there are no serious minds among the flippant flappers?

Prefers Farm Chores to Tango Teas

CHIDING the editors for not publishing more pictures of farm women and girls, Miss Frances Cabibe of Porterville (Tulare County) sends the accompanying illustrations to prove that she's a real farmerette.

And the best part of it is, Miss Frances says she is "crazy about" farm life and farm work, and wouldn't trade places with the most fox-trotting debutante of the so-called seductive city. Listen to this:

"I am not a bit afraid to drive a big tractor, and I like to help my father with all the farm work. I tied up ten acres of grapevines myself, and took turns with my father driving stakes in the vineyard.

"At night I am often almost exhausted, but there is much satisfaction in having done a good day's work, and the next morning I am up bright and early, ready for another day.

"We produce almost all our food on the farm, having milk, cheese, butter, vegetables and fruit. I am now making the place spick and span by pulling weeds."

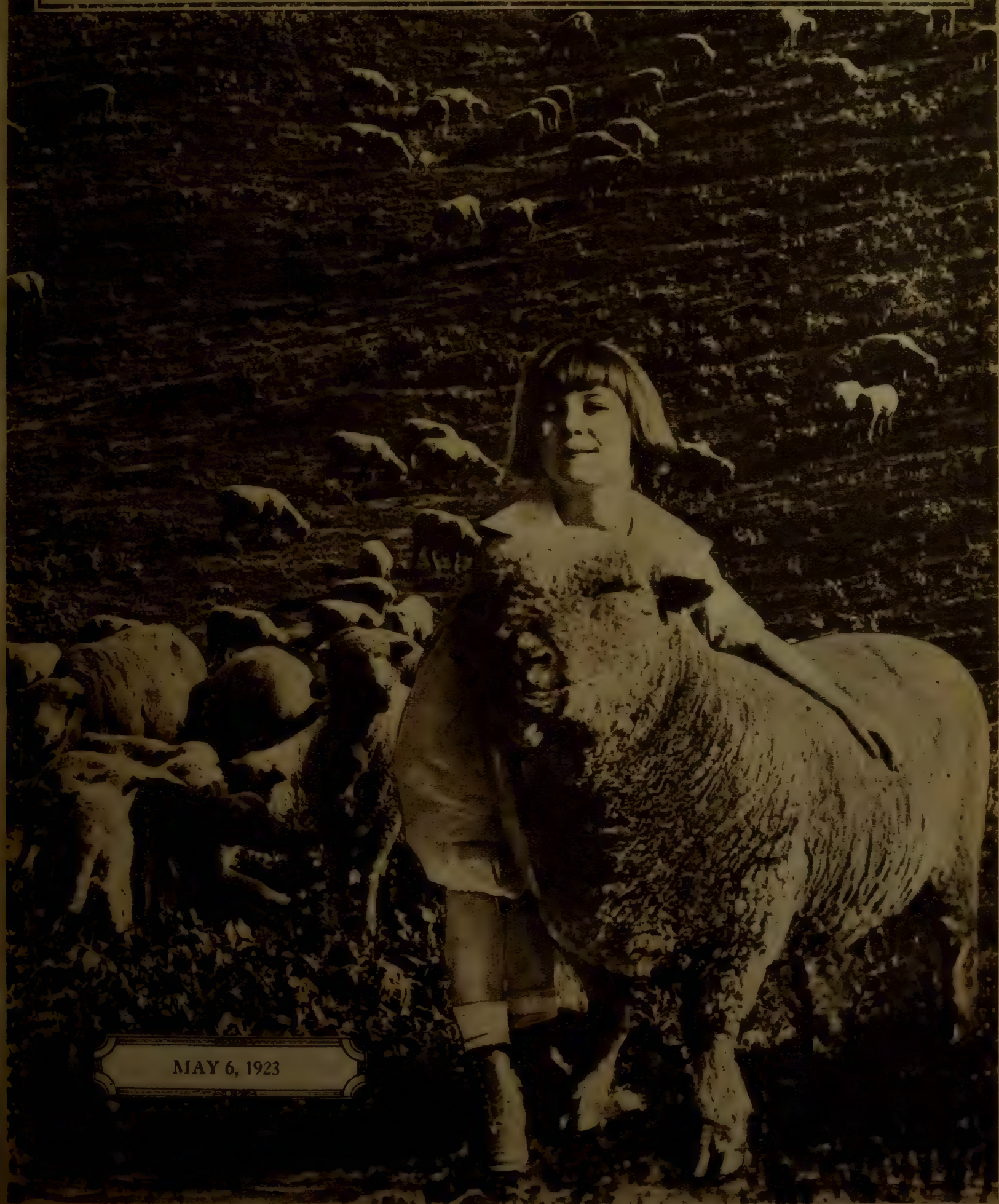
And how old do you think she is? Shhh! Just sixteen!

Such refreshing examples as this—and there are thousands of them in the Pacific West—show the wholesome influence of farm life upon the rising generation.

ORCHARD and FARM is always glad to hear from boys and girls—especially the latter—who are taking an active part in agriculture and setting a good example before their elders of thrift and industry.

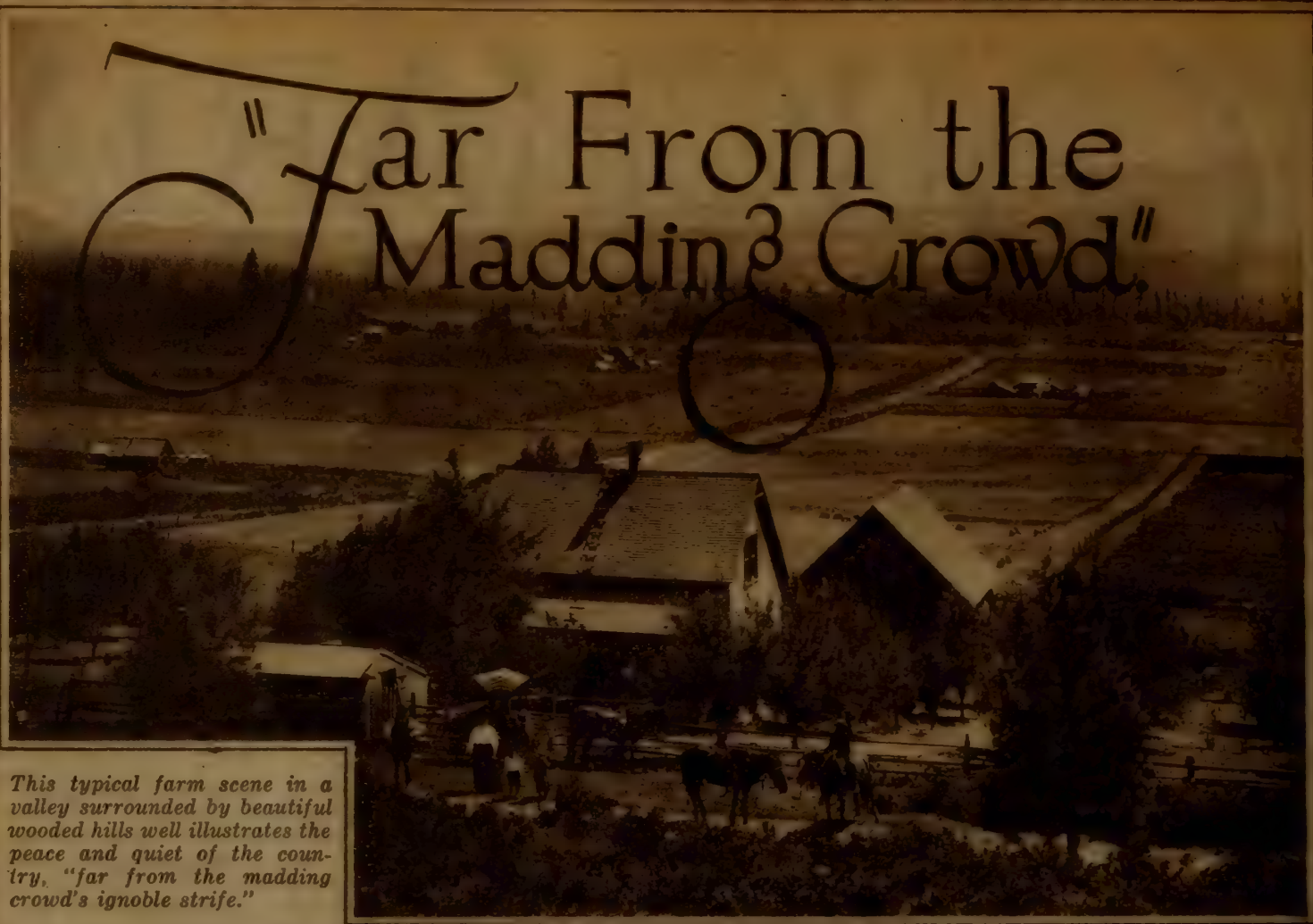
ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

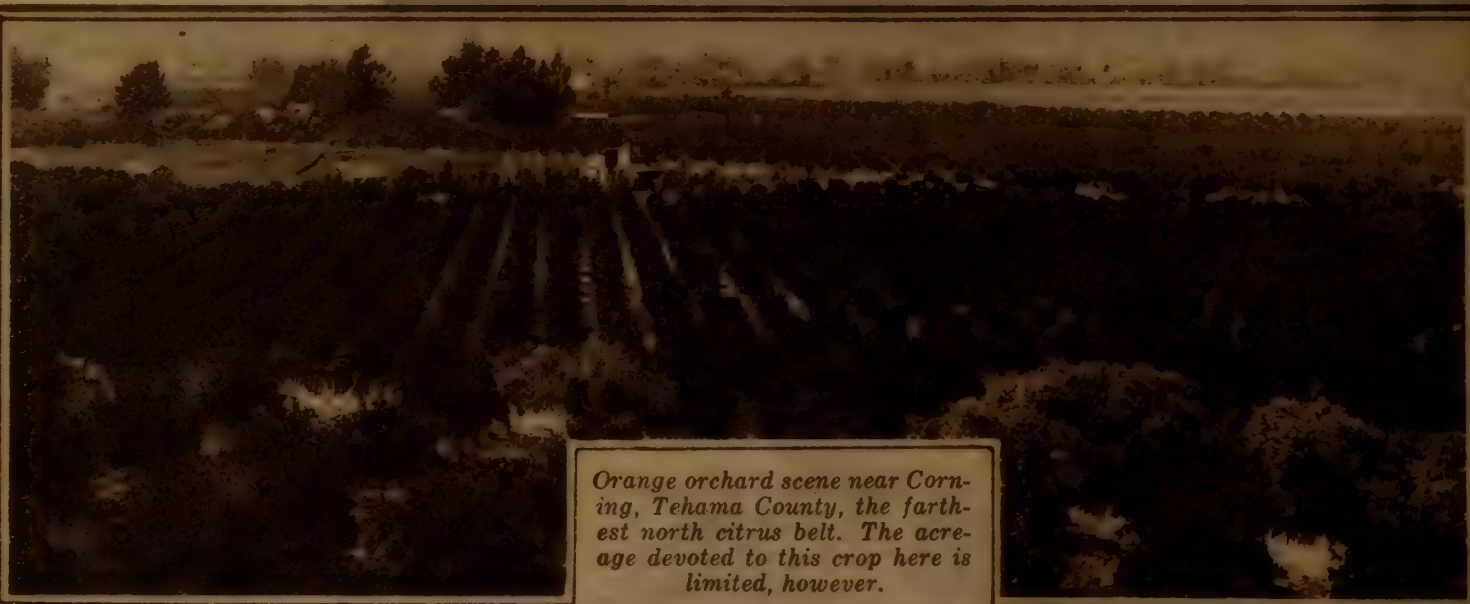


MAY 6, 1923

"Far From the Madding Crowd"



This typical farm scene in a valley surrounded by beautiful wooded hills well illustrates the peace and quiet of the country, "far from the madding crowd's ignoble strife."



Orange orchard scene near Corning, Tehama County, the farthest north citrus belt. The acreage devoted to this crop here is limited, however.

California dairy scene. Water, alfalfa and cows combine to produce peace and prosperity, forming a combination hard to beat.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
MAY 6, 1923

Why We Should Foster Our Fairs and Shows

Annual Exhibitions One of the Greatest Factors in Building Up Agricultural Resources—Message to Livestock Breeders

By B. H. HEIDE

Secretary-Manager, International Livestock Exposition

Written Especially for ORCHARD and FARM

THE Pacific Coast did not exhabit livestock at the International Livestock Exposition in Chicago until recently. When your breeders did enter the show, however, their recognition was immediate.

At the 1916 show the University of California astonished the world by winning not only the grand championship of the Exposition, but also the reserve championship, with steers which had been raised on feeds other than corn.

Not content with this unusual honor, the Davis institution came back again the next few sessions and repeated the triumph, winning two grand championships and two reserves inside of four years. No other honor of this show, which has been called the "Court of Last Resort," is so coveted, and for one herd to make such a remarkable record is nothing short of marvelous. It merely emphasizes in a very spectacular fashion what this wonderful State can do along the lines of improved livestock production.

Sheep and hogs raised in California also have made enviable records at Chicago in the show ring. At the last International "Navy Boy" was crowned the grand champion boar of the Poland China breed, while "Count Tickford" and "Innisfail Betty" were the royal purple winners in the milking Shorthorn classes.

JUDGING TEAMS EXCEL

Your high school boys also have made their mark in the Chicago competition, winning in the Junior Livestock Judging Contest. These triumphs at the great central exposition have helped wonderfully to impress upon the rest of the country the possibilities of livestock development on the Pacific Coast. But even more missionary work could well be done. It is hoped that at the future shows California will be even better represented, exhibiting specimens of livestock and crops in all the classes in which the products of your State properly would fall.

The demands of the modern livestock markets all over the country are for animals of younger and quicker maturity. The large, heavy weight animals of a decade ago, carrying a superfluity of tallow and fat, are not wanted under present day conditions. A high quality individual of handyweight size is required. In order to produce this sort of an animal it is necessary to have foundation stock which shows high class and improved breeding.

The competitions at the livestock shows are a great educational force in showing the producer what the market demands and how to produce animals for this demand. For this reason the interest in the livestock competitions is increasing more and more each year.

A late development has been the formation of boys' and girls' clubs, in which the future farmers and home makers are taught the lessons which the large shows have brought out. At one of our leading State fairs last fall, there were on exhibition 350 baby beeves which had been prepared and shown by boys and girls not yet out of high school. What an inspiration this was and what a reward for the years of labor bestowed by the men who have fostered these competitions during the period when they were sorely in need of support.

The history of livestock shows in this country has been that the men behind the centralized markets were the greatest force in promoting all the institutions which had as their aim the improvement and betterment of agriculture as a whole.

ANNUAL EXPOSITIONS NEEDED

I wish to impress upon the agrarian interests of this State the great possibilities offered them by the annual expositions of the products of the soil. In no other way can the agriculture of a section be promoted so effectively and quickly as by gathering together its products of a section in the presence of the producers for comparison and discussion.

It is also the duty of every one who produces outstanding examples of either live stock or crops to enter them in the various competitions in order to show the rest of the world what his section can produce and to furnish inspiration to others in a similar position to equal or surpass his achievement.

It is also the duty of every one who depends upon the products of the soil for his livelihood to attend these exhibitions whenever possible and to study the types which the judges put up as the ideals. It is the custom at these expositions for large groups of producers to gather together for mutual consultation, and many of the great movements for the betterment of agriculture have arisen from such meetings.

Undoubtedly the livestock industry of California will make rapid strides in the near future as the result of the opening of the Los Angeles Stock Yards. Such an open, competitive market is bound to have a remarkable influence upon the agriculture of this section. You have not only the large consuming population of your State as an outlet for your products, but also the whole world as your market.

OVERPRODUCTION NOT FEARED

With cheap water transportation to European countries and the ability to produce in your State the type of meat and meat products which are in demand by those peoples, you need not fear overproduction will be a factor in your affairs at any time within the life of the present generation. History has shown that wherever a centralized market has been opened, the surrounding territory has undergone a great development in its diversified agriculture and undoubtedly this will be the case in California.

The men behind this market are individuals with a broad vision and you may expect that their attitude towards California agriculture will be such as to help its development in every way that lies within their power. Your fruit and vegetable crops have been advertised to the world and are known wherever a discriminating table is set and it is only natural to expect with the founding of the Los Angeles market that the products of your ranges and feed lots will enjoy corresponding popularity.

It is impossible in a few words to do justice to even a single one of California's natural advantages, but I hope that I have made clear the wonderful possibilities of your agriculture and specially of the livestock industry of your State. The soil has always been the basis of permanent prosperity and such unquestionably will be the history of your favored California.

California's Potential Development in Agriculture Almost Unlimited

"YOUR unrivaled climate, advantageous commercial location, and other features of supremacy are well known in all parts of the world," said Mr. Heide to the editors of ORCHARD and FARM during his recent visit to this State. "But there is one thing that has not been impressed upon the rest of the country as it should be: that is your almost unlimited possibilities for the growth of agriculture. It staggers the imagination to picture what the future of crop and livestock production will be in your section."

B. H. HEIDE

To the Californian, busily occupied with home interests, this unbiased opinion from a recognized National leader in livestock affairs is convincing and inspiring. It is to be hoped that more and more California boosters will "tell the world" through representation at the great Chicago "International," of which Mr. Heide is the guiding spirit. —*The Editor.*

Santa Cruz Bulb Growers Developing Important Industry

By PAUL R. HICHBORN

Experienced Bulb Grower of Seabright, Cal.

ALTHOUGH bulbs are being produced on a small scale in several sections of California, Santa Cruz County lays claim to being the bulb center of the State.

Here, about seventy miles south of San Francisco, bulbs which under quarantine regulations cannot be imported from Holland, such as freesias, yellow and white callas and gladioli—both spring and summer flowering types—are produced extensively. In number of varieties and in acreage the industry in this section is being expanded rapidly.

Santa Cruz possesses for bulb production a fortunate combination of climatic and soil conditions. The summers are cool and foggy and the winters generally are warm; as a whole the climate is equable—a fortunate condition for growing bulbs successfully. The soil is rather heavy, of a loamy character and is very well suited to this crop.

IDEAL CONDITIONS PREVAIL

Combined with this perfection of soil and climatic conditions is an absence of injurious fungus and insect enemies and the greatest care is being taken to keep such pests out of the county. But nothing can be perfect; bulbs have one enemy in Santa Cruz—the gopher. These rodents do a great deal of damage, eating off the bulbs below the ground and carrying them away to their nests for future use. Gophers are combated in two ways—by poisoning and by the use of traps.

Moles do some damage, but are not as troublesome as gophers. In a single night one gopher can do over a hundred dollars' worth of damage in a planting of freesias. They are also troublesome in gladioli fields, but will not touch bulbs of the narcissus group.

Perhaps the most important bulb grown in Santa Cruz County is the freesia. Freesias are of two types, the pure white, known as the "Purity," and the colored, or "Rainbow." Of these the Purity is in greater abundance. These are culturally alike, being planted in the fall, usually from August 15 to September 15, and are harvested in the spring, digging commencing in June. This enables the bulb to ripen in the ground and is an important item in the successful growing of this crop.

Offsets or "bulblets" are used for planting. They are placed in trenches three inches deep and eighteen inches apart, ground bone being used extensively as a fertilizer when planting. This is not universally used, however, some growers preferring only a dressing of manure which is plowed under before planting.

The bulbs germinate in from three to six weeks and continue their growth until they blossom in the spring. Growth ceases after blossoming and the bulbs are allowed to ripen before being dug. After digging they are allowed to cure, being spread for this purpose in a shed or some dry, shady place, and then are graded into sizes from ½ inch to ⅞-inch, the size differences being ⅛ of an inch.

MARKET IN EAST

The bulbs are marketed mainly in the Eastern States, being used for "forcing." The magnitude of our freesia bulb industry may be understood when it is known that of the freesias grown and marketed in the United States 90 per cent are produced in Santa Cruz County.

The white calla, like the freesia, is a winter crop, being planted in the fall. Planting is made of the small offsets, which under normal conditions require three years to reach maturity. The bulbs are left in the ground over the three-year period. Harvesting is done in the early summer, usually later than with freesias.

White callas are grown for bulbs, little revenue being derived from the sale of the flowers. The bulbs are sold mainly to Eastern florists for forcing purposes. The white callas bloom here at Santa Cruz in the late winter and early spring and it is an inspiring sight to see a field of these lilies in bloom.

The yellow calla, unlike the white variety, is a summer crop. The bulbs are planted in the spring and taken up in the late fall. The yellow calla develops in two or three years, depending upon the size of the planting stock used. Where seed is used the bulb takes three years to develop; where small offsets are used commercial bulbs are obtained in two years.

Although two or more years are required for the bulbs to reach maturity they are lifted every fall and replanted in the spring. The bulb of the yellow calla is fleshy and tender and liable to injury by bruising. Where such injury occurs, sow bugs or earth worms are apt to enter and do considerable damage. These bulbs also are sold largely in the East.

The gladiolus, or sword lily, is one of the most popular summer flowers for the home *(Continued on Page 14)*

ORCHARD and FARM

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JAS C. KNOLLIN, Editor. VERNON JOHNSTON, Business Manager.
O. H. BARNHILL, Assistant Editor.

ASSOCIATE EDITORS, REGULAR CONTRIBUTORS
J. D. Bixby Sr., W. S. Guilford
Luther Burbank, Robert E. Jones
William Reynolds Butler, W. S. Killingsworth
W. J. Dryden, Herbert A. Shearer
Dr. J. Eliot Coit, Prof. F. H. Stoneburn
Walter H. Gardner, Helen Temple
George P. Weldon

The work of this unexcelled staff of special writers is augmented by regular contributions from authorities of the California Agricultural Experiment Station and Extension service, as well as information furnished by representative farm leaders and practical producers of the entire Pacific West.

"EVERY READER A REPORTER"

Concise, helpful articles and good, clear pictures are welcomed. Those accepted will be paid for at space rates and unavailable material returned promptly if postage is inclosed.

YOUR QUESTIONS ANSWERED

ORCHARD and FARM is an institution of service. Through its large staff of specialists and its close contact with authentic sources of information, this magazine is able and willing to give aid or information to any subscriber. Address all agricultural questions to ORCHARD and FARM Editor, Examiner Building, Los Angeles. Give name and address and inclose stamp for reply.

Pithy Paragraphs

SELLING BREEDING STOCK A SPECIALTY. It will pay every farmer to use pure-bred sires, but not all can make a success of selling pedigreed breeding stock. The fine stock business is highly specialized, and is one to which not all persons are adapted. Production is only half the game; the ability to dispose of pure-bred stock at profitable prices is comparatively rare. This fact should be considered carefully by those who contemplate engaging in the breeding business.

MAKING LESS BUTTER SUBSTITUTE The production of oleomargarine in California decreased 3,000,000 pounds during the last fiscal year, according to the California Dairy Council. This decrease in the making of butter substitutes is gratifying, because it increases the market for dairy butter, which is in every way more desirable than oleomargarine.

Quality considered, dairy butter is cheaper than substitutes. The former is more wholesome than the latter and helps support a home industry, while oleo materials are imported from other States and foreign countries.

One who buys meals in cheap restaurants and hotels does not know, in many cases, whether he is getting real or imitation butter. The only practicable method of eliminating this element of fraud would be to prohibit the coloring of oleomargarine.

FORCING FARMERS TO SELL CROPS. Some producers balk like a bad bay mule when asked to sign a marketing organization selling agreement. The farmer is naturally an independent individual, and the idea of being forced to sell his crop, whether he wants to or not, naturally goes against the grain. He demands the privilege of marketing his produce with a private dealer whenever it seems to his advantage to do so.

Granting this permission is the rock on which many a co-operative selling society has been wrecked. Private dealers are sometimes forced to offer better terms and prices and have been known to do so for the express purpose of disrupting a growers' marketing organization. When members generally avail themselves of such temporary advantages, the association is bound to go to pieces, for without a guaranteed volume of goods to handle it cannot sell to advantage.

POULTRY INDUSTRY NEEDS MORE CO-OPERATION—That the future of the poultry industry in California depends largely upon closer co-operation between all producers, great and small, and education of the rank and file of the poultrymen, is the contention of Cornele G. Ross, President of the Poultry Producers of Southern California.

"The pressing problem at the present time," says the spokesman of the organized egg-producers, "is to find some way in which we can interest a larger percentage of our growers in doing their fair share of the work. Too many are willing to profit unfairly by the co-operative efforts of our members."

It was Roosevelt who emphasized the duty of every man to give part of his time and effort to the industry of which he is a part. No egg farmer or breeder can afford to stay "on the outside looking in." Even if he makes no affiliation with a marketing organization, he should join in the activities of the farm bureau—but with production increasing constantly, every man who keeps hens will need all of the service the various organizations can give.

"What's New?"—Keeping Abreast of Agricultural Progress

Pushing Staples Into Limbs

A MACHINE with padded head to protect the bark from injury pushes staples into limbs for attaching wire braces. This invention obviates the difficulty of driving staples into fruit trees, which has been considered the greatest drawback to wire bracing.

Planting Puckerless Persimmons

SOUTHERN CALIFORNIA nurserymen report the sale of 100,000 persimmon trees during the past season, indicating a widespread interest in the growing of this luscious fruit. The Oriental varieties, which are being planted, are far superior to native seedlings and are practically puckerless.

Order Oregon Heifers

THE Farm Bureau of San Luis Obispo County has received orders for two carloads of grade heifer calves from Oregon cows having minimum records of 300 pounds of butterfat per year. Material for the construction of 12 silos was obtained for the use of local dairymen.

Unite Rhubarb Raisers

THE rhubarb growers of Los Angeles and Alameda Counties are forming a co-operative association, assisted by the State Division of Markets. Fred N. Bigelow, chief of this division, is of the opinion that additional agricultural organization might profitably be formed in California.

Reach Guernsey Goal Early

THE Humboldt Farm Bureau in March reached its 1923 Guernsey bull goal, which was to place 50 purebred sires in the herds of this breed. Eighteen purebred beef bulls were also introduced. The establishment of a co-operative butchering plant is contemplated.

Celebrate Pork Day

A TOTAL of 660 hogs were entered for prizes at the Kings County Fourth Annual Pork Day, March 29. A large number of animals were sold at auction under the direction of the Farm Bureau. Eleven pig club boys entered 44 animals in an annual contest. Twenty-two members of pig feeding clubs exhibited animals.

Raising Beavers in Butte County

A BEAVER farm of five acres, stocked with 15 beavers and three raccoons, recently has been established in Butte County by Will E. Standord. The animals were captured in Arizona and are to be propagated for their fur. The beaver tract has been inclosed with a fence extending several feet below ground and having an overhanging top.—M. T. RICE.

Cracking Apricot Pits

AN APRICOT pit cracker 40 by 160 feet, having a capacity of 1000 tons, has recently been completed at Santa Paula by the California Prune and Apricot Growers' Association. It is expected to be large enough to meet the demands of the organization in Southern California for many years to come.

Radio Interests Four Hundred

AS A result of a prune talk which was broadcasted from New York during Prune Week and listened to by a half-million people, more than 400 inquiries have been received by the California Prune and Apricot Growers' Association. Letters came from Florida to New Hampshire, from Canada to Oklahoma, and from Colorado to New York.

Los Angeles Drinks Milk

LOS ANGELES COUNTY leads by a big margin all other Pacific West districts in the consumption of market milk, using 20,000,000 gallons per year. San Francisco County comes next, with 12,000,000 gallons. Californians eat $10,000,000 worth of ice cream in a year and other dairy products valued at $87,000,000.

Organize New Dairy Council

AT THE convention of the Pacific Northwest Milk Dealers' Association, recently held at Tacoma, a resolution was adopted to effect an organization similar to the California Dairy Council. Washington calls itself the Western home of the Holstein, while Oregon beats the world with Jerseys and California with both breeds.

A Paint That Retards Fire

FARMERS and builders engaged in rural construction work have manifested particular interest in a new paint developed by an Oakland chemist, which is said actually to resist and retard fire. Because of the isolation of many farms and the greater fire hazard, it is believed this California invention, which is to be manufactured in Oakland, will be particularly popular in farming and suburban districts. In a recent test two small buildings—one painted with ordinary linseed products and the other with the processed paint—were deliberately fired, both having been covered with oil-soaked excelsior in order to increase the intensity of the blaze. The first was burned to the ground, but the one treated with the fireproof paint was practically uninjured, according to fire department officials who witnessed the demonstration.

Foreign Prunes Injure Market

CHEAP foreign prunes again are reported to be injuring the American market for the Pacific Coast product, several million pounds recently having been imported from Bosnia, one of the Balkan States.

"The worst feature of this trade," points out an official of the California Prune and Apricot Growers' Association, "is not the low price at which this inferior stock is being sold, but the effect upon the consumer of a low-grade article. Consumers have no sure means of distinguishing between foreign and home-grown prunes and, therefore, the latter are apt to suffer on account of the poor quality of the former."

Co-operative Spraying Pays

SPRAY "rings" have proved very profitable in some of the Middle Western States. Three plans have proved satisfactory: each member using the equipment, one member doing all the spraying for other members, and employing someone outside to do the work. In some cases agricultural high school students do the spraying under the direction of the farm adviser.

Fifteen hundred trees were sprayed four times in one season with a $210 outfit at an average cost of 75 cents per tree. One ring reports 75 per cent clean fruit, compared to 15 per cent in adjoining unsprayed orchards. Another ring reports a return of $8 for each dollar spent in spraying.

Many California fruit growers believe that spray rings will help materially in getting done the difficult, disagreeable and costly job of spraying.

When Motorists Meet Livestock

"IN 99 times out of 100 the average motorist does exactly the wrong thing when meeting livestock," declares R. M. Hagen, secretary of the California Cattlemen's Association, who offers the following suggestions to auto drivers when encountering domestic animals on the road:

Slow down; if the road is narrow, drive to one side and stop; shut off your engine; remain quietly in your seat; don't sound your horn or allow dogs to bark.

When a flock or herd of livestock is overtaken, don't blow your horn. Ask the man in charge to lead the way through the animals; drive as much to one side of the main group as possible; don't yell or allow dogs to bark. Never crowd where there is no chance of passing.

The psychology of domestic animals causes them to bunch up when frightened, effectually blocking the road. Therefore, the sounding of horns or barking of dogs only delays passage.

Another Luther Burbank Article Coming

IN an early issue of ORCHARD and FARM will be published one of the most interesting and unusual articles Luther Burbank has written.

The great plant breeder will discuss strange and unique forms of the apple.

He will tell of specimens of this fruit which possess two or more distinct characteristics of flavor and quality. He will describe various "freaks" of the apple "tribe" which he has met in his lifetime of plant breeding work.

Mr. Burbank, in the forthcoming article, will take up also possible future developments in the improvement of the apple. His conclusions will be read with the greatest interest not only by plant breeders and fruit growers, but also by every reader who finds pleasure in discovering Mother Nature's mysterious secrets.

Watch for Mr. Burbank's article, coming soon. This world famous authority—often referred to as "the best known American"—writes for no other farm publication. —*The Editor.*

How to Treat Milk Fever

MILK fever is not a fever; it is a form of paralysis. Frequently it is caused by the consumption of food that is not assimilated. Good milkers eat heavy rations and turn the food they eat into milk. When dry they have no use for large quantities of food, but they have formed the heavy-feeding habit and their owners humor them.

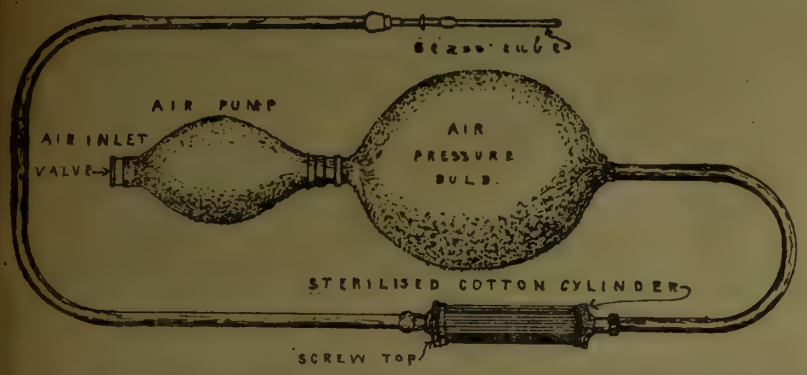
When a cow becomes restless, a day or so after giving birth to her calf, watch her. Staggering of the hind legs is the first real indication that the cow is threatened with paralysis. If this occurs send for a veterinarian.

The most successful remedy is to inject air into the udder. A bicycle pump has saved a great many cows from death when other means failed; but there is danger of infection.

The drawing shows a milk fever syringe that will pump sterilized air into the teats through a glass tube. The air passes through a metal cylinder packed with sterilized absorbent cotton. This cylinder has a screw cap with rubber washer to make it air tight and to facilitate changing the cotton.

Use absorbent cotton treated with carbolic acid (carbolized cotton) packed loosely into the cylinder so that the air can pass through. The glass tube should be sterilized by boiling in water for several minutes. The operator's hands and all utensils used must be washed with soap and water. Keep all things clean that are likely to come in contact with the air syringe.—HERBERT A. SHEARER.

MILK FEVER SYRINGE.



Plan for Clearing Clogged Pipe

A Simple Method of Locating and Curing Leaks

RECENTLY the pipe line of our gravity water system became clogged. I was at the point of digging up the pipe, a section at a time, when it occurred to me to expose it at intervals from the intake down, and to cut into it with a hacksaw in order to locate the section which was stopped up.

Beginning about two lengths of pipe below the intake I sawed the first cut. Here the water spurted out, showing that I was still above the obstruction. I made the next cut about two lengths farther down, and here no water came out. The obstruction apparently was between these two cuts.

I dug up the line from here up to the intake and uncoupled the pipe. Fortunately the intake box was of wood and the pipe turned in the hole where it entered the box, enabling me quickly to uncouple the pipe. (If the pipe had fitted solidly into a concrete box it would have been necessary to cut the pipe in order to uncouple it.)

I found that a crawfish had become lodged, and with a little other foreign matter this had sufficed to clog the line.

Upon sawing into the pipe just enough to cut through I found this cut could be "swedged" together again with a hammer and punch and then soldered.

When closing the cuts the intake box must be drained or the pipe closed at the intake. If the line cannot be drained it will be impossible perhaps to close the cuts so tightly that they will be dry for soldering. In this case the cuts may be wrapped with tire tape and the pipe embedded in a housing of concrete at these points.—HANS K. HOERLEIN, Hood River, Oregon.

Making Leaf Mold

LEAF mold is about as handy in the garden as salt in the kitchen. Without it the gardener is very often at a disadvantage. But when we need humus most in this form it is invariably most difficult to get.

The above situation often may be avoided if we manufacture our own leaf mold. In a corner or out-of-the-way place in the back yard make a shallow pit about two feet deep. Into this throw all the trimmings from the kitchen; old flowers, stalks, weeds, leaves and grass clippings. Cover the bottom of the pit with a layer of this material for an inch or so. Cover with a very light layer of soil; more trimmings, more soil and so on.

If kept moist during the dry months the material will decay. Empty the pit just before the rainy season and screen through a one-fourth inch mesh screen. The finer screenings may be retained for use in the potting-shed and seed-flats, while the coarser mold may be dug into the beds. Weeds that have gone to seed, of course, must not be used.—JACK ADAIR.

PEAS YIELD PRODIGIOUSLY

A row of peas 216 feet long grown by A. Creel in Kitsap County, Washington, last year yielded 302 pounds, which is at the rate of over 320 bushels per acre. The varieties were Teddy Roosevelt and Quite Content. The vines grew ten feet high and were supported by wire netting. This year Mr. Creel expects to use 12-foot netting. The peas were grown on a sandy loam hillside and were watered from springs above.

SUNFLOWERS YIELD 54 TONS

A yield of 54 tons of sunflower silage per acre was secured by A. F. Babcock in Big Valley, Lassen County, at an altitude of 4000 feet. One portion of the field yielded 40 tons, which is considered an enormous yield, making the cheapest dairy feed which can be grown in the locality named. —FERN SHARP

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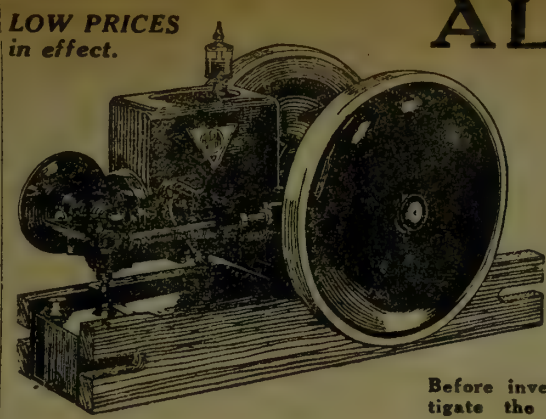

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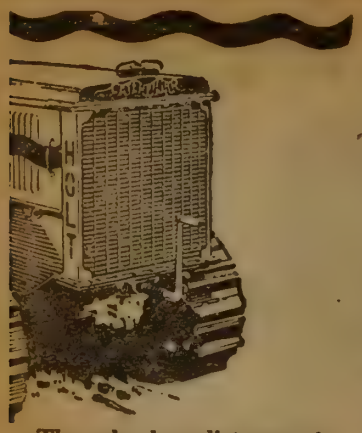

The only place dirt *can* get into the motor of the 2-Ton "Caterpillar" Tractor (Model T35) is through the carbureter and it *will* not enter there if proper attention is given the air cleaner. This is just one of many Holt quality features insuring long tractor life.

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Rose Troubles and Their Prevention

RETARDED root development is one of the principal causes of unsatisfactory results with roses. In planting, it is important to provide good drainage and to make the holes large enough to allow for rapid spread of the root system.

Don't buy large rose bushes in tin cans and expect them to live long. Such plants may have been confined for a long time and the roots may have formed the habit of growing in circles; once formed, this habit of growth seldom is broken. The rose in the nursery may have beautiful blossoms, but unless they are borne on long stems, beware! If bud stems are short and new growth is weak, trouble may be expected.

Certain roses, unless well placed in sunny locations free from too much water, will mildew. Many roses will do this when in shady spots or in too damp soil. Roses that mildew in sunny locations may as well be dug up and burned unless you are willing to sprinkle with dust sulphur before it appears. This should be done just as the new leaves appear and two or three later applications may be given on warm, sunny mornings.

AVOID CERTAIN VARIETIES

Many of the ramblers are subject to mildew in damp locations and if you are partial to them apply sulphur religiously!

The "Thousand Beauties" will take the place of "Dorothy Perkins," which invariably mildews. The former is almost thornless and is a strong grower.

Drouatt is another good rose for fences to take the place of old Eastern ramblers and is free from mildew; it also is thornless and bears good pink blossoms in masses.

The Philadelphia rambler takes the place of the crimson rambler of the East; the Cochets do much better than the Bridesmaid and the Bride of eastern fame.

The red La France should not be planted, but the J. L. Mock is a good substitute. And a few other roses as the eastern moss roses are subject to mildew. It is not necessary to plant any of these kinds for there are so many that are free from this trouble.

Do not allow roses to be planted north of buildings or fences and expect results. If mildew appears on account of damp weather, sulphur immediately. Keep water away from them and aerate the roots as much as possible. I doubt the wisdom of using grass cuttings as a mulch. They are apt to sour your soil.

In planting, if roots are long, cut them back. Spread them out well, and prune the top so as to cause it to spread.

In August or September it is advisable to cause the roses to "go dormant" by withholding water and plant food. Then prune rather severely, fertilize and water well until new growth begins. Now lessen the applications of water, but keep a good mulch. Don't cut back roses too severely or too often; many are ruined by injudicious pruning. Prune as often as you like with judgment and reason, but prune severely only once or twice a year, at dormant periods. Roses should not be cut to pieces every little while any more than fruit trees; that is an old notion, and a poor one. However, if an old bush becomes weak in branching out, cut it back severely and then thin it.

Irrigation is preferable to sprinkling, but if the roses are well mulched they may be sprinkled satisfactorily.

CULTIVATE APHIS EARLY

The green aphis is one of the most common enemies of rose bushes. Soap or nicotine sprays, or even heavy spraying with water occasionally, will keep them off. I like the "nico-dust" spray, since it is easily applied, and two dustings generally are sufficient. Don't wait until the buds are covered. The first aphis are the source of all the later troubles. Get them!

Rose scale never should cause trouble if old wood is pruned out and the bushes maintained in healthy condition. Decomposed lime and sulphur may prove valuable for roses under many conditions.

WARNING REGARDING CLIMBERS

A word about climbing roses: There are many fine ones, but few are pruned properly. Allow but three or four main shoots to develop and take out the oldest as it becomes scaly and decadent. Thin thoroughly each year and don't allow scale to gather because of excessive, weak, old wood.

Most pruners dislike to tackle a thick, climbing rose and clean it out from the inside, preferring to walk around and clip off the long branches with the long shears. This can be accomplished much more easily, but does more harm than good, for it forces out suckers that steal the strength of the good branches and cause more dead wood and weak inner growth.—E. S. CALLAWAY.

Sawdust Injures Soil

IT has long been known that manure from animals bedded down with shavings was inferior. Experiments by Gibbs and Werkman, recently reported in "Soil Science," show that the trouble is due to the shavings having a sort of sterilizing effect on the soil bacteria, which interferes with nitrification. Cedar, maple, redwood and larch were the most injurious and white pine the least injurious. None was beneficial.

It has become a common custom to cover newly seeded lawns with shavings for the mulching effect. Often a good lawn results anyway, on account of the heavy application of other fertilizer. But it is certain that much better results would be secured if lawns were mulched with other material, such as finely pulverized, well rotted manure, clippings from an adjoining lawn, or, best of all, alfalfa meal.—J. E. COIT.

Common Road Scraper

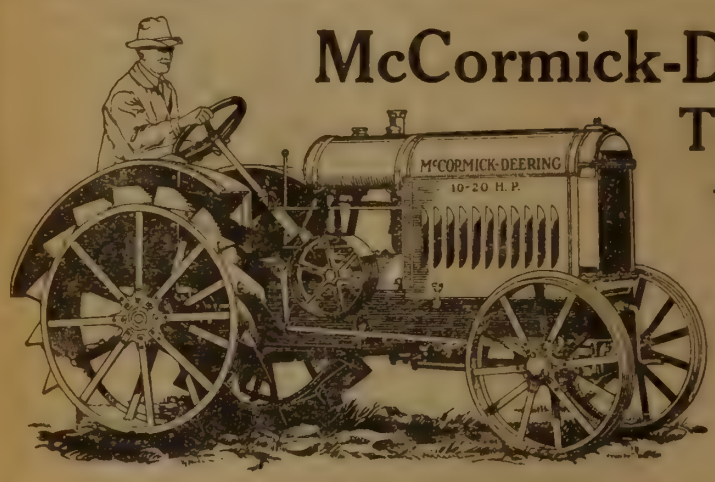
THIS kind of road scraper should be used on earth roads to keep a smooth surface. Just after a rainy time, when the mud in the road is drying, is when the road scraper does the most good.

Not every road doctor knows the value of a simple scraper like this or

there would be more good side roads. As with some other simple looking farm tools, there is more virtue in this scraper than there is in some of the high-priced, fancy looking machines sold to do the same kind of work.

Few farmers fully understand the qualifications of this simple tool. Warning: It is as difficult to ride as a mule if it is made to dig to the full extent of its ability. Under pressure on a rough road it has a few motions that have never been properly recorded in the dictionary. But when held to its work it will make a poor road good and a good road better.—H. A. SHEARER.

McCormick-Deering 10-20



Tractor Construction Resists the Wear and Tear of Sand. Dust and Hard, Steady Work

When you pull into your fields or groves with a McCormick-Deering 10-20 Tractor, your outfit will stand the gaff. A rugged, one-piece frame forms the base of this tractor. The engine, transmission, radiator, rear drive assembly, platform and fender assembly, tanks, etc., are all assembled and tested separately, then bolted securely into place in the rigid main frame. This unit construction affords unusually long life and easy accessibility.

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McCormick-Deering 10-20 is a 2-plow tractor with liberal belt and drawbar power in proportion, for all-year-round farm and orchard work.

McCormick-Deering 10-20 Features

Ball and Roller Bearings at 28 points.
All wearing parts, including cylinder walls, replaceable.
Entire main frame is one sturdy unit.
All wearing parts enclosed, running in oil.
All parts easily accessible, easily removed.
Alemite lubricating system.
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Three forward speeds.
Comfort and safety features, such as platform, wide fenders, adjustable seat and foot levers.
Throttle governor.
Adjustable drawbar.
Water air cleaner.

All these details and other features are built into the up-to-date tractor pictured above, and it is backed by McCormick-Deering quality assurance. You will agree that here is a practical farm power unit worth your close study. Stop at the McCormick-Deering dealer's store and get acquainted with the McCormick-Deering 10-20 Tractor.

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Beckwith Grows, Cans and Sells Kadota Figs

By WM. R. BUTLER

[This Fresno County orchardist last year ew 96 tons of Kadota figs and preserved 9 tons, buying the additional quantity from her growers at $100 a ton. He also propa- ted enough fig trees to plant 2000 acres of hards in the Planada district. He be- ves 50,000 acres of figs—3000 is the pres- t acreage—soon will be required to supply e rapidly increasing demand for canned dotas.—THE EDITOR.]

N. E. Beckwith and son in their orchard.

LTHOUGH figs have been grown and eaten by man for thousands of years, it is only within the past decade that any appreciable progress has been made in the production, preservation and marketing of this fine fruit. California is taking the lead in this ork, as in many other lines of agri- ltural progress.

N. E. Beckwith, Fresno County or- ardist, is one of the leaders in the velopment of the fig industry. Eight ars ago he planted 40 acres of Kado- s near Reedley. The soil was under- id with hardpan, which in some places me so close to the surface it had to broken up by putting in a "shot" of namite on either side of each tree.

Thirty-seven trees were planted on ch acre, but for that locality Beck- th now recommends twice this num- r. The past season 96 tons of fruit as picked from this 40-acre orchard, average of 136 pounds per tree. A antity of figs was purchased from her growers at 5 cents a pound, on the ee. Counting this price, Beckwith's op netted $240 an acre.

OUNG ORCHARD YIELDS WELL

R. H. Thompson, a neighbor, has four cres of five-year-old Kadotas, which st year yielded three tons per acre. his indicates a crop return of $300 r acre. Beckwith estimates that a ne-year-old orchard of trees set 20 25 feet on good ground will yield ght tons per acre, worth at present ices $800. net. The yearly cost of ring for the grove is put at $30 to $40 acre.

Beckwith's pruning method starts th crowning the tree almost at the rface of the ground, which produces low-branched tree with a hollow nter, but closed over the top. An pening is left on the north side to mit workmen to the inside of the tree. ch a tree is easily harvested from in- de and out without the use of a ladder. nce the largest item of overhead is e harvesting, this is a practical con- deration.

The first crop, comprising only 5 per nt of the season's production, is borne old wood, the balance of the fruit ing produced on the new growth made ring late spring and summer. Pick- g Kadota figs is an every-day job om August 1 to well into November.

KADOTA'S MANY VIRTUES

Mr. Beckwith sums up the virtues of e Kadota fig as follows: "It is light olden in color, rich in sugar and deli- te in flavor. The skin is so thin that hen preserved the fruit appears to be skinless, and the flesh is so firm as to enable it to stand up when shipped fresh or under processing. It does not sour, split or mold. The seeds are almost invisible. These are the characteristics which make this fig unexcelled for shipping fresh, for canning, preserving and for fig specialties.

"The Kadota does not require caprification in order to mature, as do the Smyrna varieties, which will not develop without pollenization by the male capri fig. By the aid of caprification, however, especially the first part of the second crop, the Kadota can be increased in size and made an excellent fig for drying, thus adding another asset and making it truly an all-purpose variety."

Not only is this variety the most rapid grower, but it is the earliest to come into bearing and exceeds all others in yields, says Beckwith. In the Beckwith nursery of 25 acres, near Orange Cove, there are trees grown from cuttings set in March which in December had attained a height of 12 feet and a base diameter of over an inch. Most of these yearling trees bore baby figs.

Beckwith Cannery at Reedley.

PRESERVING PROVES PROFITABLE

Experiments in processing the Kadota fig, which started only a few years ago in the Beckwith kitchen, have developed into a modern canning and preserving plant at Reedley. Mr. Beckwith and his son have pioneered in this phase of the fig industry. From a modest beginning their trade expanded to the point where the entire output of the plant was placed on diners of leading railroads and upon the tables of some of America's foremost hotels. A large part of their product now goes to cafeterias and popular-price eating houses. Starting in 1917 with a 3½-ton pack, the output of their plant reached a total of over 150 tons of canned Kadota figs last year.

Mr. Beckwith asserts the demand for canned and preserved Kadotas is developing so rapidly that before long the crop from 50,000 acres will be required to fill orders. The present plantings of Kadotas in the State is around 3000 acres.

DEVELOPS FIG COLONY

At the Planada district, eight miles east of Merced, most of the Kadota fig development centers. Here, also, is located the California Packing Corporation's 4000-acre peach and apricot orchard, the largest in the world. The soil is a deep, heavy loam and the elevation 50 feet above the main floor of the San Joaquin Valley, insuring excellent drainage.

Only a few years ago the entire district was one big expanse of barley fields. Today orchards of peaches, apricots, almonds, olives, prunes and figs, as well as some of the most productive vineyards in the State, are to be found around the little town of Planada.

The Beckwith nursery has supplied the trees for a Kadota fig colony near Planada, where 1500 acres have been planted in the last three years and where 500 more are being planted at this writing. The trees are set 76 to the acre. The Beckwiths have 40 acres of two-year-old trees in this colony and expect to locate a canning factory at Planada when this large acreage comes into bearing.

Old fig near Corning.

How to Manage a Young Vineyard for Profit

Success Depends Upon Early Care

HOWEVER well a vineyard has been planted, it will be a failure if neglected or mistreated when young. A plan well conceived and systematically carried out is necessary for proper treatment of the young vines. In a recent article Professor Bioletti told just how to plant a vineyard. In this installment he points out some highly important "do's" and "don't's" for the first year.

—The Editor.

By FREDERIC T. BIOLETTI

Professor of Viticulture and Fruit Products, University of California

Written Especially for ORCHARD and FARM.

INTELLIGENT management of the young vineyard requires some knowledge of the probable development of the vines during the first, second and third years.

In some locations where the soil is fertile and the growing season warm and long; if the preparatory work on the land is well done, if the vines are first class, and if the method of planting is good, it is possible for the vines to develop as much during the first year as they could in three under less favorable conditions.

To obtain this development is easy, but to make use of it requires skill and the expenditure of more money and labor than would be necessary the first year where the possible growth was less. The extra expenditure, however, is not three times as much, but only one and a half, or at most twice as much, and in return the expenses of two years' development are saved and a crop is obtained two years earlier.

It is well to consider the development of the vine as taking place in three stages: (1) Development of a root system; (2) development of a single, strong cane from the ground to the height at which it is desired to head the vines (this cane to form the final trunk); (3) development of a head of spurs at the top of the trunk. When these three stages of development are complete the vine is in full bearing.

Under conditions unfavorable to rapid growth these three stages require from four to five years. Under the most favorable conditions they may be completed in two.

To consider the least favorable first: After planting the vines with the care described in the first ORCHARD and FARM article, all that is needed during the summer is to promote the growth of the vine as much as possible and to insure its maturing its wood before the advent of frosts or cold weather in early winter. This requires careful attention to irrigation and cultivation, as well as protection of the young vines from wind, drifting sand, and rabbits.

If the land has received a soaking rain or irrigation during the winter, wetting the soil to a depth of six feet or more, no irrigation will be needed except in the hottest regions and in the lightest soils. If the top soil was a little dry when the vines were planted, or if the planting was done a little late, a light irrigation to wet the soil down to the bottom of the young vines is advisable. This irrigation should be given by running a single furrow along one side of the row of vines and using just enough water to wet the soil immediately around each vine.

DETERMINING IRRIGATION NEEDS

No more water should be applied until the roots have made a good start. This time is determined by noting when the new shoots are three or four inches long and have begun to grow vigorously. Another light irrigation of the same kind as the first, but on both sides of the row, then may be given if the soil appears at all dry at six inches and if the weather is very hot. In heavy soils this irrigation usually is better omitted, and in any case it should not be later than July 15, and should be the last for the year.

When the conditions are less favorable—as, for example, if the soil is shallow, or was not irrigated thoroughly in winter, or if weeds have been allowed to grow sufficiently to take up most of the water—these two irrigations may have to be heavier, and even a third applied in July.

Malagas, six months after planting as callused cuttings. The cost of staking was largely wasted, as most of the vines had to be cut back to two buds.

In any case, the soil moisture should be watched carefully by boring with a soil augur and the bottom of the vine kept just moist enough for vigorous root growth, but not wet, until the first or middle of August. By that time the soil should commence to get a little dry at six to ten inches, and the vines should cease making new growth by the middle of September. The object is to promote an abundant growth of leaves early in the season and to stop new growth early. The early-maturing leaves then will expend their energies in stimulating and feeding a large, well-developed root system.

LATE GROWTH HARMFUL

If the vine is kept growing too late, the top may be larger, but the root system will be smaller, the energies of the leaves having been expended on new top growth and little having been left for the roots. If this new top growth continues until the weather turns cold it will fail to mature and the first frost of winter will kill it back to the ground or farther.

Six inches of growth in the early summer that functions until autumn and matures makes a stronger vine and a better root system than six feet of growth that fails to mature.

The malagas shown in the upper illustration were photographed in October, six months after planting. They received no irrigation after planting, but were staked at the time they were set out and tied up in an effort to accomplish two years' work in one. They were planted too late for this, however (April 10), and the cost of staking and tying was largely wasted, as few of the vines made sufficient cane growth to form a trunk, and most of them had to be cut back. It should be said, however, that they are in as good shape as vines started at the same time from rootings.

The large view at bottom of page shows a vineyard planted in April, 1922, and photographed October 6, 1922. This ground was subsoiled 40 inches deep in August, 1921, and morning glory was controlled by application of bisulphide of carbon at that time.

The only cultivation needed after the soil is made level and well pulverized is weed-cutting. Deep summer cultivation is to be avoided.

Rabbits should be kept out by means of a tight fence if necessary. Drifting sand should be held by means of strips, one or two feet wide, of rye, wheat or similar annuals growing down the middle between every two rows. This crop should be planted before the vines and should be allowed to stand all summer. Even where there is no drifting sand the protection is very useful in windy locations. This shade crop is too far away from the young vines to steal the water they need.

END OF FIRST YEAR

At the end of the first year, then, under these conditions the first stage of development will be complete. There should be a top growth of one or two well-ripened vines of 10 to 20 inches in the coolest grape-growing region and not more than 30 to 48 inches in any region where this method is advisable.

The root system will be well developed, extending from the vine six, eight, or ten feet in all directions. The vine then will be ready for the second stage: that of producing a cane large and strong enough to develop into a trunk.

The vines should be pruned within a month after the leaves drop. The pruning is simple. It consists of removing every cane but the largest, and shortening this to two buds. The stakes then are driven, or *(Continued on Page 13)*

Vineyard of I. J. Fallon, Marysville, 7 months old.

Joe Lewis Knows Beans—Especially Limas

Joseph F. Lewis, who rented land, raised beans and paid for an 8000-acre ranch.

Rancher Makes Millions Out of Crop Introduced Into United States by His Father

FROM a handful of beans brought into California from Peru in 1867, there has been developed an industry which annually adds several million dollars to the wealth of the State. This is the story of J. F. Lewis, whose father is said to have been the first person to grow lima beans in the United States and after whom the principal variety was named. The methods which have proved successful in the improvement and growing of this important crop are described.

—The Editor.

By O. H. BARNHILL

Corner of the bean warehouse. The Lewis half crop last year amounted to 7500 sacks.

LIMA BEANS were first brought to the United States in 1867 by an officer of a coasting schooner, who entertained at dinner an old schoolmate named McAllister during a stop at Santa Barbara. The latter secured a handful of the strange beans and gave enough to plant eight hills to Henry Lewis, who at once began to grow them on his farm at Carpinteria.

"The new bean was named 'Lima,' after the capital city of Peru," related J. F. Lewis, son of Henry Lewis. "The Indians used to gather the beans pod by pod as they grew luxuriously in the Peruvian forests.

"My father always was careful to select for seed the most desirable type; a large cream-colored bean, with faint, parallel stripes, producing early, heavy crops. This type, or variety, was in great demand for seed and is now the one generally grown. It was named the 'Lewis lima,' after my father.

"One day, while cutting beans, I noticed a plant which had made but small vine growth, yet bore an unusual number of pods. When I carried this plant to the house and showed it to my father, he exclaimed:

DEVELOPS SUPERIOR STRAIN

"'Great Scott, Joe! Look over the field and find all the plants you can like that one!' From this 'find' we developed a strain of heavy-bearing, small-vined beans, which added greatly to the profit of growing them.

"In the early days of the bean industry we threshed with Indian ponies, driving 50 or 60 of them around in a corral, over ground which had been covered with vines. Before using the ground for a threshing-floor, it was first wet with water and then tramped smooth and hard by the ponies' hoofs. Barley threshers began to be used for threshing beans in 1888."

PERFECTS BEAN THRESHER

The story of the Lewis lima bean then was taken up by Guy E. Lewis, son of J. F. Lewis, who related how his father had adapted to lima beans the barley thresher. The cylinder teeth of the latter were too close together for beans, which were badly broken up in threshing. Some are still injured in this manner, but the thresher which Mr. Lewis perfected is a great improvement over the implement originally used and now is generally employed in lima bean districts. He also adapted planters and cultivators to bean culture, his implements now being in general use.

Guy also told how his father had taken up the work of improving the lima bean where his grandfather left off, and for more than a third of a century has been selecting and breeding the most desirable types.

"About eight years ago the California Agricultural Experiment Station undertook to improve the lima bean," related Guy, "but the results they secured were inferior to those which my father obtained. This was because they did not isolate their plantings of selected seed, which became mixed with poorer vines in the field.

BREEDING BETTER BEANS

"In order to prove that our plan of planting seed in separate plots was necessary to obtain a pure strain, we experimented with colored varieties which reproduced their own color only when isolated from other kinds. We clip off the ends of seed vines, having found that beans grown near the end of the vine tend to 'run out' and revert to the original wild type.

"One reason why large bean yields are not secured sometimes is because the field contains too large a percentage of male plants. The latter should constitute not more than one-third of the entire number. The male plants are taller than the female and bear fewer pods."

J. F. Lewis came to Ventura County in 1889 and has been growing lima beans on a large scale ever since. For a time he rented land in the vicinity of Camarillo, later purchasing the farm which he now owns, three miles south of the village named.

BEANS DO NOT EXHAUST SOIL

"Unlike most other crops, beans do not exhaust the soil," said Mr. Lewis.

"Being a legume the bean obtains from the air nitrogen, which is stored in the ground by means of bacteria on the bean roots. The latter furnish humus. In the vicinity of Carpinteria there are fields which have been growing beans continuously for fifty years, yet still produce good crops.

"We learned by experience that bean ground should never be plowed, but subsoiled. This fact was ascertained by observing how well beans grew on land which had produced a crop of sugar beets, the beet cutter having served as a subsoiler. The purpose of the latter, in preparing bean ground, is to break up the plow pan, which forms 8 to 12 inches beneath the surface.

"We also have learned that the flexible teeth of a spring-tooth harrow are better for cultivating than those which come with an ordinary cultivator. We attach coil springs to the movable shoes of planters in order to force the latter to follow irregularities of the soil.

BUILD HARROWS AND WEEDERS

"We make our own weeders and harrows. The former are of the 'cyclone' type and the latter are similar to the old-style wooden spike-tooth harrow. For bean *(Continued on Page 13)*

Planting lima beans. One hundred twenty horses are required for 4000 acres.

The Lewis ranch residence. There are three other dwelling houses on the place, where lima beans are being supplanted by walnuts and alfalfa.

Battery of bean wagons. From 50 to 60 men are employed during the harvest season. The threshing outfit is moved to a new location in five minutes.

Will Pecans Produce Profitably in California?

Beautiful pecan tree, 50 years old, near Yuba City, Cal.

Some Experimenters Believe Valuable New Local Industry Is in the Making

ALTHOUGH pecan culture in this State has been limited largely to experimental plantings, many horticulturists assert this nut offers better opportunities for production in the San Joaquin Valley than either the almond or the Persian walnut. Recently nurserymen and others have propagated types which seem to thrive and produce well under California conditions, and all-in-all there is great interest throughout the Pacific West in this crop. Professor Overholser's interesting article, which we are publishing in two parts, is, we believe, the first complete treatise on the pecan prepared by any California authority.

—*The Editor.*

By E. L. OVERHOLSER

Assistant Professor of Pomology, University of California

Upper left illustration only, furnished by author.

IN TWO PARTS—PART I

THE pecan is a relative of the hickory nut and belongs to the same botanical family as does the walnut. It is a native of the river bottom land of the Central and Southern Mississippi Valley and tributaries. It is not found native in other parts of the world.

This tree has been introduced into most of the States East of the Mississippi River. Very few pecans, however, are found North of the latitude of lower Virginia, with the exception of the native trees occurring in Western Kentucky, Southern Indiana, Illinois, Southeastern Iowa and Missouri.

The pecan is not adapted to mountainous sections nor to low land where water stands on or near the surface of the ground for any period of time.

Varieties now growing have not proved profitable in the Northern States. The trees are not hardy while young and are inclined to bloom so early that the crop may be destroyed by late spring frosts. Furthermore, in the North the pistillate flowers may bloom too late to be pollinated properly.

The pecan is wind pollinated and as a result successful pollination may be deleteriously influenced by unfavorable weather conditions, such as rain, cold wind and fogs, at time of bloom.

The seasons in the North are often too short to enable the nuts to be developed normally. Hence while promising in the South, the pecan, therefore, cannot at this time be properly grown in the Northern States.

CALIFORNIA AFFORDS PROMISE

Compared with the Southern States, there has been little interest in pecan growing in the West. Occasional small plantings are found in certain parts of the Pacific Coast States. The pecan about the Bay region of San Francisco either does not bear or keeps the nuts hanging on the tree sometimes until they sprout before dropping.

The most favorable reports concerning the behavior of the pecan on the Pacific Coast have come from the interior valleys of Central and Northern California. Small plantings and scattered trees, mainly seedlings, are to be found growing near the following points: Chico, Woodland, Winters, Vacaville, Elk Grove, Stockton, Fresno, Farmington and Bakersfield.

Reports from the Anaheim and Whittier sections have not been encouraging because considerable trouble is experienced with "pecan rosette," a serious disease.

In the opinion of some horticulturists the San Joaquin Valley offers greater opportunities for pecan growing than for the almond or Persian walnut. The industry, however, is as yet unproved and, therefore, must be considered as an experiment in California until the proper varieties have been found and the correct cultural methods determined. The pecan, however, is a beautiful shade and ornamental tree and should be planted for that purpose. Incidentally, through such plantings, much can be learned concerning its behavior in various parts of California.

The pecan, in the United States, ranks second as a nut of commercial importance, being one-half as important in value as the English walnut. It is one-third greater than the almond and has approximately four times the value of the black walnut. East of the Mississippi it is the most important commercial nut. Its rapid growth, precocity of production, thin shell, easy cracking quality and pleasing flavor make the pecan probably destined to become the most important of the nut-bearing trees of the United States. The pecan has a very high food value and is richer in fat than any of the other nuts, having about 70 per cent fat in the kernel.

PRESENT PRODUCING CENTERS

In order of the quantity of production, the rank of the States is about as follows: Texas, Louisiana, Oklahoma, Arkansas, Kansas, Missouri, Kentucky, Tennessee, Mississippi, Indiana and Illinois.

The soil should be deep and fertile and sufficiently porous to admit proper aeration. While well drained, it should not become dry. Heavy clay soils tend to decrease the size of the pecan nuts.

The pecan tree is large, becoming 75 to 175 feet high with an occasional diameter of six feet. The bark is rough and deeply furrowed. The flowers are monoecious; that is, the staminate or male flowers and the pistillate or female flowers are borne separately upon the same tree.

The staminate flowers, or catkins, are five or six inches long and usually are borne from the uppermost lateral buds on the last season's shoots. The pistillate flowers are terminal on the shoots of the current season's growth and are produced singly or in clusters of from two to nine. The staminate flowers appear in advance of the pistillate flowers and are the ones most likely to be injured by frost. The pistillate flowers do not appear until the terminal shoot has grown six to eight inches.

POLLINATION OF PECANS

Wind pollination is the rule. Experiments conducted show that the common varieties of pecans can be placed in two groups as a result of their floral characteristics and their pollination requirements.

In the first group the pistillate flowers become receptive about the same time that the staminate flowers shed their pollen. With this group, therefore, no special provision is necessary with respect to cross pollination. The varieties which have been placed in Group I are: Alley, Centennial, Haven, Mobile, Pabst, Rome, San Saba and Success.

With the varieties placed in Group II the pistillate flowers are receptive from two to ten days before the staminate flowers shed their pollen, hence a large percentage of the stigmas are dried before pollen is available and self-sterility results.

Varieties placed in the second group are the Appomattox, Curtis, Delmas, Frotscher, Moneymaker, President, Russell, Stuart, Teche, Van Deman. Pollen from the staminate flowers of the varieties in Group I, however, is available at about the correct time to pollinate the stigmas of the flowers of those varieties in Group II. Hence, it is possible properly to cross-pollinate the varieties listed in Group II with those listed in Group I.

Pecans are more difficult to propagate than are most other deciduous fruit trees. The planter, however, must often be his own nurseryman, especially in new regions, because trees of a variety suited to his section are frequently not available from nurseries. Experience has shown that moderately cool, cloudy days, without wind or rain, are best for the budding or grafting of pecans. Hot days with dry winds should be avoided and preferably budding should not be attempted on rainy days or in the early mornings following heavy fogs or dews.

SELECTION OF SEED

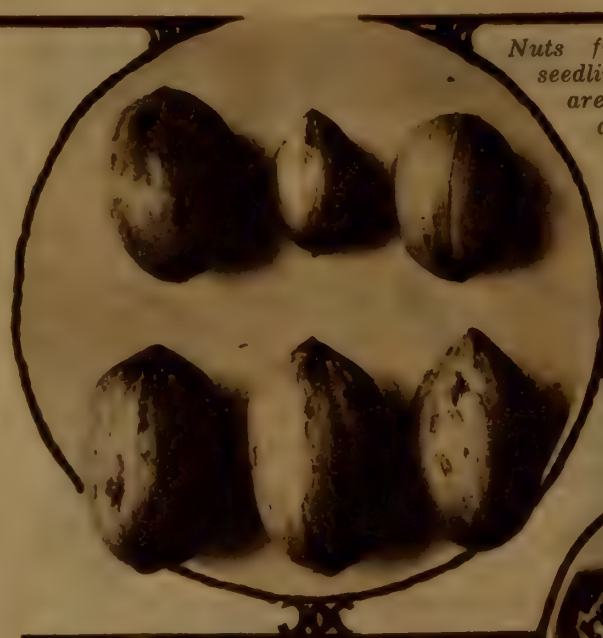
Suggestions concerning the selection of nuts for the production of seedlings can be given as follows: (1) Choose plump nuts of medium size; (2) select from thrifty, productive, bearing trees, free from disease; (3) it is believed seeds should be selected from a latitude similar to that in which the trees are to be planted finally.

Seeds should be retained, as nearly as possible, in the same condition as at the time of harvest. They should not be permitted to dry, but if drying has occurred they should be soaked before being planted. The nuts should be stratified immediately after harvest and held at a low temperature in a dark place until the ground is prepared for planting.

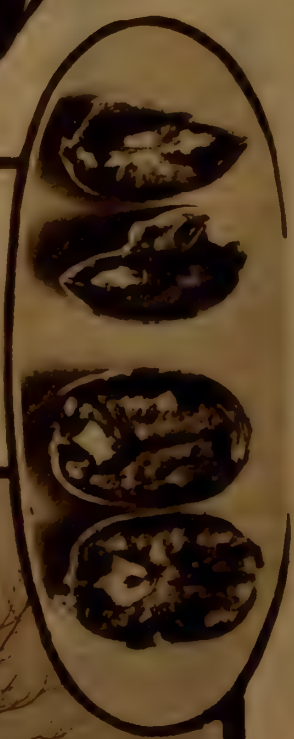
Seeds may be planted immediately after harvest, in which case stratification is not necessary. Generally, however, they are planted in the early spring following stratification during the winter months; this lessens the risk of loss by attacks of mice and other rodents.

The seed bed should be of a light sandy soil and must be well prepared. The nuts should be planted at a depth of two or three inches and eight to twelve inches apart in the rows, which may be from four to six feet distant.

The development of the seedling during the first season is confined largely to the tap root. The growth above ground may (Continued on Page 11)



Nuts from common seedling pecan trees are shown above at left. Below these are three typical nuts from a selected seedling found by a California nurseryman.



To left and right in ovals are comparative illustrations of same nuts when cracked. Desirable type at bottom.

This 11-year-old seedling pecan, nearly 50 feet high, grown by J. B. Wagner, veteran Pasadena nurseryman, bore the fine nuts shown with inferior specimens in circle above.

Keeping Chicks in Healthy Condition

ALWAYS feed chicks according to their appetite, taking care not to give them more than they will clean up before the next feed. Feed by measure, in order to know just what you are doing. Guesswork invites failure.

If the chicks begin to show signs of failing appetite miss one feed, giving epsom salts instead. If the droppings become pasty and pale you are not feeding enough charcoal. Burnt wood is the greatest bowel regulator for chicks; therefore, they should be given plenty of this material.

Get the young chicks out onto the ground as soon as possible. Don't be afraid of cold weather. Cold air is fine for chicks, but they should never be allowed to become chilled. If they have been properly "hardened off," chicks will be able to run outdoors in freezing weather. We had 2400 out on the ground February 9, when the mercury stood between 30 and 40 degrees and there was snow on the near-by hills.—C. E. ARMSTRONG.

Proven New Way Keeps Chickens Free From Lice

Amazing Discovery Revolutionizes All Lice Killing Methods. Mineralized Water Keeps Birds Lice Free. No More Dusting or Spraying.

Permanent freedom from lice and mites is now assured every poultry raiser. Thousands of poultry raisers, for the first time, are keeping their flocks permanently free from these pests without dusting, spraying, greasing or doing any work themselves. The use of a scientific discovery perfected last year has revolutionized all commonly accepted methods for keeping poultry free from lice and mites. No other method as sure, easy and quick has ever been found.

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These blood sucking, profit stealing pests every year actually kill millions of chicks and almost wipe out egg production in many flocks. Thousands of satisfied users quickly proved the amazing power of this discovery and now refuse to be without it.

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J. Franklin Briggs, Lynn Haven, Fla., says: "Ever since I started using Lice-Go six months ago I haven't found a louse in my flock. It's easy now to keep my birds clean—and I get more eggs and better chickens."

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"Every year until now I have lost many baby chicks from lice. Since using Lice-Go, I have never lost a single chick. Its results are amazing."—M. Johnson, Milwaukee, Wis.

Doubles Egg Yield

"One package of Lice-Go got rid of all the lice in my flock, so I gave the second package to my neighbor to use on his badly lice-infested chickens. Not only did it drive away all the lice, but his egg yield jumped from 17 eggs a day to 46. Weak, sick birds were quickly toned up and began to lay for the first time in months."—J. Fairholme, Cedar Rapids, Iowa.

RESULTS GUARANTEED

Hundreds of thousands of satisfied Lice-Go users are now reordering in larger quantities than ever. They refuse to be without it. It's easy to give. Simply drop a Lice-Go tablet in the birds' drinking water. The minerals taken into the bird's system come out thru the oil glands of the skin and every louse and mite quickly leaves the body. It is guaranteed to help the hatchability of the eggs, and cannot injure flavor of eggs or meat; it is harmless to chicks and does not affect the plumage. A few days' treatment at the start and then a little added to the drinking water each month is all that is necessary.

So confident is Mr. Hick that Lice-Go will rid your flock of every louse or mite that he offers to let any reader of this paper try Lice-Go without risking a penny.

SEND NO MONEY

Send no money—just your name and address to Chas. M. Hick, Dept. 643, 1018 S. Wabash Ave., Chicago, Ill. A card will do. He will send you two large double strength $1.00 packages. When they arrive, deposit only $1.00 and postage with the postman. If you are not absolutely satisfied after thirty days' trial your money will be refunded immediately.

Don't hesitate to accept this offer as it is fully guaranteed. Two big Chicago banks say that Mr. Hick will be exactly as he agrees without question or argument.

Pullet Pasturing

IN RAISING 30,000 chickens during the past ten years, we have ever kept in mind the importance of employing natural methods. Health and vigor are conserved and promoted by keeping the young chicks and pullets outdoors just as much as possible.

When the pullets are ten weeks old they are placed in small colony houses and moved out into a brush pasture. The little houses are set on runners, which permits them to be moved to fresh pasture easily, the birds being shut up inside at night and a string of houses fastened together and pulled with a tractor to the new location.

As the nights become warm our young birds take to the trees, where they roost in the pure air, safe from vermin infection. Plenty of deep, cool shade is important during the hot summer months. Tree shade is much to be preferred to that of buildings, as chickens are apt to huddle together and get "lousy" in the latter location.—C. E. ARMSTRONG.

Hog Business Improving

THAT the pure bred hog business is "coming back" rapidly is the assertion of Alec Wilson, genial and able livestock superintendent of the famous Italian Vineyard Company, Guasti (San Bernardino County). "We have shipped more breeding stock this year than last," asserted Wilson recently, and prices, while on a lower scale than during the boom days, have been satisfactory."

The Berkshire herd maintained on this famous ranch is recognized as one of the best in California. Mr. Wilson says his company has specialized on this breed because of its asserted popularity with packers. "After all," the veteran stockman points out, "hogs are produced primarily for meat and the heavy lard type of the old days no longer is in demand. We feel that the breeder should bear in mind the ultimate object of his business, which is to please the packer, as well as the palate of the ultimate consumer."

Wilson is one of the best-known and most popular livestock men of California, and is proving his versatility by conducting a very successful Guernsey dairy, as well as a large swine department.

Feed Chicks Simply

THE more simply chicks are fed the better they will grow. A ration of clean wheat, corn and oats, together with a good supply of milk and green feed, is hard to beat. It is worse than useless to start chicks off with rich feed in an attempt to force development.

It is generally recommended that chicks be fed nothing until they are 60 to 70 hours old. They are apt to suffer from hunger and become weakened, we find, in this time; therefore, we prefer to begin feeding the chicks 50 hours after they are hatched.

We feed no mash at all, thus eliminating bowel trouble, leg weakness and overdrinking. This year we fed 8500 chicks without a trace of bowel trouble. The little birds made a wonderful growth.—C. E. ARMSTRONG.

CITRUS THORNS MAKE MELODY

Tree thorns make good phonograph needles, according to James Pierce, grower of sub-tropical fruits.

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Statements from over half the cow testers employed by cow testing associations throughout the United States, reaching over 6000 farms, give additional proof of the superior skimming efficiency of De Laval Separators.

Cow testers know best of all what cream separators are used most, which skim cleanest and last longest, because they regularly test the skim-milk from the separators owned by their members. They say:

—"I find on an average De Laval Separators skim cleaner—from a trace to .04 of one per cent. Thirteen out of nineteen separators here are De Lavals."* (.01 of one per cent equals one lb. out of every 10,000.)

—"Out of 48 separator users 29 use De Lavals. I've found them the best skimmers for the longest time."*

—"26 members have separators, and 22 are De Lavals. They give the best satisfaction after considering all points."*

—"De Laval Separators have no equal for quality and efficiency. 15 out of 20 are De Lavals."*

—"90% of the separators used by my members are De Lavals. The majority skim closer than .02 of one per cent."*

—"The De Laval is a very close skimmer under any and all conditions. 95% of the separators here are De Lavals."*

—"I have 25 members and 18 use De Lavals. I have not had one test below .05 of one per cent."*

*Authorities for these statements from cow testers, together with many others equally good, are contained in a booklet entitled "Cow Testers—What They Do and What They Say About De Laval Cream Separators and Milkers." Send for it—contains information about the value of cow testing associations.

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The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than these we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been Hoganized. Prices for May are as follows:

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White Leghorns	$6.00	$11.50
Rhode Island Reds	9.00	18.00
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CERTIFIED White Leghorn quality Chicks at Utility Prices. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.60 per 50; $12 per 100. Special prices 500 to 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 Seventh St., Petaluma, Calif.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

PETALUMA HATCHERY—Established 1902. Choice White Leghorn chicks from selected heavy-laying breeding stock, inspected and accredited by Sonoma County Farm Bureau. Chicks during May and June, $12.50 per 100, $115 per 1000. We positively guarantee safe arrival and full count of good, strong chicks, and no questions asked. L. W. CLARK, Box 165, Petaluma, Calif.

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a specialty. Rested breeders used. BABY CHICKS, $16 per hundred. Don't buy chicks till you get my free circular. MRS. W. T. WHEELER, Berkeley, Cal., Rt. 1, Box 496-E.

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BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

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WANT to hear from owner having farm for sale. Give particulars and lowest price. JOHN J. BLACK, Chippewa Falls, Wisconsin.

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FOR SALE—Millions of tomato plants of different varieties, ready April 15 to June 15. Canners and large growers, write for prices. We grow and ship out more tomato plants than all the other growers in Southern California combined—about 4 million to Utah alone. References: Chamber of Commerce or any bank or business man in Pomona. Twenty years' experience. Order copy of our book, "THE HOME GARDEN." It will tell you how. 60c prepaid. L. C. Johnson Pomona, Cal.

SWEET POTATO PLANTS—Hardy, field-grown plants. Vineless Yam our specialty; higher sugar content than Nancy Hall; one-half the vine, finer appearance. We also offer Nancy Hall, Georgia Yam and Yellow Jerseys. Better plants at lower prices. Write for quotations in various quantities. STONE & STEVENSON, 410 Security Bldg., Los Angeles.

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Hive Entrances Clear

NOTHING wears out the delicate, gauzy wings of bees quicker than to force them to fly in and out of the hive entrance through obstructions of any kind. Furthermore, obstructions cause a distinct loss of time.

Hundreds of incoming bees strike obstructing grass or weeds and fall to the ground, losing several minutes before they can recover and crawl into the entrance. On a day when perhaps 20 pounds of nectar is coming in this loss of time and bees may be quite serious.

One way to avoid this loss is to cut the grass in front of the entrance twice in the spring, then hoe the ground clean over a space about two feet square in front of each hive.

A light mattock or an old carpenter's adz is a fine tool for clearing hive entrances.

For a permanent apiary, salt or distillate can be used to keep down weed growth, but is rather expensive when there are hundreds of hives. Such materials should not be applied when the bees are flying freely.—J. D. BIXBY SR.

SEPTIC TANKS COST LITTLE

Materials for a septic tank, which can be constructed by a farmer during his spare time, cost only $30 to $35, according to figures compiled by agricultural engineers.

Causes of Spring Dwindling

A SUBSCRIBER asks: "What is wrong with my bees? They have been storing honey steadily during September and October from wild buckwheat and blue-curls, until they are stuffed full. I have had to give some colonies a second 'super.' In spite of this abundant food supply, most of my colonies have dwindled down to a mere handful. Some hives do not contain more than a pint of bees. What is the trouble?"

Here is a case of "too much of a good thing." The bees have stored honey until the queen is crowded out and has scant room to lay eggs. As fast as brood hatches (emerges) the cells are filled with honey, instead of being reserved for the queen to lay in.

As hundreds of bees are dying from old age daily and few are hatching to take their places, the colony is thus so reduced in numbers that it may be unable properly to care for the first spring hatch of bees and consequently perishes.

This condition, which is called "spring dwindling," begins with the first crowding of the broodnest in August or September. The remedy is to give more room in the brood nest. Full combs should be taken out and their places filled with empties, not foundation sheets.

"Swarming out" of the weak, discouragd little colonies may be expected with the first warm days of spring. Unable to keep their little broods properly warmed during the cool nights of winter the bees become discouraged and leave the hive on a warm, sunny day, to their own certain destruction. I have seen such a swarm clustered on a fence post.

I know of no way to save these small colonies except by purchasing a few pounds of package bees from some earlier locality. Small colonies containing exceptionally valuable queens may justify the high prices which have to be paid at this time of the year.

J. D. BIXBY.

Are There Drawbacks to Beekeeping?

AN EASTERN reader inquires: "Are there no drawbacks to California beekeeping?"

Well, yes; one of them crawled through the apiary the other day. It was 4 feet 8 inches long and had more rattles than a flivver. But don't let that alarm you; I kept bees for seven years at various points in the Sierra Madres before I saw the first live rattler. Still, it is well to be cautious when out in the hills.

Tarantulas, centipedes and scorpions never seem to bite any one; while poisonous spiders are too slow to overtake anything faster than a snail.

Bee diseases are at times a serious drawback, but are traceable largely to neglect or improper treatment. Most of these originate primarily in a natural shortage of food for the bees, or one resulting from the greed of beekeepers.

A thorough knowledge of bee diseases and their treatment is a safeguard. However, one always has the county inspector of apiaries to call upon for assistance. He is paid for doing that kind of work.

The most serious drawback with the average newcomer is unwillingness to serve an apprenticeship under utterly changed conditions or to profit by the experience of others. The usual vicissitudes of the seasons may be expected here as in any climate—drouths, floods, heat waves, frosts—and all have their effect upon the bee and upon the apiarist's income.

Intelligent, industrious effort, nevertheless, will make a financial success of beekeeping in California, as it will of any other established agricultural industry.—J. D. BIXBY SR.

Prepare to Feed Bees Now, and Play Safe

APIARISTS of the citrus and sage brush regions should prepare to feed their bees now, in order to carry them through next winter. This may sound like calamity-howling, but we are now in the midst of what is likely to prove a hundred-day scarcity of bee forage.

This will lead to prompt restriction of breeding by the queens, the stores in the hives will be rapidly consumed by feeding the brood, and the present large colonies rapidly reduced by their constant search for supplies. There is a possibility that the spring rains will produce a fair crop of buckwheat, blue curl and other honey flowers, but the chances are the bees will be so reduced in numbers that they will be unable to store sufficient honey to last them through the winter.

The early promise of a bumper crop of orange honey later was reduced to barely an average, and scarcely a quarter crop of sage honey will be gathered, on account of dry weather and the ravages of the sage weevil.

It is advisable, therefore, to feed all light colonies during the summer of a drouthy season. During the spring the hives are full of young brood and the queens are laying rapidly. The bees must be fed heavily or moved to alfalfa fields or other summer range.

I have known of seasons when, a month after orange blossom time, not a handful of brood or five pounds of honey could be found in any hive of a large apiary. Take no chances of your bees being reduced to such extremities, but provide plenty of feed.—J. D. BIXBY SR.

SPERRY
SUREGROW
MAKE'S POULTRY PROFITS GO UP
P.S. PULLET SCRATCH

Joe Lewis Knows Beans

(Continued From Page 9)

threshing we prefer a steam engine to one driven by a gas motor, because the former furnishes steady power and lots of it, two things which are very necessary in threshing beans. More than once we have helped out neighbors who have got stuck trying to run their bean thresher with a gas tractor.

"We use horses for field work. We use about 120 work horses. Mules are better for road work, but because their feet are small, they sink so deep into our soft, sandy soil that they cannot do as much work as horses. We use the broad-hooved Percherons and raise our own colts."

Guy is foreman of the horse department and this year is raising about forty-five fine colts from sixty brood mares. He has made a special study of harness and saddles, especially collars and hames, and is known as an expert in fitting them to the animals and in keeping both horses and harness in good working order.

Mr. Lewis and his sons are strongly in favor of co-operative marketing and for six years the former was a director in the old bean growers' association.

"The most troublesome factor in the bean market is the broker," declared Mr. Lewis. "He and his associates are constantly trying to manipulate the market for their own selfish interests, at the expense of both producer and consumer. They try to force the market down, in order to buy beans at a low price, then inflate values and sell at unreasonably high valuations.

"In order to prevent such manipulation the association of which I was a director used to buy beans of non-members. The Department of Justice finally stopped this, because it was considered a violation of the anti-trust law."

COST OF GROWING BEANS

Mr. Lewis is of the opinion that 7 cents a pound is a profitable price for beans when the season is favorable, but that 10 cents is necessary to make money during dry years, such as the past four have been. The price in April was 8½ cents a pound and the coming crop was then being contracted at that figure. Owing to dry weather only about a half crop has been grown in Ventura County the past four years and the present season promised to be drier than ever.

When Joe Lewis began growing lima beans the yield was seven to eight 100-pound sacks per acre and the price $2 to $2.50 per sack. By the breeding of better beans for fifty years the yield has been increased to 25 or 30 sacks, while the price has risen to $8.50. This indicates an advance in per-acre returns from $17 to $230. The latter figure, however, is what can be obtained for beans grown during a good season on first class land.

Is there money in growing lima beans? "There has been," answered Guy Lewis. "Since my father came here thirty-four years ago he made enough money growing beans on rented land to buy this farm, which he purchased 17 years ago. The place has since been highly improved. It consists of 8000 acres of hill and valley land. Half of it is under cultivation.

"My brothers, J. F. Jr. and Searles, and I assist him in the management of the place. For many years he has not been able to work in the field, but he is still the 'big chief,' directing all the ranch operations.

PLANT WALNUTS AND ALFALFA

"We believe there is more money in walnuts and alfalfa than in beans and therefore the cultivated fields are being turned into meadows and nut orchards. We are planting 1200 acres to beans this year and produced last year 7500 sacks—a half crop. Our soil is subirrigated and produces big crops of alfalfa without artificial watering. We have 800 acres planted to walnuts."

For more than twenty years J. F. Lewis has been badly crippled with rheumatism, the result of overwork and exposure. Although forced to support his drawn and withered form on crutches and unable to perform manual labor, the spirit of the man who has done more than any other to develop California's lima bean industry has not been dimmed or soured by physical misfortune.

"I used to think that money was everything," he confessed, with a sad smile. "For many years I worked at a terrific pace, day and night. At one time I farmed most of the 10,000-acre Camarillo ranch. I thought the human machine could stand almost any strain and believed what we are so often told about hard work not hurting anybody. Too late I learned my mistake. If, however, my work has helped others along the road to success, I shall feel that my life and labor have not been in vain."

Prof. Bioletti's Article

(Continued From Page 8)

the necessary trellis erected, well in advance of the starting of the buds in spring. The vines now are ready to commence the second stage of their development, which will take place during the next year. This method can be applied in any region, but in the sections of quick development it involves a large amount of extra work the second year; the vines grow with all kinds of irregular and unsuitable shapes and at least a year is lost in obtaining a full crop.

In the next article the methods to adopt to accomplish the first two stages during the first year will be explained.

Killing Dandelions

EVERY morning go over the lawn with a chisel, cutting off each dandelion below the crown. This takes only a little time each day, but must be attended to daily to insure success. Make sure that no blossoms are left and that no plants go to seed.

The lawn should be kept closely mowed, in order to expose all the dandelions and make it easier to destroy them. Some persons have been successful in ridding their yards of dandelions by simply keeping all the blossoms picked off, but cutting off the plants is surer.—E. S. CALLAWAY.

LEAVE A LITTLE HONEY

Unless you are sure there will be a good later flow of honey leave a full super on every colony. Many an apiarist missed his chance for a good crop of orange this year because he took the last ounce of last year's bumper crop of sage honey away from his bees.—J. D. B.

Such features as the overhead valve and cam-shaft motor, three speed transmission, and anti-friction bearings of the 2-Ton Caterpillar (T35) Tractor are typical of the superiority of design of the entire line of "Caterpillar" Tractors.

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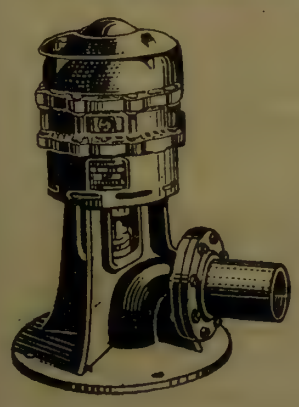

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A Telephone Personality

In your face to face contacts with people, your appearance, your bearing and many other things help you to make the right impression. But in your telephone contacts there is only one thing by which you can be judged—your speech.

An effective telephone personality is to-day a business and social asset. Everybody appreciates the person who speaks distinctly and pleasantly, neither too fast nor too slow, with a clear enunciation of each word, with lips facing the mouthpiece and speaking into it. In business, this is the telephone personality which induces favorable action on the part of the listener. To the salesman it may mean the difference between an order and no order; between an interview granted and an interview refused.

Curiously enough, people who are careful to make themselves effectively heard and understood face to face, often disregard the need for effectiveness in their telephone speech. Perhaps they shout, perhaps they mumble, perhaps they hold the mouthpiece far from their lips. And frequently they never realize that their carelessness has defeated the purpose of their talk.

The Bell System maintains for telephone users the best facilities that science, modern equipment, skilled operation and careful management can bring to telephone speech. But these facilities can be fully effective only when they are properly used.

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Santa Cruz Bulbs

(Continued From Page 5)

garden. Commercial plantings of gladioli exist in several places in California and in other States, notably in the eastern part of the United States, but the industry is growing rapidly in Santa Cruz County.

The gladiolus takes two years to develop from the small bulblets formed at the base of the parent bulb. These are planted in early spring and harvested in the fall, after the tops have died down.

These bulblets produce a small bulb which is replanted the following year, producing a marketable tuber and a number of small bulblets.

Some bulblets, especially of certain varieties, will produce in one year a salable bulb; that is, one which has a diameter of 1½ inches or over. A one-inch bulb also is considered salable. These large bulbs will produce from one to several flower stalks.

The so-called "baby" gladiolus, or spring flowering type, differs from the standard gladiolus in its season of bloom. It is a winter crop. Planting takes place in the fall and harvesting in the spring. Unlike the summer flowering type this variety does not produce bulblets to any great extent, increase taking place mainly by division. The baby gladiolus bloom about Decoration Day and for this reason are very popular with florists, large numbers of flowers being sold annually at this season.

THE SPANISH IRIS

Another spring flowering bulb, extensively grown in Santa Cruz County, is the Spanish iris. Like the freesia and baby gladiolus it is a winter crop, planted in the fall and harvested in the spring.

Narcissi, daffodils, tulips and hyacinths are permitted entrance to the United States. For this reason they are not extensively grown in Santa Cruz, as we cannot compete with cheap European labor. The narcissus and daffodil, however, are grown quite extensively here, the largest plantings being of the "paper white" narcissus. Quite a revenue is derived from the sale of the flowers. Daffodils and narcissi are winter crops. Hyacinths and tulips are not grown on a commercial scale here.

In conclusion, it might be well to say a word or two in regard to fertilizers. This is an important subject and requires careful attention. Stable manure is extensively used, being plowed under a short time before planting. Hen manure is considered dangerous, due to its large amount of nitrogen, which has a tendency to burn the bulb. To overcome this tendency, it is the practice to compost hen manure for several months before using it.

Those growers who use commercial fertilizers prefer bone meal. This material is thrown in the trench at the time of planting. This does away with the waste entailed by scattering it broadcast. Nitrate of soda is not used because of its burning effect.

Perhaps the greatest precaution to be taken is to have good drainage. A bulb will not thrive with "wet feet."

Peacan Raising

(Continued from Page 10)

not be more than six to twelve inches, but the tap root may develop three to five times the length of the top.

As with the walnut, sometimes from three to six pecans are planted in the place where the tree is to stand permanently and later the best seedling is budded or grafted and the others removed. This method is satisfactory for a few trees about the home, but has not proved desirable with the larger commercial orchards.

The pecan does not reproduce itself true from seed and therefore must be budded or grafted as are peaches, apples and other fruits. Nurserymen believe that the bud should be inserted about ten inches above the level of the ground. Grafting, however, is performed so that when planted, the union is below the surface. Most planters prefer budded trees, but nurserymen find grafting is more economical.

Whip grafting is performed during the dormant season on the trunk at the surface to several inches under ground about as practiced with the walnut.

(To be concluded. Watch for Part II.—Ed

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Feared Chicken Pox Conquered by Science

Prompt Treatment With Vaccine Will Cure Most Infected Birds and Prevent Spread of Disease

By W. J. DRYDEN

Contributing Editor of ORCHARD and FARM

NEXT to increasing egg production, the problem that gives the poultryman of California most concern is the prevention and cure of diseases. During the past few years more has been accomplished in this State in the treatment of chicken-pox than with any other disease.

Experiments with vaccine by Beach of the University of California have proven beyond doubt that there is a possibility of getting this disease entirely under control. At present the results are fairly satisfactory and the cost entirely reasonable in comparison with results secured. However, it is within reason to believe that an even greater percentage of cures can be affected and that the cost will be decreased, although at the present time, when a flock is infected the expense is no serious consideration.

The warts on this rooster's comb, face and wattles are the first manifestation of chickenpox.

Chickenpox is first manifested by "warts" on the comb, face, wattles and even (though rarely) on different parts of the body. Swollen eyes are common with this disease.

While authorities do not all agree it is generally accepted that chicken pox and most other forms of canker are due to the same causative factor and prevention against both may be afforded by a vaccine prepared from dessicated chicken-pox scabs.

In treating affected birds the scabs first should be removed and the sores treated with iodine, carbolated vaseline or sulphur ointment. This treatment should be repeeated at two or three day intervals, until the disease has disappeared or has been placed under control.

When the scabs are first removed it is advisable to apply the first treatment of vaccine.

In administering the vaccine the feathers on the breast under the right thigh should be held out of way and the exposed skin disinfected.

A screw needle of about two inches in length and of 18 gauge with a six to twelve mill syringe has been found most satisfactory in administering the vaccine.

The needle is pierced through the disinfected skin and one mill of vaccine given each bird. This process can be repeated in three or four days and again within a week in badly affected flocks. The University of California keeps on hand a supply of the vaccine for the use of the poultrymen of the State.

CHECKS SPREAD OF DISEASE

This treatment not only will cure most of the birds, but also will act as a preventive against the further spread of the disease. The length the birds remain immune does not seem to be definite and has varied from two months to more than two years.

The birds will not be affected in production by the vaccine any more than if they were handled for culling purposes. The winning pen at the 1921 Santa Cruz laying contest started the season with an attack of chicken-pox, which might lead one to believe that in some cases it will be found to the advantage of the farmer, even in a small flock, to resort to vaccine.

Unlike many chicken diseases, chicken-pox cannot be entirely prevented. Even under the best sanitary conditions possible, its outbreak is possible. The problem of keeping the disease out of the flock, however, is worthy of serious consideration by the poultrymen.

All new birds introduced into the flock should be examined thoroughly and if possible should be segregated while under observation. Many outbreaks may be prevented in this manner.

There are cases where it has been known that contagious diseases were carried upon the shoes of visitors going into the houses after having been among their own infected flocks. It is also known that dogs and other animals can transfer the disease. If the houses can be kept clear of visitors or a disinfectant pan placed outside of the door in which the shoes can be dipped, part of the danger can be avoided. Fencing and a little care will do away largely with the danger from animals, which is not as important as it might appear.

If the condition of the flock is kept up by proper feeding, housing and sanitary methods prevention as well as checking the spread of chicken-pox will become a more simple matter.

Showing method of vaccine treatment for chickenpox. The University of California supplies vaccine to poultrymen of the State for treating this disease

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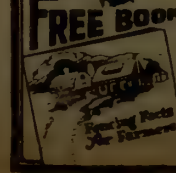

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

MAY 13, 1923

Topworking Fruit Trees Upside Down

By ROBERT W. HODGSON
Agricultural Extension Service, University of California

(1) Here is shown an old, but not yet serious, case of "foot rot" of the walnut. The first step in treatment is thoroughly to clean out the hole, removing all soft or rotted wood. Inarching is saving many damaged walnut trees, but may not be necessary in a case like this.

[Editor's Note—See also illustrations on citrus inarching, Page 11 of this issue.]

THE marvels of modern surgery are not confined in their application to animals and human beings. Fully 95 per cent of all orchard planted trees in California are either budded or grafted, and therefore represent a root and trunk of one individual supporting the branches, shoots and leaves of another individual, the operation having been performed in the nursery row.

This practice is so commonplace and so nearly universal as to arouse no special comment. The topworking of bearing trees by means of budding or grafting also is a major surgical operation, involving the joining of two distinct individuals—an enforced artificial parasitism, the root of one plant being forced to support the top of another plant.

Even a more remarkable practice of tree surgery, however, now is rapidly coming into use—that of grafting new root systems on injured trees as a means of prolonging their lives. Inarching, as this practice is termed, although known for centuries and used occasionally in the propagation of plants difficult to bud or graft, has never come into common use, and consequently excites a great deal of interest.

SAVES MANY CITRUS TREES

As a result of the application of inarching to the saving of gopher-injured citrus trees, developed by W. M. Mertz some four years ago and demonstrated extensively in Los Angeles County by the Agricultural Extension Service during the past three years, thousands of citrus trees have been saved from early decline and death and this practice now is widely used by citrus growers.

(2) Here is a more serious case of "crown gall"—yet not so bad but that the tree may be saved. A hatchet is useful in removing the softer wood.

Inarching already has become a valuable aid to citrus growers, not only in the saving of gopher-injured trees, which constitute an important source of annual losses, but also for diseased trees, those affected with oil injury, those girdled by field mice, and in fact any condition which causes the loss of the whole or a part of the bark area at or just below the surface of the soil.

Citrus growers are testing the method for replacing stocks which have proved unsatisfactory through causing stunting of trees. There is already considerable evidence to show that rather remarkable recoveries may occur when more desirable roots are grafted in. Trees which have stood still for a period of years, due to uncongenial stock, within two years after inarching, using a more congenial stock, have shown remarkable stimulation and greatly increased vigor.

Deciduous fruit growers now are becoming interested in the method and are planning to test it for the control of root diseases and as a means of establishing resistant stocks on bearing trees which are failing. Pear growers are testing the method, using blight resistant stocks as a means of protecting the trees against death from this disease, also using French stock on soils where the Japanese stock has proven unsatisfactory.

This latest method of tree surgery recently has been adopted by the walnut growers as a means of saving trees attacked by plant cancer (usually referred to as crown gall) and other diseases causing the rotting of roots. It may be employed for any condition which causes either the girdling of trees or the rotting away of roots providing that the new root system established is either resistant or immune to the disease involved, or that special precautionary measures are taken to control or eradicate the disease.

Walnut growers now are testing inarching as a means of saving trees affected with crown gall and foot rot, but also for testing stocks resistant to the nematode.

RECLAIMING GIRDLED TREES

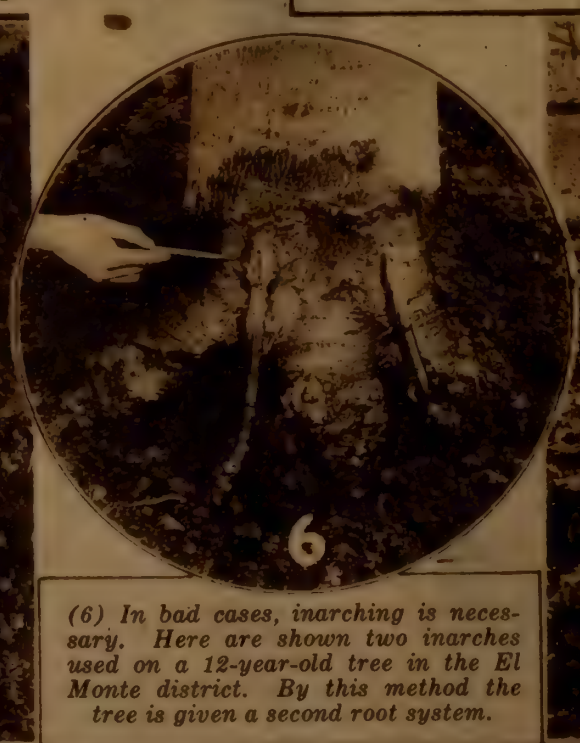
The above mentioned uses as yet are largely experimental. It has been conclusively proved, however, that by means of inarching, trees doomed to early death from girdling, or the destruction of a part of the root system, may be saved. The practice has a number of advantages over bridge grafting, which has been used to a limited extent in the past as a means of saving girdled trees.

It requires only one union instead of two, as is the case in bridge grafting. Furthermore, it has much wider application than bridge grafting, since the latter requires sound bark on both sides of the injured area. This is rarely the case where *(Continued on Page 10)*

(3) Careful work is necessary in order to take out all the "bad wood" without injuring the remainder. Chisel and mallet are preferred for close work. This tree was in a serious condition.

(4) The next step is to paint the cavity with disinfectant, after which the job is sealed with wound dressings. Tools should be dipped in the disinfectant between jobs.

(5) A good preparatory job. The cavity is ready to be sealed. The tool shown at the left is convenient for scraping away diseased wood. Inarches needed here!



(6) In bad cases, inarching is necessary. Here are shown two inarches used on a 12-year-old tree in the El Monte district. By this method the tree is given a second root system.

(7) Little Miss Walnut Grower is interested in the process of tree dentistry. The black circle above her head is the owner's mark to distinguish infected trees.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
MAY 13, 1923

Timely Suggestions on Making Alfalfa Hay

Careful Handling Increases Feed and Sale Value—It Pays to Mix Science With Elbow Grease

By B. A. MADSON
College of Agriculture, University of California

THE market value as well as the feed value of alfala hay depends in large measure upon the way in which the crop is handled during harvest.

Good alfalfa hay is not just dried alfalfa, but rather is cured, and at present prices may be worth several dollars more per ton to the farmer. If the crop is cut and dried too quickly, the hay becomes harsh and brittle, and many of the leaves drop off, all of which reduces its value. On the other hand, if cured slowly and under proper conditions, certain little-known fermentation changes take place which impart the characteristic aroma of new mown hay, the stems remain more or less pliable, and most of the leaves are retained, all of which are important advantages.

PROF MADSON

Unfortunately, we do not have well-defined market grades or standards for alfalfa hay as we have for other products, but most buyers base their judgment of the value of hay upon certain well defined characteristics, and upon the prevalence of impurities, such as grass or weeds, which cannot be controlled by harvesting methods. The more important characteristics are color, fineness of stem and leafiness.

QUALITY COMMANDS PREMIUM

It is quite generally agreed that good alfalfa hay should be bright, and pea-green in color. Any discoloration or bleaching, due to excessive exposure to the action of the sun, dew or rain, not only detracts from the appearance of the product, but actually reduces its feeding value. Rains, of course, are the most injurious, for not only do they cause a badly discolored product, but if hay in the swath is exposed to a heavy rain, as much as half of its nutrients may be leached out. Fortunately, rains are not a menace in California during most of the haying season, and it is only the early or late crops which may be damaged in this way.

On the other hand, even during the dry season, if hay is exposed too long to the action of sun and dew it loses something in quality. The actual feed value as determined on the basis of composition may not be seriously affected, but the discoloration and harshness caused by such exposure detracts from its appearance and reduces its palatability, and hence the price the ultimate consumer will pay for it.

The part which color and appearance play in the value of alfalfa hay is well illustrated by the experience of a Kansas grower who always made it a practice to cure his alfalfa under cover, in that way retaining its natural color as well as its leafiness. As a result largely of the better appearance, he received on an average two dollars per ton more for his hay on the Kansas City market than did other farmers in the same section, who cured their hay in the usual manner. Curing under cover is not feasible where the acreage is large, nor is it necessary under California conditions, but there is no question that the appearance and in part the quality of much of the hay produced in California may be enhanced by reducing the time of exposure during the curing process to the minimum.

Coarseness and leafiness, which materially affect the feeding value of the hay, are influenced both by the conditions of growth and by the method of harvesting. There is a prevalent opinion that because alfalfa grows so well in California, the quality of hay produced here is better than that from other States, but this opinion is not borne out by facts.

An Alfalfa Field in the Sacramento Valley

It is the experience of many dairymen who buy and feed large quantities of alfalfa hay that hay from the mountain districts or from Nevada, for example, where, because of cooler conditions the crops grow more slowly, is more nutritious than that grown in the California valleys.

There are at least two reasons why this is true: First, with our warm climate and practice of heavy irrigation, the plants grow very rapidly, having a tendency to become rank, coarse, and stemmy, a condition which can probably not be remedied except at the expense of yield; second, because of the high temperature and low humidity which prevail during a large part of the haying season, the crop, when cut, dries out to rapidly, causing the leaves to become so brittle that many of them drop or are broken off in handling. It happens frequently that by the time the hay is ready for market half of the leaves are gone, so that the product consists largely of rather coarse, woody stems, which give it a bad appearance as well as low forage value.

LEAVES MOST VALUABLE

In this connection, it is of interest to note that analyses have shown on an average 40 per cent of the weight of the cured alfalfa plant consists of leaves, and 60 per cent of stems, but that of the total protein content of the plant, nearly 60 per cent is in the leaves and only 40 per cent in the stems. Likewise, with the fats and ash, both of which are important nutrient constituents, about four-fifths of the former and one-half of the latter are found in the leaves. We can readily see, therefore, the importance of saving as many of the leaves as possible.

While, the actual operations involved in making alfalfa hay have been pretty well standardized, the actual procedure varies somewhat in different localities and under different conditions. After the crop is cut and partially cured in the swath, it is raked into windrows, or bunches, from which it may be baled or stacked directly, or it may be put up into cocks to complete the curing process before baling or stacking.

As a rule, the best quality of hay is produced if a large part of the curing process is allowed to take place in the cock rather than in the swath, and many buyers and feeders contend that hay which has been stacked for some time is better than hay baled or fed directly from the field. However, unless stacking is done for other reasons, it appears doubtful whether the improvement in quality, and hence in price, which may result from stacking, will be sufficient to justify the added labor and expense. On the other hand, stacking is necessary if the hay must be held for any length of time before it can be baled or otherwise disposed of.

In general, the actual operations themselves are of little importance unless done at the proper time or with a view to the condition of the crop, or their effects on the condition. It does not necessarily cost any more to perform the various necessary operations at the proper time, but it may add considerable to the value of the product.

THE CRITICAL PERIOD

The best time to cut common alfalfa to secure the maximum yield of good hay is when the plants are about one-tenth in bloom. At this stage the plants have about made their full growth, and if allowed to stand longer, only become coarse and more woody. A better rule to follow, however, in determining the time of cutting, is to watch the development of the new buds or shoots at the crown of the plants. In common alfalfa these buds, which grow up to produce the next crop, begin to develop about the time the plants start to bloom. Under favorable conditions they develop rapidly, and if cutting is delayed these new shoots, which may have attained considerable size, will be cut off, their growth checked, and the time of maturity of the next crop delayed. Thus, by late cutting the number of cuttings per season may be reduced.

In the rapid growing Peruvian varieties, the crown buds appear earlier than in the common alfalfa, so that these varieties should be cut just before or at the beginning of the blooming period. The Peruvian varieties, and especially the Hairy Peruvian, are more inclined to become coarse and stemmy if left too long. Early cutting will overcome this defect to some extent, but probably only at the expense of a slight reduction in yield.

After cutting the crop should be left in the swath only until the leaves are thoroughly wilted. This is the critical period, and if left too long the leaves will become dry and break off, while the stems yet will contain considerable moisture. Further, if left in the swath too long, the hay becomes discolored and loses its aroma and palatability. Especially is this true in regions where heavy dews occur. On the other hand, if put into windrows, or cocks, as soon as thor- *(Continued on Page 10)*

New Discovery Takes Guesswork Out of Apricot Thinning

NOW that peach thinning has been reduced almost to an exact science by Professor Weldon's discovery, recently announced in ORCHARD and FARM, it is interesting to note that the Agricultural Extension Service in Los Angeles County has prepared thinning tables applying to apricots.

The Weldon plan met with instant response on the part of growers and canners; hundreds are thinning by this method during the present season.

THINNING IS NECESSARY

The new apricot tables not only show how many fruits to leave on each tree, but also afford a very clear and forceful understanding of why apricot growers cannot expect to secure first quality fruit without thinning.

In order to test the use of the tables, the number of fruits on one eleven-year-old Royal apricot tree was determined by actual count. It ran over 12,000. By reference to the tables it will be seen that if a crop of this size were matured and reach canning specifications, the production per acre would amount to 27 tons, an unheard-of figure. It was considered that this tree should be able to mature a crop to proper size which would produce 13 tons per acre. Consequently 8000 fruits were removed, leaving 4000.

Table Showing Apricot Thinning Schedule

	20 BY 20 FT.—108 TREES PER ACRE			24 BY 24 FT—75 TREES PER ACRE		
		NO FRUITS PER TREE			NO. FRUITS PER TREE	
TONS PER ACRE.	LBS PER TREE.	10 PER POUND.	12 PER POUND.	LBS. PER TREE	10 PER POUND.	12 PER POUND.
1	[illegible]	185	222	26.7	267	320
2	37.0	370	444	53.3	534	640
3	55.5	555	666	80.1	801	960
4	74.0	740	888	106.8	1068	1280
5	92.5	925	1110	133.5	1335	1600
6	111.0	1110	1332	160.2	1602	1920
7	129.5	1295	1554	186.9	1869	2240
8	148.0	1480	1776	213.6	2136	2560
9	166.5	1665	1998	240.3	2403	2880
10	185.0	1850	2220	267.0	2670	3200
11	203.5	2035	2442	293.7	2937	3520
12	222.0	2220	2664	320.4	3204	3840

TONNAGES PER ACRE WHICH WELL CARED FOR APRICOT TREES OF DIFFERENT AGES SHOULD BEAR

AGE.	PRODUCTION IN TONS.*	AGE.	PRODUCTION IN TONS.*
3	12 to 1	8	10
4	2 to 3	9	10 to 12
5	4 to 5	10	10 to 12
6	5 to 8	11	10 to 12
7	8 to 10	12	10 to 12

*Tonnage depends upon size of trees, vigor of fruit buds, system of pruning, number of fruits per tree, character of soil, and irrigation facilities.

HOW TO USE TOOL

Following are the steps in accurate thinning to replace guesswork: (1) Determine the proper tonnage per acre; (2) note the proper number of fruits per tree; (3) select a representative tree; (4) thin by actual count one tree; (5) use this tree as example.

An example of the use of the accompanying data is as follows: Trees are planted 24x24 ft. (75 per acre) and are ten years old; trees full-sized for their age and healthy; soil is excellent; water conditions good. The trees appear to be capable of producing 10 tons per acre. According to the apricot thinning schedule, in order to produce 10 tons per acre of fruit sizing 10 per pound, only 2670 fruits should be left on each tree, or to produce fruit sizing 12 per pound, 3200 fruits should be left.

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Pithy Paragraphs

STANDARDIZING FARM EQUIPMENT.

The work of the International Harvester Company in standardizing farm equipment promises the farmer substantial relief from one of his commonest and most irritating troubles. He never could see any good reason, for example, for building 876 types of two-horse farm wagons, and is glad the number has been reduced to 22, which is certainly a plenty.

Often it has been found necessary to scrap a costly piece of machinery because some essential part was broken or worn out and could be replaced at a price that would justify the repair expense job. If the various parts could have been used to replace any lost or worn parts on a new machine, the loss would not have been so great; yet this was seldom possible, because implements were made in such a great variety of types that few of the parts were interchangeable. Farmers suspected that one reason why models were changed so often was to promote the sale of repairs.

Although quietly accomplished, the standardization work which has been done by the U. S. Department of Commerce is one of Secretary Hoover's most important achievements.

CO-OPERATION HELPS OUTSIDERS

"Just as long as loyal producers continue to co-operate it will be possible for non-members selfishly to profit by the former's efforts," declares Cornele G. Ross of the Poultry Producers of Southern California.

"The poultry industry faces a difficult marketing condition, in that there is probably nothing more universally producible than the egg, which is perishable and fragile in the extreme. It cannot be exported from its home market without meeting competition from producers in other localities, and the greater distance it is moved the heavier the handicap under which it must be handled, compared with the local product.

"Many co-operative organizations go astray through failure to recognize that modern salesmanship is a highly specialized business and ability in this line commands adequate compensation. Seldom, if ever, is it found among its own membership, who are first of all producers and cannot have had the experience necessary to compete with other marketing organizations employing the most efficient sales methods money can buy."

COUNTRY CHILDREN UNDERNOURISHED

"Malnutrition occurs as frequently among country children as among city children, and in some cases more frequently," declares Miss Jessie M. Hoover of the United States Department of Agriculture. "The rural situation is largely due to the fact that farmers sell their milk instead of using it at home."

This is a serious indictment against American farmers and calls attention to one of their most common and inexcusable mistakes—exercising too little care and judgment in nourishing their children, in proportion to what they spend in feeding livestock.

"For 20 years farmers have been talking about balanced rations for their hogs and cows," says Miss Hoover. "It is only now that they are beginning to apply the same principles to their families."

A peculiar feature of the situation is that milk is used more generously, according to the authority quoted, on the farms where only a family cow is kept than on dairy farms, where milk is produced for market.

GOPHER ERADICATION SHOWS RESULTS

One of the most encouraging observations concerning rodent control is that of Robert W. Hodgson, Farm Adviser for Los Angeles County, who reports the Extension Service has found few fresh cases of gopher injury to citrus trees. This means that less inarching will be necessary, many trees having been saved by this method as the result of demonstrations by extension specialists.

A discouraging factor, however, injects itself in the form of news that the Governor's budget, under the new economy program, will not permit the continuance of biological control work in this State. This means that California will lose the valuable co-operation of the United States Biological Survey, which is given only to States making special appropriations. It means, in fact, that the cumulative effects of several years' work may be lost in the course of a few months.

The only thing that will save the situation is for all communities to carry on the work themselves, all farmers and landowners co-operating in use of poison, gas, traps and the various means of eradication developed by those who have specialized in the public campaign. A serious problem, worthy of serious thought!

"What's New?"—Keeping Abreast of Agricultural Progress

Trapnest Breeders Organize

THE Trapnesters' Association of Santa Cruz has been organized to promote better breeding of egg-laying strains of chickens and to encourage a proper and more extensive use of the trapnest in determining the productive value of hens.

Tulare Making War on Thrips

A THOROUGH and systematic war of extermination is being waged against thrips in Tulare County. A. J. Flebut, Federal entomologist, is assisting in the work, which is directed by F. R. Brann, county horticulturist.—FLOYD BYRNES.

Dairymen Are Chopping Alfalfa

SOME of the dairymen in the Hemet-Jacinto (Riverside County) dairy district have adopted the practice of running alfalfa hay through a feed cutter before feeding, having found that waste thereby is practically eliminated.

New State Land Colony

PLANS for a State land colony between Anderson and Cottonwood, similar to the ones at Durham and Delhi are being worked out by the Shasta County Farm Bureau and Dr. Elwood Mead. Landowners propose pooling their property and developing it as a unit.

Large Valencia Shipments

THE 1923 crop of Valencia oranges in Tulare and Kern Counties is estimated at 2600 carloads. The Lindsay district expects to ship approximately 1600 cars. San Joaquin Valley orange trees bloomed early and heavily this year. A large crop of navels is anticipated.—FLOYD BYRNES.

Advertising Artichokes

THE Halfmoon Bay Artichoke Growers' Association is spending $25,000 advertising their product, the supply of which threatens soon to overtake the demand. A half million artichoke recipe books are to be distributed and numerous window displays made, in addition to other kinds of advertising.

Children Catch Many Gophers

FOUR hundred eighty-six gophers were caught by Sonoma County school children during the contest recently conducted by the Sebastopol Chamber of Commerce. Lynn Mullaly won the first prize, a $10 gold piece, by exterminating 126 rodents. Henry Martin killed 116 gophers, the second largest number.—KATHLEEN RODD.

Planting 300 Acres Lemons

EUREKA lemons are to be planted on 300 acres of the Nichols estate, which the Limoneira Company recently has purchased, seven miles east of Ventura. One hundred acres are to be planted to other citrus fruits. The Limoneira lemon orchards near Santa Barbara are said to be the largest in the world.

Fighting Frost in Alameda

ALAMEDA orchardists in March purchased 25,000 orchard heaters of the lard pail type, indicating that they intended putting up a real fight against Jack Frost. A number of electrical frost alarms were installed and arrangements made with the U. S. Weather Bureau to co-operate in the work of frost fighting.

Grape Measles May Spread

AN EPIDEMIC of black measles of grapevines, such as destroyed whole vineyards in Southern California in the '80's and in the Santa Clara Valley in the '90's, threatens the vineyards of the State, according to Prof. F. T. Bioletti, who attributes the danger to recent dry weather and overbearing during the past two or three years.

These Chevon Producers Prosper

SEVEN years ago two young Greeks came to California, leased a mountain ranch and began to raise goats. They made cheese out of the milk and chevon sausage out of the meat of male kids and females which proved unprofitable milkers. A goat which will dress 60 to 70 pounds brings them $25 to $30. The goat products bring an average price of 40 cents a pound and the Greeks have built up a herd of 2000 animals. What these men have accomplished indicates the possibilities of the goat industry in this State.

Tulare Has Certified Milk

THE first certified milk ever produced in Tulare County recently was placed on the market by P. M. Logan's Toteco dairy, near Tulare. Thirty-six Holsteins furnish the milk, which is extracted by electric milking machines. The stable is floored with concrete and the walls lined with asbestos. Each animal has an individual drinking fountain and every precaution is taken to exclude dirt and disease germs.

The success of the experiment is said to have caused R. E. Hyde, millionaire Visalia dairyman, to equip and conduct his milk plant in a similar manner.—FLOYD BYRNES.

Sell 800 Tom Turkeys

EIGHT HUNDRED dressed gobblers were recently shipped from Corning (Tehama County) to San Francisco and sold for 35 cents a pound by H. R. McCoy. The birds averaged 19 pounds and brought $5320. McCoy has bought 300 coops and is planning to raise 4000 turkeys this season.

Good Bee Prospects in Yolo

YOLO COUNTY apiarists harvest a $100,000 crop of honey annually, and there is an opportunity to make that district one of the most profitable honey-producing communities in the world, according to James Conneley, bee inspector, who also reports that an organized attack on foul brood is needed to stamp out that disease in Yolo County.

Oregonians Fight Poison Oak

OREGONIANS are much interested in the possibility of eradicating poison oak with chemicals. One city in Jackson County last year spent $1000 in fighting this shrub, which has severely poisoned many residents. In the Willamette Valley this plant, together with Canadian thistle, morning glory and other noxious weeds, is reported to have been successfully controlled by spraying.

Frosted Clover Kills Cattle

A LARGE number of cattle were recently killed in Mendocino County by eating frosted native clover, death camas and larkspur—principally the plant first named. Stockmen were advised by the Veterinary Science Division of the University of California to watch weather conditions closely and move cattle to another range, in case further losses are threatened.

Goat Breeders Organize

UNDER the direction of Fred N. Bigelow, chief of the State Division of Markets, California milk goat breeders have formed a co-operative marketing association, for the purpose of selling milk goat and their products. There are 60,000 milk goats in the State, valued at $1,000,000. Their milk is considered even more valuable than cow's milk for ill and under-nourished children.

Cost of Killing Coyotes

SEVENTY-SIX coyotes, 55 bobcats and 71 other predatory animals recently have been killed in Humboldt County, under the direction of Charles G. Poole of the U. S. Biological Survey. The Government paid $1000 towards the work, the State $1388 and the county $1334—a total of $3732. This is an average of about $13.50 per animal for the 202 destroyed.

Growers Lose Half Million

CALIFORNIA almond growers lost a half million dollars on their crop last year because all of them did not belong to the Almond Growers' Exchange, according to officials of that organization. This loss was occasioned by the price-cutting of individual shippers and speculators, who handled 2750 tons of nuts, it is estimated.

The exchange sold 5750 tons of almonds, has 3000 members, and owns property valued at $1,338,000. Up to the middle of April over $2,000,000 worth of 1923 nuts had been sold. The directors recommend the establishment of a factory to shell, blanch and can almonds.

Numbering Farm Homes

FARM homes in the Fairoaks district (Sacramento County) will be easier to find, as a result of their being numbered and the roads named. The work of doing this recently was begun by Robert Waring, leader of the enterprise; Charles Deterding, county engineer; L. Y. Leonard, farm adviser; H. J. McCurry, postmaster of Sacramento, and S. J. Richard of the Chamber of Commerce.

Mileposts are being set on Fairoaks road, the principal thoroughfare, and on tributary roads, while the farm houses are numbered very much the same as are those in cities. To find "780 Fairoaks road," the visitor would go 7.8 miles out on the highway and look for a house numbered 780. If the address were "450 Winding Way," the place would be found on the road by that name 4.5 miles from Fairoaks road.

Frey Favors Better Cheese

"THERE are sections of California which are undeniably adapted to the manufacture of the very highest quality of cheese," declares Dr. J. J. Frey, chief of the State Dairy Service, in discussing the need of more and better cheese making in this State.

"The isolation of some of the mountain valleys, the natural grasses of the mountain meadows and the icy water from springs or artesian wells and its uniform temperature throughout the year are points which are decidedly in favor of the development of the cheese industry in our mountain counties. Sections so favored should not fail to capitalize their natural advantages.

"High-class cheese may be sold within the boundaries of our own State at a premium that will net the mountain dairymen more for his butterfat than his brother of the great interior valleys who is more favorably situated as regards transportation and accessibility to markets."

YOUR GARDEN OF FLOWERS

By HELEN TEMPLE

CONTINUING our discussion of window boxes: Primulas delight in a cool, shady situation where there is protection from strong winds. My best success with the primula malacoides has been attained when growing them in a cool, moist situation with nothing but filtered sunshine during part of the day. I feel quite safe in recommending them for shady window boxes in all sections of the State.

HELEN TEMPLE

In the interior and semi-tropical sections, primula seed may be sown from March to May, inclusive, but in the cooler sections they may be sown as late as August. However, if you are unable to sow seed during the cooler weather you may purchase the plants from your local florist or the seed dealers who advertise in ORCHARD and FARM.

Do not allow the plants to spend their strength in early blooming. Keep all buds picked off until they are six or seven inches across. A window box planted with either the primula malacoides or the English primrose soon will be filled with attractive plants, and the delicate blossoms should continue to come throughout the cool weather. These plants will winter nicely in severe climates if they are covered with leaves or straw. Soil should be light, mixed with old manure and leaf mold.

We have several species of the primula growing in our California mountains and canyons. They are found usually in a cool, protected situation, where there is an abundance of water and oak trees. Among these species we have the well-known "shooting stars" (large and small), or wild cyclamen, and the commonly known "mosquito bill," "Poor man's weather glass," "star flower" and "Prairie pointer." The domesticated primula, however, is much more satisfactory as a window box plant the year around. The wild species are excellent additions to the wild flower garden in a shady corner, where they may be fully appreciated.

OTHER PLANTS FOR SHADY BOXES

German and English ivy, vinca, begonias, cineraria, scarlet flax, bellis and aquilegia (columbine) thrive in the shady window boxes, or where there is a northern exposure. Then we have ferns in variety. Ferns and tuberous begonias make a window box of beauty and refinement when combined. Bellis is an old-fashioned flower, growing about six inches tall, blooming in the spring. It is a perennial, wintering well if protected during the frost season. The scarlet flax and the white bellis combine well in the window box, both of them delighting in a cool, moist situation. The flax grows about a foot in height and bears bright red flowers. The perenne flax is also very fine, the foliage being very delicate in appearance and the flowers blue and white. As the name suggests, it is also a perennial.

Cineraria is best when planted alone. The flowers are very bright and showy, being grown in great variety. They are very successful in the large window box in the cool, protected situation. Cinerarias are very effective against a dull background, especially at the north of the house. The cineraria has become one of our most popular plants in California during the past few years. "We all have them." When left to itself it re-seeds and makes a solid mass of color in a short time, which brightens our homes from late January until July. During the warm weather they retreat, though one may find a stray blossom now and then. When cool weather begins, the old plants should be cut back, thus allowing new growth to spring from the roots.

The ivy and vinca of both varieties are very acceptable window box plants for shady situations, being easy of culture and yet effective. The aurea variegata vinca is quite hardy when grown in a cool situation, where there is very little sun. The ivy is too well known to demand description. However, the dark green ivy cannot be appreciated unless it is grown near a light background. It is very effective when grown in a window box belonging to those severely plain stucco bungalows which have sprung up during the past few years.

One of the hardiest ferns for window boxes is the sword fern, which grows with little attention other than an abundance of water during the hot weather, needing just enough during the winter to keep the boxes moist. Then we have the wild ferns. The brake will grow for three years without renewing, if the soil is rich. Do not irrigate ferns too often, and do not expect them to succeed in a windy situation. Syringe the foliage thoroughly once or twice a month.

GARDEN OPERATIONS FOR MAY

Garden work was somewhat limited in April, due to the late rains, therefore we must do a little extra work this month and "make up for it." Seed should be planted a little deeper, as the top soil drys more quickly than in the earlier months. In May we begin mulching operations for conserving moisture. A mulch of soil is often sufficient, but it is advisable to use fine straw, old manure or dry lawn clippings where the weather is dry and warm. May marks the beginning of summer in many sections, therefore mulching should begin at this time.

All hardy plants should go into the ground as quickly as possible in all sections of California. Caladium bulbs are divided and set out in May. Dahlias go into the ground this month. Geraniums, roses, pansies, petunias, verbenas, penstemons, lantanas, phloxes and bouvardias must not be forgotten in our rush of May work. And the fall chrysanthemums must be hurried along if we want any of those wonderful late blooms. Take sturdy cuttings from spring growth of the old plants, or, better yet, use the tops of the plants. I found the tip cuttings with the soft new growth made roots quickly, and the blossoms were wonderful during the late fall in 1922. Old chrysanthemum bushes should be cut back at this time.

Carnations do best when they are pinched back at this time, and also make stronger plants when they are robbed of all their buds. However, we hardly feel equal to depriving ourselves of an occasional *(Continued on Page 8)*

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Old Sol Is Harnessed Successfully

THE solar heater is distinctly a California "institution," and has achieved wide popularity in this State. Incidentally it is a mighty good advertisement for California's famous sunshine.

Constant sunshine, however, is not necessary. In fact, users claim this type of heater will furnish a constant supply of hot water even on a succession of partly cloudy days, or on a rainy day following a day of partial sunshine.

The principle of the heater is simple: A pipe coil, covered with glass, is so placed as to concentrate upon the coil the rays of the sun, the heat being diffused and held by sheets of copper. As the water in the sun coil becomes heated, it travels through an upper circulating pipe to a copper coil in a storage boiler, which usually is placed in the attic space of the house.

The cool water in the boiler coil returns through the lower circulating pipe to the sun coil, to be reheated and sent back to the storage boiler; this constitutes a circulating system of indirect heating.

Arrow indicates sun coil installation.

One form of installation connects the same boiler with the furnace and the gas heater. On the rare days when there is neither furnace heat nor sunshine, the gas heater may be used. By filling the heating coil with a mixture of alcohol and water, it is possible to use the outfit in colder sections without danger of freezing. The tanks and pipes are heavily insulated to prevent loss of heat, which is said to average less than one degree per hour.

Pruning Shrubbery

THE best time to prune shrubs is right after they have finished blooming or are most nearly dormant. Intelligent pruning, however, may be done at any time without injury to the plant. Long, poorly-spaced branches may be removed in order to let light into the bush and to improve its shape. Leave no stubs showing, but take such branches out entirely. Frost injury or disease, however, sometimes necessitate heading back.

The cutting back or clipping system of pruning, commonly practiced by subjects of the Mikado, has ruined many California shrubs and fruit trees. Of course, it is necessary to treat a hedge in this manner, or a tree shaped for formal effect, but ordinary shrubs, bushes and fruit trees are greatly injured by this heading back process.

Cutting back a tall shrub affords only temporary relief, for the bush will afterwards become higher, heavier and more ill-shaped than before. Commercial orchardists are fast learning that the long pruning system is the only right and logical one, but owners of home grounds who depend upon Jap gardeners for knowledge of such matters still have their ornamentals and back-yard fruit trees and vines injured by ignorant, improper pruning.

Berry bushes should not be sheared back like a hedge. Remove overly long canes, leaving the medium length ones to bear fruit. The vines then will arch over in a natural manner, bringing the berries out into the air and sunshine, instead of crowding them to the center on stubby canes.—E. S. CALLAWAY.

Wait for the June Drop

FOREHANDED deciduous fruit farmers are apt to get in a hurry about thinning and do work which nature would do for him a little later in the season. It is really a waste of time and labor to pull off small fruits which will later drop off of their own accord.

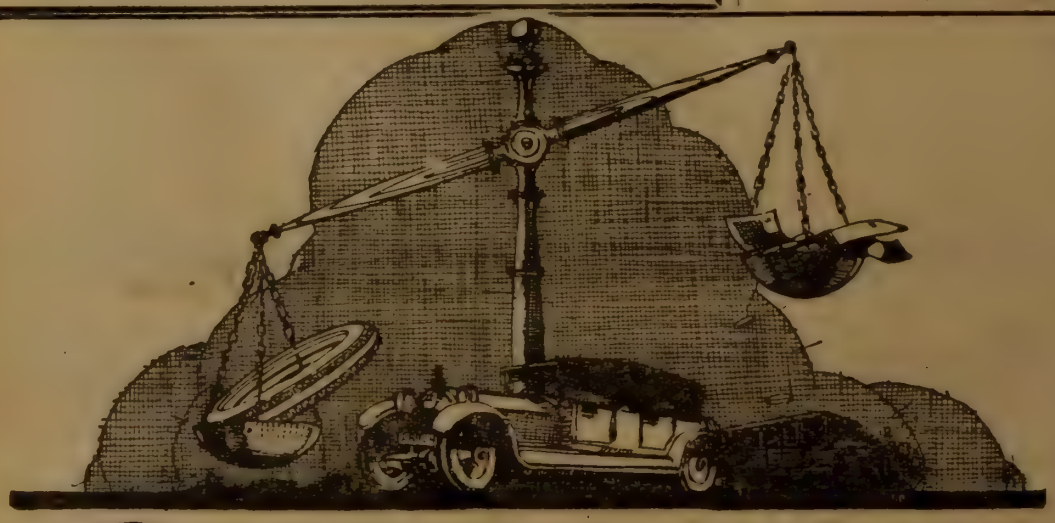
It may be argued that early thinning saves the growth which goes into surplus specimens, but the latter are mostly water and therefore represent very little loss.

ONE HUNDRED MILES OF ORANGES

Since 1880 Riverside County has shipped 122,679 carloads of citrus fruit, enough to make a train 100 miles long, according to estimates of marketing specialists.

TURKEYS BY THE TON

Douglas County, Oregon, shipped 185 tons of dressed turkeys in 1921 and an even larger quantity the past year.



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SAMSON SUPER SIZE—CORDS

Pecans in California

By E. L. OVERHOLSER

IN TWO PARTS—PART II

In budding, the patch or annular methods are preferred. The buds best suited are in the axils of the leaves at the base of the current season's growth. Some nurserymen clip the leaves away close to the buds about two weeks before the bud is desired. They claim the wound heals over and lessens evaporation of water from the bud after it is inserted. Pecan seedlings appear to be the best stock.

In California the nuts ordinarily would be planted during January and February when conditions were favorable. The seedlings should be large enough for grafting after one growing season and for budding about the middle of the second growing season. Grafted trees are ready to transplant at the end of the second season and budded trees at the end of the third season.

The pecan is one of the most difficult of all trees to transplant. Care must be taken to prevent drying, by keeping the roots and top covered with wet sacks until the tree again is placed in the ground. The tap root is cut off about two feet below the surface when dug for transplanting.

Upon rich deep soil with abundant irrigation water, planting should be 60x60 feet. Fillers, such as peaches, figs and other fruits not requiring a large amount of space, might be used until the pecan trees become sufficiently large to require the entire area.

TABLE SHOWING VARIETIES AND CHARACTERISTICS OF PECANS

VARIETY	ORIGIN	DISSEMINATION	SIZE	THICKNESS OF SHELL	QUALITY	REMARKS
Burkett	Texas	Adapted to W. arid regions	Large	Thin	Excellent	Very productive
Busseron	Ind.	New; promising for N. range	Medium	Average	Very good	Prolific
Delmas	Miss.	Widely	Large to very large	Moderate	Highest	Blooms early, ripens crop late; subject to scab
Frotscher	La.	Widely popular in S. W., Ga. and La.	Large	Very thin	Medium	Free from disease; shy bearer
Greenriver	Ky.	New; promising for N. range	Below medium	Average	Excellent	
Indiana	Ind. Seedling of Busseron	New; promising for N. range	Medium	Average	Very good	Prolific
Major	Ky.	New; promising for N. range	Slightly below medium	Thin	Excellent	Kernel unusually plump
Moneymaker	La.	Widely	Medium	.....	Fair	Very prolific; adapted to N. range for Southern varieties
Pabst	Miss.	Widely	Large	Somewhat thick	Good	Generally productive, although late coming into bearing
Schley	Miss.	Widely; one of best known	Medium to large	Very thin	Very good	Mod. prod.; subj. to scab, but one of most popular varieties.
Stuart	Miss.	Most extensively planted	Medium to large	Average	Good	Cracking qual. fairly good. Mod. prod. Cosmopolitan
Success	Miss.	New	Large to very large	Medium thin	Very good	Highly prolific
Texas Prolific	Texas	Appears to be adapted to W. arid sections	Large	Medium	Rich and sweet	Usually prolific
Van Deman	La.	Widely disseminated	Large to very large	Medium thick	Rich; very good	Losing popularity, due to susceptibility to scab
Warrick	Ind.	New; promising for N. range	Slightly below medium	Moderately thin	Rich; excellent	

LITTLE PRUNING REQUIRED

The tree is headed about five feet high and requires little pruning other than the thinning out of crowded or interfering branches and the removal of the dead wood. The better varieties may be expected to come into bearing when seven to ten years of age, although commercial yields are not expected until the trees are ten to twelve years old. An average yield is about 100 pounds per tree.

Experience with pecans in California is so limited that it is impossible to recommend, with certainty, the best variety to be planted. It is largely a question of pioneering on the part of the grower to determine the varieties best adapted for each section.

Prof. G. W. Adriance of the Agricultural College of Texas has suggested that the pecans of Western Texas, which are of excellent quality, may do better in the interior valleys or warmer interior sections of Southern California than any of the other types. He recommends that the Texas Prolific and Burkett might be tried.

Additional varieties which are widely grown and are cosmopolitan in their adaptation are given in the accompanying table. Certain varieties, as the Busseron, Greenriver, Indiana, Major and Warrick, are indicated as promising for the Northern range. These varieties might be tested in Northern California, especially in the cooler coastal or foothill regions.

DISEASES PRESENT PROBLEMS

Other varieties, such as Frotscher, Pabst, Moneymaker, Stuart and Alley, are cosmopolitan and widely disseminated and might prove adapted to the interior valleys or warmer coastal sections of the Southern part of the State. The Schley, Delmas and Van Deman probably would not be adapted to the coastal sections because of their susceptibility to pecan scab, where the humidity is fairly high.

The pecan by no means is free from diseases and insects. It is problematic what troubles would be most serious in California. With the efficient quarantine service many pests troublesome elsewhere may be kept out of this State. With certain varieties, however, the pecan scab is likely to be serious in the warmer, more *(Continued on Page 8)*

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Flower Garden

(Continued from Page 5)

bouquet of carnations at this time of the year, therefore we disbud once a week, leaving just one bud to a plant, and find that success results.

Most of the early planted vines are feeling about for support at this season. Stakes or lath supply support for the sweet peas growing away from the friendly fence or trellis.

Dahlias of all varieties are crying for a chance to grow. The clumps of last year will be found with many buds on them at this time, while the forgotten bulb in the ground will be found with stems more than six or eight inches above the ground. Borders of dahlias of one color are a most effective background for lower-growing flowers. The pompon dahlia has come into favor in full force during the last two years. It is so "neat" and attractive that we feel we must have a few of them in our borders.

Then there is the rare dahlia. One does not feel safe in planting expensive bulbs in the open ground, yet they are seldom a complete success when potted. A bit of wire netting fitted into a large basket, placed into the hole, which must be larger than ordinarily found necessary, then filled with earth to the proper depth, proves a safeguard against the gopher and mole. Gophers are fond of dahlia bulbs. An expensive bulb should be thus protected against them.

May is an excellent month to sow the seed boxes with herbaceous plants for late fall blooming. In sowing seed in the open ground for fall blooms, we often find the tiny seedlings scorched by the hot sun. I find less waste of seed and better satisfaction results when the seed boxes are used in both the interior and coast regions, and especially does this apply to the fall flowers.

Pecans in California

(Continued from Page 7)

humid sections. It is recognized by a dark green to black smoky or velvety superficial growth on the leaves, twigs and nuts. It is controlled by growing resistant varieties. Those varieties practically immune are the Stuart, Frotscher, Moneymaker, Teche, Russell and Success.

In parts of Southern California there is some indication that pecan rosette may be troublesome. This disease is characterized by undersized, crinkled, yellow-mottled, narrow leaves. The diseased branches are short and give a "rosette" appearance. The disease progresses from the extremity downward.

The trouble apparently is not of parasitic origin in that it is not infectious. It cannot be eliminated by careful pruning or even cutting back to a stump. Healthy buds or scions budded or grafted upon diseased stocks develop rosette. Affected trees when transplanted sometimes recover. A proper soil texture, with sufficient moisture and organic content, seem to lessen the amount of the disease.

The brown leaf spot is another common leaf disease found distributed throughout the pecan belt. Dark brown to reddish spots appear on the upper surface, which become grayish on the lower surface as the spots become older. This disease, however, is not serious to thrifty vigorous trees, especially if the old leaves are kept plowed under.

The principal insects which may injure the nuts are the pecan nut case-bearer, pecan shuckworm and pecan weevil. Those injuring the foliage and shoots are the pecan leaf case-bearer, pecan cigar case-bearer and fall webworm.

Only Four Months' School

THE 10,000,000 country school children in the United States attend school an average of only 96 days a year, compared to 143 days for the 11,000,000 city and town children, according to the U. S. Bureau of Education.

In some States good city schools are maintained with a tax of only 50 cents per $100 worth of property, while certain country districts are taxed three or four times this amount, yet have poor schools. Increased State aid for rural schools is advocated by the bureau.

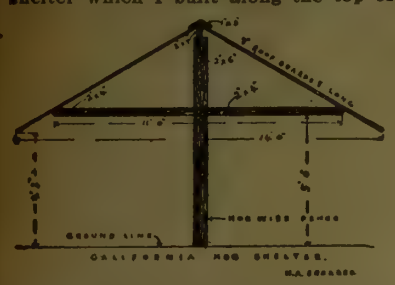
Put the Bull to Work

A BULL weighing a ton, working a treadmill at a speed of one mile per hour, will generate about one horsepower, which is sufficient to run a cream separator, milker, pump, feed cutter or other light machinery, according to tests recently made by the Montana Experiment Station. A treadmill also furnishes needed exercise for the bull.

A True California Hog Shelter

A PECULIARITY of our climate is that although it may be hot in the sunshine, the air always feels cool in the shade. Hogs are warm-blooded animals, and have much good sense; for if given an opportunity they arrange their feeding hours to fit the weather. Hogs naturally eat in the cool of the morning, lie in the shade while the sun is hot, and again forage for feed from the middle of the afternoon until long after dark. Shade is almost essential to success with hogs in California.

The illustration shows a sun-shade shelter which I built along the top of



a hog wire fence in the Sacramento Valley. The advantage of the fence running lengthwise through the center of the shelter is to separate the larger from the smaller hogs and to give the smaller ones a fair show. The shelter faces two lanes that lead to different pasture fields.

The posts that support the roof should be longer than ordinary fence posts in order to raise the peak of the roof about eight feet from the ground. Two by six-inch pieces make good roof posts. They should be placed eight feet apart. A 2x4-inch ridge piece is nailed on top of these posts to support the roof boards. A 2x4-inch scantling is placed two feet from the lower ends of the roof boards as shown, and a 2x4 is nailed crosswise in order to hold the roof in place.

The roof in the drawing is 30 degrees (between one-quarter and one-half pitch) which brings the eaves down to about four feet from the ground. Three feet of head room is enough for a hog, but manure collects and the extra foot or so is worth a good deal at cleaning time.

Sixteen-foot boards make a good sun-shade if the joints between are battened. The boards are cut at the center, which gives two 8-foot roof boards. Eight inches is a good width to use for the roof. Wider boards check and split more than narrow ones.

This hog shelter may be used for winter feeding by dividing the shed crosswise with fencing. A wire fence stretched along the north and west, with straw piled against the fence, will make a warm winter shelter.

—HERBERT A. SHEARER.

Fight Those Ants

THE ant is more than a household menace. In fact, this common, "pestiferous" little insect is one of the worst enemies of agriculture in California. It is dangerous, not only for the damage it does directly, but also for its protection of other pests, and its germ-carrying proclivities.

The common "Argentine" ant is our worst offender in California, and farmers and fruit growers are giving more and more attention to its control.

Various methods are in use, of which the poisoning method undoubtedly is most successful. For the household, poison syrups, pastes and powders are available at retail stores. No household need suffer from the annoyance of ants, so effective are the substances now available.

In citrus districts severe infestation may result in the loss of the crop by the third season and loss of the tree the fourth season, not to mention decreased returns the first and second seasons. Consequently citrus growers have given particular attention to ant control.

So important is the subject, in fact, that the United States Department of Agriculture has compiled a special bulletin (No. 965), based upon the work of Government investigators; this includes specific suggestions for control. The California Agricultural Experiment Station also has given much attention to this problem, and has gathered data of great value. The ant is receiving much attention and is going to receive more! So say the men who are leading the fight against destructive pests.

Don't Pick Loquats Green

LOQUATS are not ripe when they have barely changed from green to a pale yellow. At this stage they are sour and totally lacking in that fine aroma and refreshing flavor which characterizes the mature fruit.

The loquat should remain on the tree for several weeks after it turns yellow and until it assumes an orange color and the skin slips readily from the flesh. Most of the fruit as seen on the market is immature and inferior.

Those who have loquat trees in yard or garden will find it well worth while to cover the trees with netting to protect from birds and bees and to hold the fruit until it is fully mature. There is—by the way—as much difference between an ordinary loquat seedling and a fine budded variety as there is between a wild crab apple and a Jonathan or Delicious.—J. E. COIT.

Value of Goat's Milk

GOAT'S milk and leafy vegtables are needed to correct the deficiency of the ordinary diet of white bread, meat, potatoes and sugar, according to Dr. Charles P. de Langle of San Francisco, who declares that "a diet which consists mainly of high-milled cereal products, muscle meat, potatoes and sugar has proved a failure in animal experimentation and in human experience. It accounts for the prevalence of rickets and similar defects, small jaws and poor teeth, and for children who are small, defective and mentally deficient. Such insufficient food fills asylums and creates social and industrial unrest," concludes Doctor de Langle.

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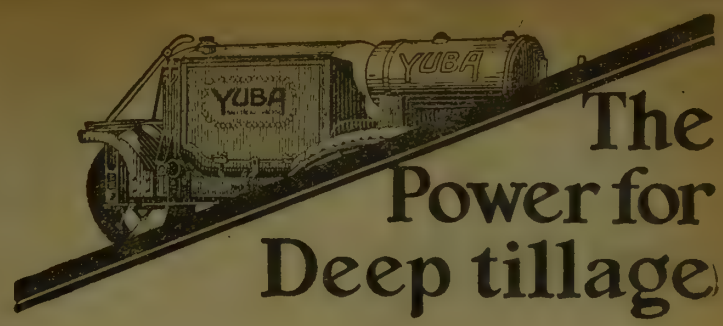

The Power for Deep tillage

But one note of warning has been sounded in the rapidly spreading enthusiasm for the new science of deep tillage.

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Hay Harvest Pointers

(Continued from Page 3)

oughly wilted, the leaves will continue to draw moisture from the stems, resulting in a much more uniform product.

The time which must elapse between cutting and raking and cocking will vary with weather conditions, and with the locality.. In the valleys, where the weather is hot and dry, some of the most successful growers make it a practice to cut for a couple of hours in the morning, raking the hay into windrows in the afternoon, and bunching and cocking the following morning.

In some cases the bunching and cocking are eliminated, the hay being bunches or hauled directly from the windrow to the stack or baler, but this can be done only when the conditions are very favorable. In most sections some time will be required to complete the curing process before the hay can be safely stacked or baled.

Other growers prefer to cut in the afternoon, rake into windrows the next forenoon, and bunch and cock the following afternoon. The best procedure to follow, however, will vary with conditions, but after all is not so important if care is taken to see that the hay is not left in the swath so long that loss or discoloration results.

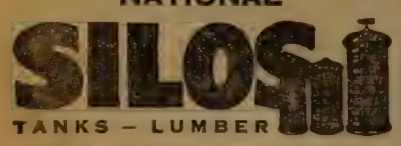
Another precaution necessary in some localities is never to windrow or bunch the hay while it is damp, either from dew or other cause. Moisture on the hay will discolorer the leaves, stimulate the development of molds, make the hay musty, and lower its value.

At best, hay making involves considerable hand labor, and many farmers who grow hay for the market, in order to cut down expenses, bale their hay in the field from the windrow. The press is placed near the center of the field and the hay is moved to the machine with buckrakes.

Others, who stack their hay in the field until later in the season, use the same method. While the longer exposure and rough handling may reduce the quality of the hay somewhat, the practice in most cases is justified amply by the saving in labor and expense. Much of the alfalfa hay produced in California, however, is hauled from the field in wagons, the loading being done by hand. Hay loaders as labor saving devices have found but little favor because of the difficulty of operating them successfully across the field levees, as well as the fact that they do not handle large windrows or cocks successfully.

In fact, it appears doubtful if the labor required, and hence the expense involved, in hay making can be materially reduced at present, so that the grower's best opportunity of increasing his returns is by the improvement of the quality

NATIONAL



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Inarching Trees

(Continued from Page 2)

root diseases or gopher damage are involved, since these generally work below ground and extend well down into the roots.

Further than this, the inarching method involves planting young seedlings at the same time that they are inserted into the trunk of the injured trees. The new root system starts growth immediately and begins to pump sap into the old tree. The root systems of the young trees in turn are nourished by the leaf surface of the injured tree, so that a relationship of mutual benefit is established.

PLANT YOUNG SEEDLINGS

The method used in inarching is well illustrated by the accompanying photographs. It consists of the planting of young seedlings close to the injured tree and the insertion of the trunks of the seedlings into the trunk of the injured tree immediately afterwards. The technique of the operation is comparatively simple.

The thick bark on the injured tree first is cleaned and pared down to make it more pliable and more easily handled. An inverted T-shaped cut then is made as close to the point of injury as possible, remembering that the bark must slip quite readily.

The trunk of the young seedling is cut with a long, sloping cut, in order to get as large a cambium surface exposed for union as is possible. The angle of the cut is such that the cut surface will fit closely against the cambium layer of the injured tree. The seedling trunk is inserted into the inverted T-shaped cut and pushed snugly into place, where it is fastened tightly with a small nail. Care must be taken not to split the graft. In order to avoid this, it is desirable to drill a small hole through the grafted seedling before inserting the nail.

SEAL WOUND WITH WAX

After nailing the graft in place the wound is thoroughly sealed with grafting wax, after which a waxed cloth shield is applied as a further precaution against drying out. When the seedlings have all been inserted and the soil tightly tamped about the roots, moist earth is piled about the trunk of the tree, extending well above the tops of the inserted seedlings, to provide conditions favorable for early union.

The grafts should be given special attention for a month or two. It is generally necessary to irrigate the young seedlings in order to start growth of their root systems.

The operation described is much simpler than that of budding and the percentage of successes is relatively high. After a little practice any grower should be able to do the work successfully.

USE VIGOROUS STOCK

It is important that vigorous seedlings be used, of varieties known to be sturdy and thrifty and resistant to soil troubles. In the case of citrus trees, sour stock seedlings are recommended. With walnuts, Northern California black seedlings should be used.

Within a few months an improvement in the condition of the injured tree will generally be noted and within a year marked improvement in most cases occurs. There are many instances of citrus trees which had been girdled several years prior to inarching and were in a very bad condition, which within eighteen months after inarching have been almost entirely restored to their former condition of vigor and productivity.

New Way to Rid Poultry of Lice

Rev. G. R. Mente Tells of Amazing Discovery Which Keeps Hens and Chicks Free From Vermin

Few Drops of Liquid in Drinking Water Does It—No More Dusting, Spraying or Greasing

"I have used your remarkable Lice and Mite Remedy with fine results," writes Rev. G. R. Mente, Methodist Parsonage, New Washington, Ohio. Mentioned this at a Farmers' Institute a few weeks ago. Consequently, farmers by the dozen have been after me ever since to find out where and how they could get it. It has put a stop to the poultry losses in this community. You are a great benefactor to poultry raisers."

Lice and Mites Go Like Magic

This remarkable new discovery which Rev. G. R. Mente used is Imperial Lice and Mite Remedy. Just a few drops occasionally in the fowls' drinking water makes Lice, Mites, Ticks and all vermin go like magic. No more disagreeable and unsanitary dusting, spraying, greasing or dipping. Equally good for Chickens, Turkeys, Ducks, Geese and Pigeons. Fine for baby chicks and makes them healthier, sturdier and grow faster. All poultry raisers know that sickly, lice-infested hens cannot lay or have good hatches. Vermin sap the very life and strength of hens and baby chicks. Stop these losses now. Guaranteed not to affect eggs or flesh of fowls in any way. Also a splendid egg tonic and blood purifier. Costs but a trifle, on money-back guarantee of satisfaction.

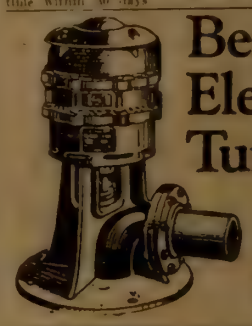
White Diarrhoea Remedy Free

(Regular $1.00 Size Package)

At last a sure treatment for this dread disease. No muss. No fuss. Comes in condensed tablet form to be dropped occasionally in chicks' drinking water. Raise every chick hatched. Economical to use. Be prepared. These remedies should always be on hand.

SEND NO MONEY. Just your name and address to Imperial Laboratories, Dept. 6248, Kansas City, Mo., for one regular, full size $1.00 bottle of Imperial Lice and Mite Remedy (double strength) and they will include free of cost, a regular $1.00 box of Imperial White Diarrhoea Remedy. Pay postman only $1.00 and few cents postage on arrival, or a large size trial package of either one of these remedies for 50c.

If you have a large flock, this Special Introductory Offer also applies on a double quantity of both remedies—two regular $1.00 bottles of Lice and Mite Remedy and two regular $1.00 packages of White Diarrhoea Remedy at an additional saving all for $1.75. Simply specify that you be sent this regular $4.00 value for only $1.75. Readers risk no money, as Imperial Laboratories are fully responsible and will refund the cost on request any time within 30 days.



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You Haven't Read the Paper Until You've Read the Ads.

Inarching Saves Trees

Farm Adviser Hodgson Demonstrates Every Step in the Process

THE illustrations on this page show exactly how to do inarching as explained in article elsewhere in this issue.

We believe this to be the first complete series of demonstration photographs on this subject ever published. By observing the pictures carefully any fruit grower who has not seen a demonstration or learned how to do the work, readily may repair his "gophered" or "crown-galled" trees.

The value of a mature citrus tree has been placed at $100. At small expense and with a few minutes' work, a tree which might otherwise die, may be saved for years of productivity. —*The Editor.*

(1) Digging the hole. The inarches are planted and inserted at the same time. Note the shallow fibrous roots, regarded as almost a certain sign of old gopher injury.

(2) Next the bark is cleaned and thinned by light scraping at the point where the inarch is to be inserted. The back of knife blade serves nicely.

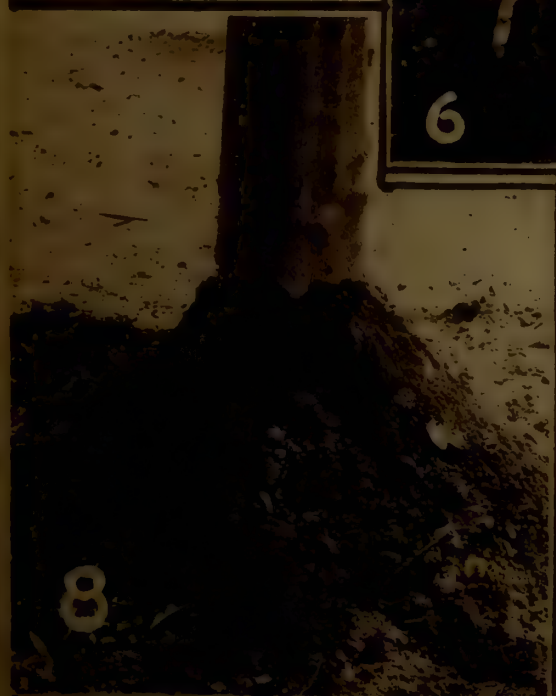
(3) Sourstock orange seedlings, ranging in size from ¼ inch to ¾ inch in diameter are used. One inarch, already placed, may be seen at the back of this tree. The fibrous roots mentioned above again are shown in this picture.

(4) Showing the method of preparing the seedling. One long, slanting cut is made. An ordinary shoemaker's knife is very satisfactory, but it must be sharp so as not to tear the bark.

(5) Next a T-shaped cut is made in the bark, which is opened carefully with a sharp stick. (The piece cut from the seedling is good for this purpose). Then the prepared seedling is inserted as shown and held in place with a brad or small nail, driven lightly so as not to injure the bark. A hole should be drilled for the nail.

(6) At the left is shown the inarch ready to be sealed, the dirt having been well firmed about the roots to prevent "slipping," due to settling after irrigation.

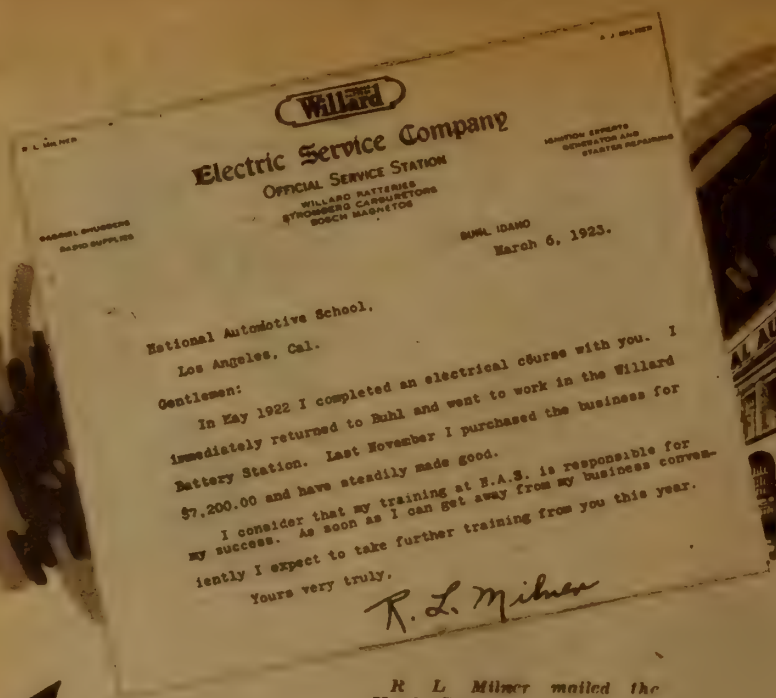
(7) Now a waxed cloth shield is applied, a slit being cut and the edges being folded under the inarch to make a tight job. A good coating of wax is brushed over cloth, cion and bark.



(8) Finally, moist earth is heaped well up around the base of the tree to favor early and complete union. Water is applied or "cut in" at next irrigation.

(9) Here are the tools used: Small shovel, oil heater, wax pot, waxed cloth, cobbler's knife, grafting knife, small drill, nails and hammer.

(10) Two months after completing work the soil is moved away and job is complete. Union has occurred and the tree literally is enjoying a new set of roots, having "topworked upside down."



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RUHL, IDAHO
March 6, 1923.

National Automotive School,
Los Angeles, Cal.

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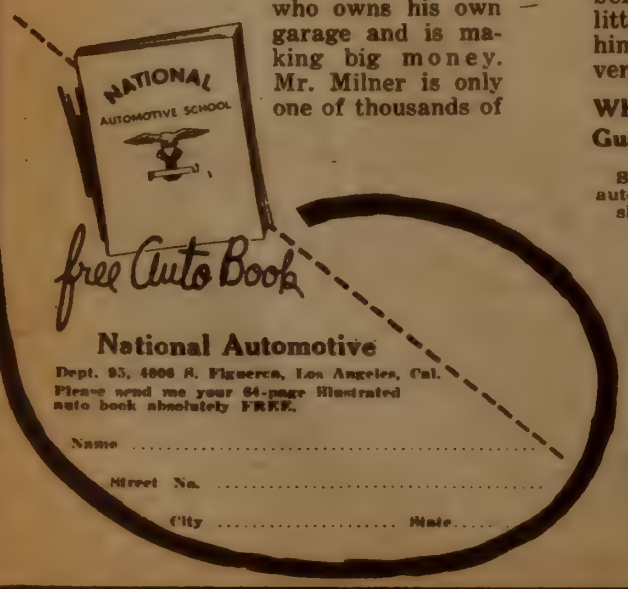

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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

MAY 20, 1923

Should Deciduous Trees Be Summer Pruned?

By GEORGE P. WELDON

Pomologist Chaffey Jr. College of Agriculture. Contributing Editor Orchard and Farm

MOST of the work of pruning in the deciduous orchard should be done during the dormant period. If there is a "best time" for pruning in the dormant period of trees, however, no one seems to have discovered it.

From the standpoint of wound healing there is perhaps a slight advantage in favor of late spring work just prior to the time when growth begins. Yet those who have had the widest pruning experience are inclined to the belief that any time between the dropping of the leaves in the fall and their return in the spring will bring good results.

An old rule that has been considered more or less reliable is "prune trees while dormant for wood growth and while growing for fruit production." In a general way this rule holds good. Pruning of dormant trees reduces vegetative growth, and the heavier the pruning the more vigorous the development. Pruning of trees in summer checks vegetative growth and is apt to result in the formation of fruit spurs which seriously affect the growth of the tree and bring about general weakness.

The danger in summer pruning lies in the fact that if too severe it may seriously affect the growth of the tree and bring about general weakness.

MISTAKE WITH APRICOTS

It has been a common practice in California to prune apricot trees shortly after the crop was harvested. This practice has nothing to commend it and to the contrary is decidedly detrimental because the tree, after fruiting early, must lay by plant food for the following season. In other words, the early part of the season is occupied in the development of foliage and new branches.

Length growth takes place rather rapidly, and in addition to this the fruit crop must receive its share of plant food and be developed. After the harvest and up to the time of leaf shedding in the fall, plant food storage takes place and the tree is supplied with mature wood and well developed buds for the next season.

It is doubtful if severe summer pruning such as that which the apricot sometimes receives is ever desirable with bearing trees of any kind. On the other hand, a reasonable amount of summer pruning may be beneficial.

Heavy cutting, which results in the removal of large quantities of foliage while the tree is growing, is neither safe nor effective. Since a tree depends upon the leaves for plant food elaboration, their loss has the same effect as starvation. How, then, can any amount of summer pruning be done with safety? The answer to this question involves a knowledge of different types of foliage.

Vigor in general is characterized by foliage that is dark green in color. Such foliage has the maximum ability to elaborate plant food. If, instead of the dark green color, the foliage has a yellowish or light green hue, the power to supply food is reduced and a far greater loss of water through transpiration results. It is therefore important in summer pruning work to pay attention to the kind of leaves that are being removed. Since the lighter colored foliage occurs mostly near the extremities of the tender growing tips, these may be removed by pinching off or they may be easily removed with pruning shears, and the tree will not suffer because of their loss. On the other hand, the removal of entire branches will mean the loss of the dark green basal leaves, as well as the light green terminal leaves, and more or less harm may result.

From this it may be seen that summer pruning is principally for the purpose of eliminating succulent water sprouts and checking the growth of undesirable branches by removing the terminal buds.

TREATMENT OF YOUNG TREES

It is with young trees during the first or second year in the orchard that summer pruning brings best results. It is especially good to develop the most desirable framework branches during the first or second season in the orchard. After those branches which it is desired to leave, have been selected, their growth may be augmented by the pinching off of the tip of other branches that are not desired. In pinching off the tips only the best foliage of the branches which are not needed is left for plant food manufacture, and the growth of the tree will be better than it would if entire branches were removed.

There is a general tendency to overprune trees. This is especially true, I believe, of young trees, and it is important that the foliage should not be reduced materially if trees are to make their maximum growth.

TIME TO SUMMER PRUNE

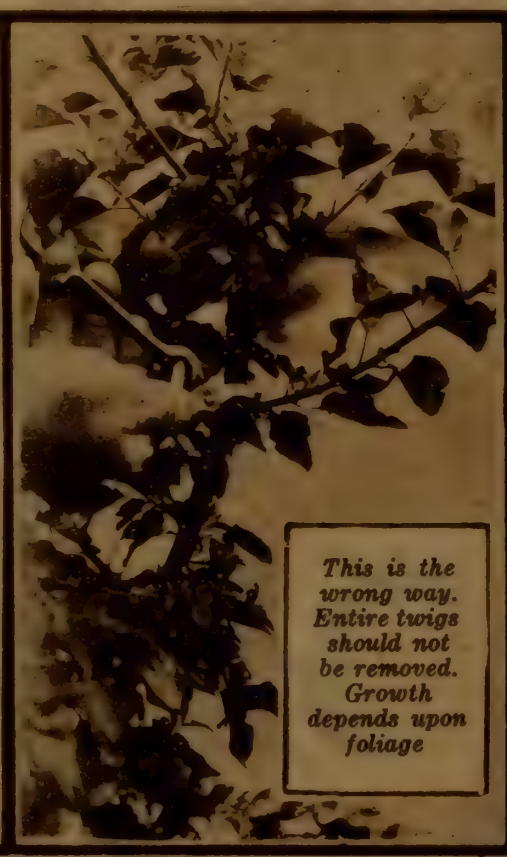
If summer pruning is done for the purpose of shaping the young tree and developing the most desirable branches for the framework, it is important that it should be done early in the growing period. While the time will vary with locality and season, as a general rule the months of May and June are the most favorable for this work. It is not possible to get the best results by going over the orchard only once. Two or three times may be necessary in order to check persistent growth, and many failures to get expected results may be charged to neglect in going over the trees a second and perhaps a third time.

DEVELOPMENT OF FRUIT SPURS

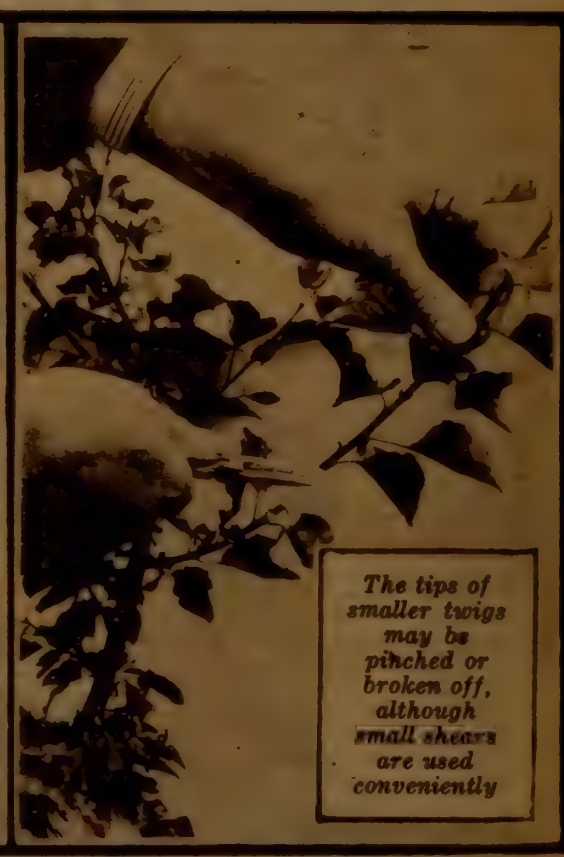
Water sprouts on a spur-bearing tree, such as the apple and pear, may be changed into fruit spurs by careful and frequent summer pruning. Sometimes, through faulty pruning, there is little or no fruiting wood low down on the trees near the crotches. The development of fruit spurs may be accomplished in a single season if the following directions are applied:

When the *(Continued on Page 10)*

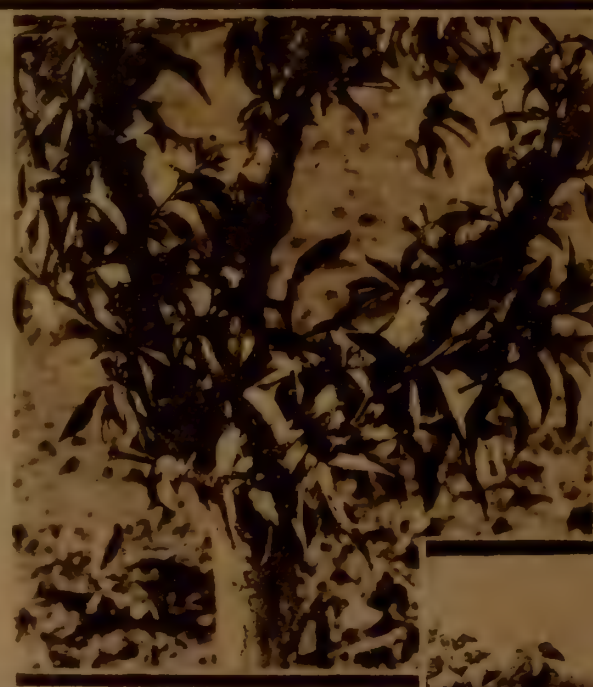
This is the right way to summer prune. Basal leaves are left for shade and plant-food elaboration



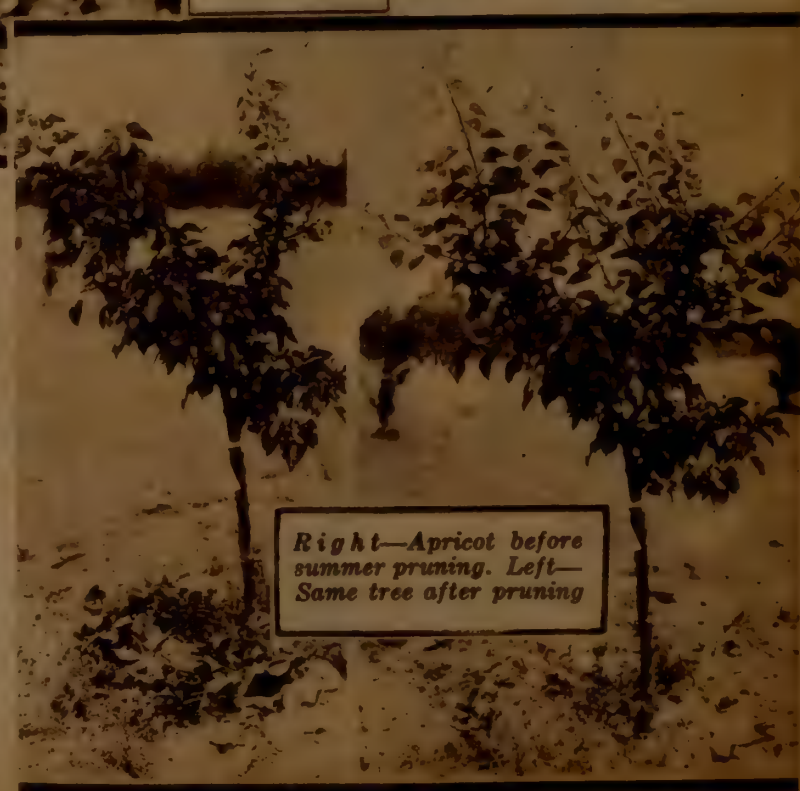
This is the wrong way. Entire twigs should not be removed. Growth depends upon foliage



The tips of smaller twigs may be pinched or broken off, although small shears are used conveniently



"Close-up" view of summer-pruned apricot tree. Note spurs and basal leaves left for shade and plant food elaboration. Foliage in this position may prevent serious sunscald of the trunk



Right—Apricot before summer pruning. Left—Same tree after pruning

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER

MAY 20, 1923

What About the New Agricultural Credits Act?

A Critical Examination of the Congress' Parting Gift to Farmers—What It Means to Producers in the Pacific West

By WILLARD D. ELLIS

President, Federal Land Bank of Berkeley

Written eespecially for ORCHARD and FARM

THE last Congress enacted many new laws that were intended to benefit agriculture. The last bill that was passed, which was approved March 4, 1923, the day Congress adjourned, is known as the Agricultural Credits Act of 1923.

This bill consolidates in a single act the so-called Lenroot-Anderson, Capper and Strong bills. It provides for the establishment of twelve Federal intermediate credit banks. These banks have been established and now are ready for business. They are located in the same cities as the Federal land banks; they are managed by the same officers and directors as the Federal land banks. The Government of the United States is the sole stockholder. These banks are under the supervision of the Farm Loan Board.

WILLARD D. ELLIS

The bank serving California, Nevada, Arizona and Utah is known as the Federal Intermediate Credit Bank of Berkeley and is located at Berkeley, Cal.

NO LOANS TO INDIVIDUALS

These banks cannot make direct loans to individuals. They cannot make loans through national farm loan associations, through which the Federal land banks make long-term amortized farm land loans.

A Federal Intermediate Credit Bank, however, may purchase from or discount for a national bank, State bank, savings bank or trust company a farmer's note when indorsed by the discounting bank if the money advanced on the note was advanced to a person engaged in agriculture for the purpose of carrying on agricultural production or defraying an indebtedness arising therefrom.

Such a note must have a maturity at the time it is discounted of not less than six months nor more than three years. For the present no paper will be handled with a maturity of longer than nine months. Upon livestock paper satisfactory assurance of renewal can be given in proper cases only to an aggregate amount not exceeding the capital of the Federal Intermediate Credit Bank and always subject to reinspection and satisfactory condition of security.

No bank may discount in the aggregate with an intermediate credit bank farmers' notes in excess of twice the discounting bank's unimpaired capital and surplus.

INTEREST CHARGE LIMITED

No bank, without the approval of the Farm Loan Board, may discount a note if the original borrower has been charged more than 1½ per cent interest above the Intermediate Credit Bank's rate. The Berkeley bank's rate is 5½ per cent. No note, may, therefore, be discounted if the farmer making it has been charged more than 7 per cent interest.

An Intermediate Credit Bank may purchase from or discount for an agricultural credit corporation, incorporated livestock loan company, co-operative bank, co-operative credit or marketing association of agricultural producers organized under State law any note, draft or bill of exchange of such institution if the proceeds of such obligation were advanced in the first instance for an agricultural purpose or for the raising, breeding, fattening or marketing of livestock.

Intermediate Credit Banks may loan direct to any co-operative association organized under the laws of any State and composed of persons engaged in producing or producing and marketing staple agricultural products or livestock. The direct loans to co-operatives must be secured by warehouse receipts or shipping documents covering staple agricultural products or mortgage on livestock and such loans may not exceed 75 per cent of the market value of such staple agricultural product or livestock.

The act provides that the term "staple agricultural product" shall be defined by the Farm Loan Board. The board for the present has defined the term to mean grain, cotton, wool, tobacco and peanuts. Dairy products, eggs, fruits and vegetables are being considered by the board and will be ruled upon later.

WAREHOUSE RECEIPTS ACCEPTED

Intermediate Credit Banks will accept the receipt of any warehouse licensed and bonded under the Federal warehouse act. In all other cases the warehousing laws and regulations of the State controlling the same must be submitted to the Federal Farm Loan Board for approval.

At the present time there are not more than a half dozen licensed warehouses in California under both Federal and State warehouse acts. The original United States warehouse act defined the term "agricultural product," wherever used in the act, to mean cotton, wool, grains, tobacco and flaxseed. The California warehouse act, which was approved June 3, 1921, followed very closely the United States warehouse act. The term "agricultural product" in the California act is defined as cotton, wool, hay, fertilizer, grain products, grain, tobacco, rice, beans and flaxseed.

The United States warehouse act was amended February 23, 1923, so that the Secretary of Agriculture is authorized to declare what agricultural products are warehousable under the act. An amendment now before the California Legislature provides for the warehousing under the State act of practically any agricultural product grown in the State.

SUPERVISION NEEDED

There is need in this State for better regulation, supervision and inspection of warehouses. The larger city banks that have financed some of the large co-operative marketing associations are responsible for much improvement in warehousing during the past few years. It is hoped that the operation of the Intermediate Credit Bank will result in still better improvements. The agriculturist in the end will be benefited.

The capital stock of each Intermediate Credit Bank is $5,000,000. Each bank may issue collateral trust debentures in an amount not exceeding ten times its unimpaired capital and surplus. Assuming that these debentures can be marketed readily, the maximum loaning capacity of each bank, excluding its capital, would be $55,000,000. No debentures bearing a rate of interest in excess of 6 per cent per annum can be issued.

The discount rate of an Intermediate Credit Bank cannot exceed by more than 1 per cent the rate borne by the last preceding issue of debentures. The debentures are exempt from taxation the same as Federal farm loan bonds. They should be a prime investment if the banks are properly managed. Farmers themselves will find them attractive and should invest in them.

Because no direct loans can be made to individual farmers, many will become disappointed with the act. It is not practicable or sound for an Intermediate Credit Bank to make direct personal loans. There is not a close enough contact between the borrower and the bank and proper supervision cannot be given.

The country banker who takes an interest in his community and makes a study of the farmers' problems with a view to furnishing credit in an intelligent manner still should be the farmers' best friend.

UP TO COUNTRY BANKER

In the writer's opinion, the country banks will be slow to take advantage of the rediscounting privileges afforded them by the Intermediate Credit Banks. Some bankers object to any kind of rediscounting. National banks and State banks that are members of the Federal Reserve System already have access, through the reserve banks, to rediscount privileges that are more attractive than those offered by the Intermediate Credit Banks.

There are no "co-operative banks" in this State and only one "agricultural credit corporation" in the State. Of the existing institutions through which the credit of the Intermediate Credit Bank might become available to the farmer, the co-operative marketing associations would seem to be the most likely to take advantage of the facilities afforded.

Undoubtedly a number of "agricultural credit corporations" will be organized under State law. These credit corporations may rediscount with the Intermediate Credit Bank agricultural paper in an amount not exceeding ten times the discounting corporation's unimpaired capital and surplus. For the present no paper will be rediscounted for agricultural credit corporations having a capital stock of less than $10,000.

For the present also no paper will be rediscounted for co-operative credit associations except when secured by warehouse receipt covering agricultural products or chattel mortgage on livestock.

COLLATERAL AGREEMENT

Loans against warehouse receipts or upon livestock must be accompanied by collateral agreement to provide such additional security from time to time as may be necessary to preserve the proper relation between the market value of the security and the amount loaned.

With the proper rulings from the Farm Loan Board permitting the Intermediate Credit Bank to handle the products of the co-operative marketing associations of this State, and a sound business and financial policy on the part of the co-operatives and the bank, it would seem surely that co-operative marketing would be put on a more sound basis than ever before.

However, too *(Continued on Page 10)*

Deciduous Fruit Growers Are Facing Critical Situation

Poor Grades Glut the Market—Remedy Largely in Hands of Producers

By VINCENT F. BLANCHARD

Agricultural Extension Service, University of California

DECIDUOUS fruit growers throughout the southern part of the State and in some other sections of California indeed are facing a serious condition. With the production of a large crop of poor quality fruit during the 1922 season still fresh in their minds, there is a possibility of another season of such quality. This might mean the financial embarrassment of many growers and canners. Some canners, in fact, have large quantities of poor grades still in their warehouses unsold and the lower grades of dried fruit are still a drug on the market.

It is now generally recognized that only by growing a crop of good quality can the growers and the dried and canned fruit interests retrieve their misfortunes of last year. Foreign countries are not buying our dried products since the war and the poor grades which formerly were sold them have only a very limited market in this country. These poor grades also influence the lowering of prices for better grades. The consumer of canned fruits will not buy poor grades, and fruit which is sold fresh is practically worthless if not of good quality. Therefore the question of obtaining high quality is of paramount importance.

SOIL MOISTURE BIG FACTOR

The difficulties of the present season were enhanced by the exceedingly low rainfall during the late winter and early spring in many parts of California.

The moisture supply is far different from what is was a year ago, for in some districts we are practically one acre foot of water short of what was available then, even with the late rains.

Soil borings made by members of the Agricultural Extension Service staff for Los Angeles County have shown the soils to be dry, or nearly so, in most instances. Dry soils, at the time of the year when trees are in need of the greatest amounts of soil moisture, are weakening to the trees and will result in injury to the crop and trees if remedial steps are not taken.

IRRIGATION IS REMEDY

Since most of the deciduous acreage of California is equipped for irrigation, it is not an impossible problem for the grower to solve. It merely means the disarranging of the usual program, irrigating at least one month to six weeks sooner, and applying far more water than usually is necessary. The grower should apply enough water to penetrate deeper than the zone area; for most deciduous fruit trees on average soils this means a depth of at least six feet. Such dry soils should have had better than six acre inches for loam and more for heavier types, for this first application.

One irrigation probably will not be sufficient to carry the trees through the harvesting season, and a second should be applied during May for average loams. Some growers are prejudiced against applying water within a two or three weeks' period before the crop is removed on account of danger of splitting and puffing the fruit. Such injury is the result of letting the soil become dry and then irrigating, and there is no danger from applying irrigation water at any time, providing the soil is never allowed to become dry. Canners usually have a provision in their contracts not to irrigate within two weeks of harvest. However, this should not be taken to mean not irrigating at all, but rather irrigating previous to that time.

Soil moisture plays an important part in the functioning of trees, and lack of understanding of this principle has a detrimental effect on the trees. This is reflected not only in the current season's crop, but also in the health of the trees and in succeeding crops.

When trees come out into blossom and leaf in the spring, the energy which makes such growth activity possible comes from starch and sugar stored up the previous year. Vigor depends to a great extent upon the health of the trees the previous year. If there is a shortage of soil moisture, then the root system could not supply the leaves and the tree was lowered in its efficiency. Instead of producing large, healthy fruit buds, it grew small, weak ones, and instead of storing up large quantities of starch and sugar, it held an inadequate supply. Growth also was impaired and the tree greatly weakened. This shortage of soil moisture supply has great detrimental effect upon crop prospects and the health of the trees.

FINANCIAL LOSS THREATENED

Lack of moisture during the current season also prevents fruit from attaining desirable commercial size and quality. Likewise it will mean financial loss to the grower producing such fruit. If the growers do not make up this deficiency of soil moisture, then it can be expected that the fruit will be small, droplets of gum will exude from peaches, greater amounts of gum will exude from trunks and branches and roots will die back to a great extent, and the chances for a good crop next season will be seriously impaired.

The solution is in the hands of the grower. He needs only to use a soil auger and bore into his soil to see the necessity for irrigation staring him in the face. One acre foot of water in at least two applications is the answer.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

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TO SERVE: All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

DO YOU KNOW YOUR TREES PERSONALLY?

"Show me a successful orchardist and I will show you one who actually knows his trees," asserted a prominent horticulturist recently. One is reminded of the old Roman proverb to the effect that "the best fertilizer for the farm is the footprints of the owner." Fruit growers are learning the necessity for systematic and frequent tree inspection. They are learning to keep accurate records of condition and production. To KNOW what a tree is doing instead of simply GUESSING may make the difference between success and failure! Efficiency is the watchword of the hour in fruit production.

WHAT IS A THOROUGHBRED?

The term "Thoroughbred" properly is applied only to horses. It indicates a distinct breed, or, rather, a type made up of several breeds. The thoroughbred horse was produced through crossing on native English running mares, the Darley Arabian, Godolphin Barb and Byerly Turk, and by generations of selection on the race course.

Other animals of pure breeding are termed pure bred, not thoroughbred. The Horse Association of America recently issued an attractive little booklet, entitled "Saddle Horses, Hacks and Hunters," which illustrates the different types of these animals and describes their origin and value. Every horse lover—in fact, every one who wants to be correctly informed on this interesting subject—should secure a copy of the leaflet, "Number 82." Address Horse Association of America, Union Stock Yards, Chicago.

IMPROVING STOCKYARDS PRACTICES

Although the Packers and Stockyards Act is less than two years old, it has, according to leaders of both the livestock and meat industries, resulted in a great deal of good. Abuses have been corrected, friendlier contact has been promoted between producers and dealers, and the business of handling livestock, meat and dairy products has been placed upon a higher plane.

A market supervisor is stationed at 19 shipping centers, including the Los Angeles stockyards, which is the only point in the Pacific West so favored. It is unnecessary to forward complaints to Washington, as the resident supervisors are in a position to handle all such matters right on the ground.

As a sample of good work done, the Livestock Exchange of East St. Louis was ordered to discontinue a boycott against two co-operative livestock buying companies, and a large packing company was prohibited from putting up butter in 15-ounce packages.

FARMERS FORCE LEGISLATION.

"The last Congress passed more laws helpful to agriculture and gave more sympathetic attention to farmers' wants than any other half dozen Congresses," declared Secretary Wallace during his recent visit to the Pacific West. "Agriculture has had its inning at Washington."

Mr. Wallace might have added that much credit is due to the farmers themselves not Congress—for helpful agricultural legislation. For many years American farmers have asked for laws necessary to place them on an equality with other industries. Their requests largely were denied until they organized and went into politics, placing themselves in a position to force compliance with their demands.

While according due credit to our national lawmakers for laws favorable to farmers, the fact should not be lost sight of that not until the congressional head was pilloried upon the "farm bloc" did it respond readily to the demand for agricultural legislation.

MUST THE CITRUS GROWER GAMBLE?

Success in citrus production depends upon three factors: (1) Cultural operations, which the grower may control; (2) inherent qualities of the trees, which cannot be controlled but which can be determined by experiment and analysis; (3) orchard environment, which so varies that every orchardist must reach his own determination. Studies have shown that the average citrus grower is not more than 50 per cent efficient; that on the average grove 15 per cent of the trees are drones or non-producers; and that the ordinary orchard is less than 50 per cent efficient in condition and production.

With the citrus industry expanding rapidly in Florida, South Africa, South America and Australia, marketing problems of California producers are almost certain to become more difficult. In fact, it is only by increasing their efficiency that California citrus growers can hope to hold their leadership, in the opinion of authorities. This may be accomplished by keeping tree records, studying the fertility question, controlling soil moisture, treating trunk and root diseases before they cause serious damage—in fact, by being forehanded in all things. The grower who applies modern methods and makes use of new ideas can face the future with little apprehension. But so rapid is the improvement in cultural practices that he who is content with the old ways is likely to be "caught short" on the "day of reckoning."—R. W. H.

"What's New?"—Keeping Abreast of Agricultural Progress

Raising Red Gravensteins

RED Gravenstein apples are being grown in Washington, where they sell at a premium over the yellow striped strain. Seattle dealers paid as high as $3 a box for brilliantly colored Gravensteins last fall.

Farm Bureau Makes Photoplay

THE American Farm Bureau Federation has gone into the photoplay business, having picturized "The Brown House," by Herbert Quick, who directed the production. The story tells the dramatic struggle of a farm community towards better things, and is designed to show conditions as they exist in rural America and the necessity for agricultural organization.

Testing Seeds for Purity

ALTHOUGH a sample of Red Top grass seed recently tested by the State Department of Agriculture contained only 1.5 per cent of weed seed, the latter numbered 62,000 to the pound and included 18 varieties. This illustrates the importance of testing field seeds for purity, showing that even where the percentage of weed seed is small, the aggregate number of such seeds may be very great, owing to their minute size.

Raisins Remaining Unsold

IT IS estimated that 50,000 tons of unsold raisins will be carried over from the 1922 crop, which totaled 225,000 tons. The Sunmaid Raisin Growers' old contract, which provided for an initial payment of four cents a pound, has been discontinued. An advisory board, consisting of one member from each of the thirty raisin growing districts, is to be elected by the 15,000 members of the organization, the growers in each locality voting for their representative.

Canning Frozen Strawberries

A NEW five-gallon tin container promises to supplant the 50-gallon barrel as a package for frozen berries. The new vessel is enameled on the inside and lacquered on the outside, has soldered seams and a large friction cap. It requires only 24 hours to freeze fruit packed in five-gallon tin cans, compared to three days for barreled fruit.

It is claimed that the berries keep better in the cans, retaining their natural flavor to an unusual degree. Recently J. O. Holt—Eugene, Ore., canner—manufactured first-class fruit syrup from strawberries which had been barreled and frozen last summer.

Great Guernsey Gatherings

PREPARATIONS have been completed for three great gatherings of Guernsey breeders: Oregon City, June 6-7-8; Adohr Stock Farm and Brant Rancho (Los Angeles County), June 16; Puget Sound, July 18-19-20.

The last named meet will be in the form of a cruise around Puget Sound, in a specially chartered steel steamer, with stops at Guernsey dairy farms. At the Adohr stock farm there will be a barbecue lunch at noon and a special dinner and entertainment in the evening. At Oregon City there will be a cattle show and entertainment.

Guernsey breeders are noted for their enterprise and enthusiasm, which insure pleasant and profitable meetings, to which "all lovers of the fawn and white" are invited.

Pass Anti-Filled Milk Law

THE passage of the Voight-Ladd anti-filled milk bill by Congress is considered by American dairymen a great victory for the advocates of pure-food legislation. Prohibitive or restrictive laws against "oiled" milk have been passed by the following States: California, Oregon, Washington, Utah, Colorado, Wisconsin, Ohio, Maryland, New York, New Jersey, Vermont and Florida. Similar legislation is pending in other States.

The Voight-Ladd law prohibits interstate and foreign commerce in filled milk, meaning milk to which any other fat or oil has been added.

In 1920, 86,000,000 pounds of filled milk was manufactured in the United States. A good share of this stuff was worked off onto consumers as real milk, according to Charles W. Holman secretary of the National Milk Producers' Association, just as oleomargarine is palmed off onto consumers for real butter.

Preventing Hog Cholera

"THE California Department of Agriculture will not countenance the hauling of carcasses of hogs, which have died of cholera, to woods or fields, burying them in shallow pits or throwing them into streams," announces Director G. M. Hecke. "Such carcasses must be burned, to prevent spreading the disease, also all litter and refuse in the yards where the animals have died.

"The practices mentioned indicate an utter indifference to the State law and the welfare of other hog owners in the community. Swine raisers, in order to cure hog cholera and prevent the infection of other animals, should bear in mind the following points:

"Early diagnosis is imperative; suspect cholera when the first hog becomes sick; isolate infected animals at once; burn all cholera carcasses immediately; disinfect premises after removal of sick animals by spraying hog houses and fences with a 5 per cent solution of any good coal-tar disinfectant."

Hawaiians Eat Sonoma Cheese

MORE than a ton of Mission cheese, which is manufactured in Sonoma County, is being shipped every week to the Hawaiian Islands, where it finds ready sale. As production increases, California dairymen are preparing to extend their markets to China, where increasing quantities of imported milk are being consumed.—KATHLEEN RODD.

Inspecting Imperial Meats

AS a result of a law recently enacted by the supervisors of Imperial County, all animals slaughtered for meat in that community must be officially inspected, to guard against the transmission of disease and the insanitary handling of flesh foods. Six of the slaughter houses of the county have been provided with inspectors and arrangements are being made to extend this service to the three other Imperial abattoirs.

Are Cows Unprofitable?

ACCORDING to W. M. Regan of the University farm most California cows are unprofitable, producing an average of only 160 pounds of butter per annum. In order to more than pay for her keep, a cow must give enough milk to make at least 225 pounds of butter in 365 days, believes Professor Regan. Breeding experiments are being conducted at Davis to show how better producing cows may be obtained.

Big Boosts for Bossy Cow

THE National Dairy Council now has ninety-two active workers, who are conducting milk campaigns in Philadelphia, Pittsburg, Minneapolis, St. Paul, Columbus, St. Louis and many other cities. They distributed last year over 5,000,000 pieces of literature. The amount of milk per capital used in the United States was increased from 43 to 49 gallons in 1921; butter, 14.7 pounds to 16.1 pounds. Many schools are beginning to serve pupils with milk.

A Hint to Hose Gardeners

"NINETY per cent of the home gardening troubles which are brought to the Los Angeles Farm Adviser's office are the result of poor watering methods," declares W. D. Hodgson. "Ordinary daily sprinklings are usually insufficient for deep rooted plants. Make sure the soil is moist at the depth where root development is greatest. It is not necessary to water such plants every day, or even once a week, provided the soil is thoroughly saturated at sufficient depth."

Negro Farmers Move North

DURING the past 12 months more than 32,000 negro farm laborers have moved to northern States, according to the U. S. Department of Agriculture. From South Carolina 22,750 have gone north, 15,000 from Arkansas and large numbers from other Southern States.

An extensive acreage of farm land has been abandoned as a result of this movement of laborers, which was caused by high industrial wages, unrest among returned negro soldiers, the breakdown of the contract labor system and the boll weevil. The latter made cotton growing unprofitable for many negro farmers.

Stamping Out Bovine TB

THE State Department of Agriculture has examined and tuberculin tested practically all the cattle in Lassen and Modoc Counties, branded what few were found infected with the disease and slaughtered them under official inspection.

"Modoc and Lassen cattlemen have manifested a lively interest in the work of eradicating bovine tuberculosis," says J. P. Iverson, chief of the division of animal husbandry. "They have shown a commendable spirit of co-operation with State and Federal officials, and it will not be long until these counties will be 100 per cent free from this insidious disease, which has proved a ravaging foe to the livestock industry.

"Stockmen in some other California counties are showing a similar interest in the work. During the first three months of the present year, 305 California herds, comprising 35,489 animals, have been TB tested."

Caprification Season Coming

IN Southern California the season for the caprification of Smyrna figs is the last of June and first of July. This operation consists of suspending in the branches of the tree fruit from the Capri fig, which contains a minute wasp, the blastophaga. The latter carries pollen to the Smyrna figs, causing the latter to develop.

The aid of this little insect is necessary, because the opening in the blossom end of the Smyrna fig is so small that ordinary insects cannot enter to carry pollen to the blossoms, which are found on the inside of the fruit.

Owing to the difference in climatic conditions, Southern California fig owners have had trouble in pollenizing their fruit with Capri figs from the central part of the State. The Extension Service has listed local growers of this variety for the convenience of Smyrna producers. The University of California, Berkeley, supplies this information and other facts necessary for the successful production of Smyrna figs.

Arizona Poultry Industry Flourishes

Egg Production Increasing in Great Salt River Valley—Association Reorganized

By JAMES WYNKOOP

FROM one coop of chickens fifty years ago to 350,000 hens today, with a total value, including eggs, of upwards of $2,000,000, is in brief the history of the poultry industry in the Salt River Valley of Arizona.

The first coop was brought to the valley by Lum Gray, one of the first settlers. He came here with his family in the early 70s, at about the time the present city of Phoenix was laid out, and shortly after the first water for irrigation purposes was taken by white men from the Salt River.

This irrigation accomplishment by the noted frontiersman, Jack Swilling, and some 140 associates was so successful as to attract pioneers from every quarter, although the most of them came from California. Lum Gray came with the first of these, with his coop of chickens.

The Indians who populated sparingly the valleys of central Arizona knew nothing of chicken raising and in consequence it remained for the white man to introduce this valuable fowl to them. The Indians, as well as the white settlers, soon became enthusiastic in poultry culture.

It is known that Mr. Gray's single coop developed through careful breeding into quite a large flock and these birds were the beginning of egg production in the fertile valley. Others soon brought in chickens and the poultry business became a settled industry, although on a relatively small scale. Only a few thousand people lived in the valley during the 70s.

FIRST POULTRY SHOW

About twenty years ago the first poultry show was held in the Salt River Valley. The building in which the exhibits were made still stands at the northeast corner of First avenue and Jefferson street, Phoenix. C. B. Wood, former postmaster of Phoenix, was the moving spirit in this show. He was a poultry breeder of unusual accomplishments for that period. Through his efforts the show was a pronounced success. It brought together the best chickens in the valley and induced their owners to take a greater interest in the industry. It also led to larger egg production and increased the number of poultrymen very materially.

On the first State election day, in November, 1911, when Arizona was preparing to change from a territory into a State, the first poultry association was organized. It was known as the Arizona State Poultry Association. This organization was active only upon occasions, and the occasions were rare. It was handicapped for lack of funds, but in a feeble way it existed until seven years ago, when a reorganization was effected and the name changed to the Maricopa County Poultry Association. A. C. Reed, a successful poultryman, was the first president. This organization has been active throughout its existence and has accomplished much. W. S. Fetterly is now president and A. G. Freeland is the secretary.

Among those who were active in the reorganization of the association where Frank Mosshammer, E. T. Hewitt, cashier of the Phoenix National Bank; A. D. Layhe, prominent attorney; Gus Forrester, pioneer poultryman; M. E. Bemis, poultryman, publisher and assistant secretary of the Phoenix Chamber of Commerce; Henry Powers, at present deputy county assessor. Shortly after the reorganization, Ernest R. Hall, former Secretary of State, became an active worker in the association.

From one coop of chickens to 350,000 hens in 50 years is considered quite a record for a new country such as the Salt River Valley, where the main farming interest has been centered on dairying, cattle feeding, and, of more recent years, cotton raising. Within the past three years, however, the poultry business has received its greatest impetus. In that period the number of hens and output increased 30 per cent. The eggs and poultry found ready markets exclusively in Arizona. It is estimated 25,000 cases of eggs are shipped into Arizona from other States annually.

High School Farmers' Day

THE annual "Visiting Day" recently held at the Analy Union High School at Sebastopol was attended by 150 people and was pronounced a great success by those who saw the excellent work being accomplished in agricultural education. The forenoon and half the afternoon were spent at nearby farms, where there were demonstrations in various agricultural operations, judging contests and reports of boys' and girls' club work. Next came a ball game, after which the day ended with a program and chicken supper.

The purpose of this event, which has become quite an important part in the work of the high school—according to Prof. L. Pressley, assistant agricultural teacher—is to stimulate an interest in the study of agriculture in the high school by showing parents and pupils just what is being accomplished in this line.

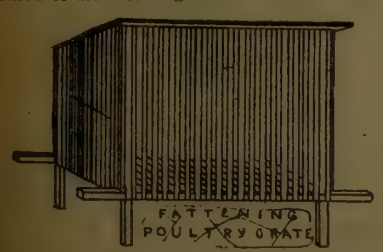
"Agriculture must have an important place in our high school curriculum," declares Superintendent Melrowe Martin. "The Smith-Hughes work in no way interferes with that being carried on by our State Agricultural College, but serves as a preparatory course for those who wish to enter that department of the university. We train every boy who studies agriculture in our school to be a good citizen when he goes out to take his place in the community."

Fattening Crate

MILK-FED chickens that bring high prices are stuffed with fat-producing foods in crates like this to meet the requirements of customers who want good fat chickens and are willing to pay extra for quality.

These crates are made of spindles, round ones for the bottom of the crate and flat strips for the sides.

The bottom spindles are one and one-half inches in diameter. They are made to fit into auger holes at the back



and half auger holes in front to lift out easily for cleaning. The roof may be chicken wire if the crate is kept under cover.

Three feet by four feet is a good size to make these crates, as it is better not to have too many birds together. Also it is necessary to have crates enough to cull out for the purpose of grading to size. Each crate should be comfortably filled; fattening chickens are not supposed to exercise while they are being stuffed for rapid gains.—H. A. SHEARER.

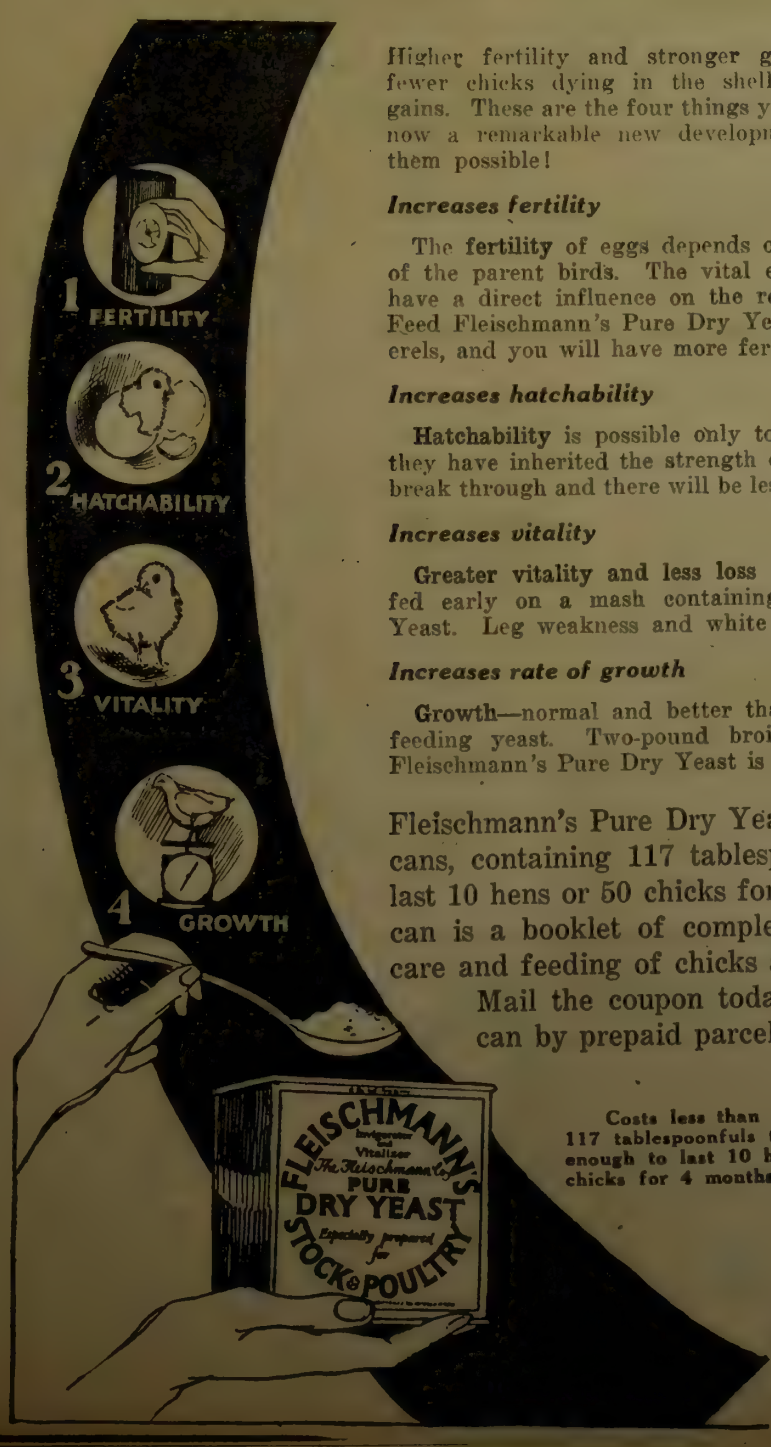
Fastening Hose Couplings

HOSE couplings have an annoying way of slipping out, especially when subjected to great pressure, as in spraying. A cheap, quick and effective method of fastening such couplings is to wind baling wire around the hose outside the coupling and twist the ends together.

In order to wrap and tie the wire sufficiently tight, fasten one end to a post or tree, then wind the wire twice around the hose and roll the latter back and forth while pulling on the other end of the wire. Then, still holding the wire taut, turn the hose end for end. This will twist the ends of the wire together without loosening, something which is very difficult to do in any other way. The long ends of the wire may then be clipped off with a pliers.—O. H. B.

Every poultry raiser wants these 4 results

now you can get them!



Higher fertility and stronger germs—larger hatches with fewer chicks dying in the shell—greater vitality—quicker gains. These are the four things you want in your flock. And now a remarkable new development in feeding is making them possible!

Increases fertility

The **fertility** of eggs depends on the potency and activity of the parent birds. The vital elements contained in yeast have a direct influence on the reproductive organs of fowl. Feed Fleischmann's Pure Dry Yeast to your hens and cockerels, and you will have more fertile eggs in your incubator!

Increases hatchability

Hatchability is possible only to strong embryo chicks. If they have inherited the strength of a yeast-fed hen they will break through and there will be less dying in the shell.

Increases vitality

Greater vitality and less loss are found in young chicks fed early on a mash containing Fleischmann's Pure Dry Yeast. Leg weakness and white diarrhea are prevented.

Increases rate of growth

Growth—normal and better than normal—is the result of feeding yeast. Two-pound broilers in two months when Fleischmann's Pure Dry Yeast is added to the mash.

Fleischmann's Pure Dry Yeast comes in 2½-pound cans, containing 117 tablespoonfuls, or enough to last 10 hens or 50 chicks for 4 months. With each can is a booklet of complete instructions for the care and feeding of chicks and mature birds.

Mail the coupon today for a big 2½-pound can by prepaid parcel post.

Costs less than 2c a tablespoonful. 117 tablespoonfuls to the can—enough to last 10 hens or 50 chicks for 4 months.

The Fleischmann Company, Dept. D-145, 941 Mission St., San Francisco, Cal.

Enclosed find two dollars ($3). Please send me a 2½-pound can of Fleischmann's Pure Dry Yeast by prepaid parcel post.

Name .....

Street and number .....

City ..... State .....

Killed 200 Rats New, Easy Way

Dog, Ferret and Traps Failed. Amazing Virus Killed Them All. Not a Poison.

"I was overrun with rats," writes H. O. Stenfert of Redford, Mich. "Seemed to be several hundred of them. Dog, Ferret and Traps failed. Tried Imperial Virus and was rid of them all in a short time. Have found rat skeletons, large and small, all over the farm."

Killed Gophers Like Magic

"I killed every gopher on a 12-acre field of alfalfa last fall with two bottles of Imperial Virus," writes Chas. Scofield of Masachetah, Mont. "It is all you claim for it."

Rats, Mice, Gophers, in fact all Rodents, greedily eat Imperial Virus on bait. Sets up burning fever. Pests die outside, hunting for water. Harmless to humans, poultry, pets, stock, etc. Endorsed by Farm Bureau Experts and large, nationally known institutions everywhere. Economical to use. Large size trial bottle of this true virus for 50c, or

You Can Get Yours Free

SEND NO MONEY. Write today to Imperial Laboratories, Dept. 1669, Kansas City, Mo., and they will mail you two regular $1 bottles of Imperial Virus (double strength). Pay postman only $1 and a few cents postage when package containing regular $2 quantity arrives. Use one yourself and sell the other to a neighbor, thus getting yours free. Readers risk no money, as Imperial Laboratories are fully responsible and will refund the cost on request any time within 30 days.

When answering advertisements please mention this paper.

Apples Supplant Grain in Yucaipa District

Mountain Valley Farmers Find Fruit More Profitable Than Field Crops

By WILLIAM REYNOLDS BUTLER

FOR nearly fifty years the Yucaipa district produced only grain and hay. During the past fifteen years, however, this fertile valley has undergone a change from a sparsely settled field crop community to an up-and-coming progressive orchard section, with approximately 6000 acres set to orchards, mostly apples.

The Yucaipa Valley lies in the San Bernardino Mountain foothill country at an elevation of 2500 to 3000 feet. "Yucaipa" is an Indian word, meaning "evergreen valley." The typography of the valley is unusual in that it is composed of three distinct benches or tablelands, each with its own type of soil.

A closeup of this new region reveals some interesting facts. The development has not been on the hit or miss order, but has been evolved from a careful study of the district's resources. Those who pioneered in horticultural work needed but to refer to small home orchards around the old ranch houses of the first settlers. Those hardy pioneers planted for home use or for experimental purposes such fruits as figs, apples, olives, cherries, pears, walnuts, apricots, peaches, plums (especially the Magnus Bonum), loquats, oranges and grapes.

APPLE PROVES BEST BET

Planners of the present development checked on the earlier pioneer plantings and decided that the apple was the one best bet for the Yucaipa. Nearly every ranch today has small home plantings of practically all the above named fruits, but commercial production has centered on those varieties of apples for which it was found the valley was best adapted. Later blooming varieties are in the majority, for late spring frosts are not uncommon.

Two-thirds of the acreage planted is owned by nonresidents who had faith in Yucaipa and put up their money to assist in its more intensive development. Some nonresident orchard owners have been operating with tenants or caretakers. Others have been assisted by resident owners of small orchards. No elaborate homes have been built, but rather maximum expenditures have been made in bringing the plantings into profitable bearing. "An orchard will build a fine home, but a big house will not raise an orchard," as one of the practical orchardists sagely observed. Do not think, however, that Yucaipa folks do not live comfortably. They do, but without frills.

Orcharding means watchful waiting and working from planting time to the profitable yielding period. Some Yucaipa folk are so financially situated that they can "carry on" during this trying period without an orchard income, but a large number are not. To study a case of one of the latter class I interviewed F. B. Henney, who lives on his 20-acre apple ranch one and a half miles north of Yucaipa.

FROM BANKING TO FARMING

Henney was formerly in the banking business in Los Angeles. His orchard was planted in 1911 and for nine years he retained his position in the city, devoting his spare time to his Yucaipa apple ranch. Four years ago he enlarged the farm cottage and moved to Yucaipa. Mrs. Henney tried the chicken business and has been very successful. Bees form another profitable side line and are valuable for fruit pollination.

Mr. Henney owns two power spray outfits and in addition to caring for his 20 acre grove does custom work for his neighbors, having about 100 acres of trees under contract. The entire district religiously follows out a definite spraying schedule; one dormant and three summer sprays. The orchards have been kept comparatively free from the usual pests as a result of careful, conscientious work.

As one might expect, knowing how long grain and hay have been hauled from the Yucaipa, the soil needs something to replace the "skimmed plant food cream" which it lost. Both to supply this need and to lighten up a naturally heavy soil, cover crops are grown generally in the Yucaipa. In co-operation with the Extension Service, Henney is conducting a test of melilotus indica as a cover crop and as a mulch to retain moisture.

COVER CROP EXPERIMENT

The seed was planted August 1. An excellent "stand" was secured and the crop came through the winter in good condition. Henney clipped the clover March 12 and then irrigated the ground. He planned to clip the rank growth April 25 and let the crop lay to smother the plants and afford a thick mulch. By this method he hopes to eliminate cultivation. A neighbor, H. Seely, is conducting a similar test with vetch.

Henney has confined his apple plantings to three standard varieties: Rome Beauty, Winesap and Delicious. He has small plantings of pears and cherries. Either long pruning or a slight modification of this system seems to be the rule in caring for these orchards.

Mr. Henney is an active member of the Farm Bureau. In addition to his many other activities he is manager of a local co-operative packing house, where fruit from 100 orchards, with a total area of 1000 acres, is handled.

ENJOYS YUCAIPA SOCIETY

Mrs. Henney confesses that she was rather loath to leave the social life of the city for the hard work and lonely life of the country. At first she made frequent trips back to the city. Later she joined the women's club of Yucaipa. After becoming acquainted with her fine Yucaipa neighbors her trips to the city were less frequent.

She tells of the recent Yucaipa Women's Community House, built at a cost of $15,000. There the social life of Yucaipa centers. Space will not permit of a description of this well-appointed clubhouse. It is one of the "homiest" and most complete clubhouses I have ever seen.

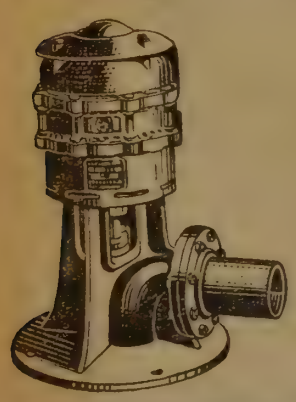
George H. Pendleton, former grain dealer of Chicago, has one of the most extensive orchards in the Yucaipa. It comprises 43 acres set to Winesaps, Winter Pearmains, Delicious and Rome Beauties. His land is rolling, the highest having an elevation of 3140 feet.

The orchard was planted in 1911. The total yield in 1921 was 10,000 boxes and in 1922, 12,000 boxes. The fruit is handled in a packing house in the orchard. Mr. Pendleton ships to a Los Angeles commission house. Prices for 1921 ranged from 88 cents to $2.40, net.

EMPLOYS MODERN METHODS

Mr. Pendleton employs modern methods of cultivation, pruning, spraying, packing and marketing. So insistent has he been on maximum growth of trees that he has spread tons of first cutting alfalfa in the orchard to supply organic matter. He remarked that this poor quality hay, purchased at low cost, was full of fox tail and other weeds, which seeded the orchard to a cover crop. He figured this saved the cost of planting a cover crop and added much organic matter to the soil. Pendleton does not favor a summer cover crop, preferring clean cultivation.

A survey of this new horticultural district reveals some fundamental ground work in intensive orchard practices. Better still, it affords a striking lesson in modern rural community building. Folks in Yucaipa believe in mixing play with work. A democratic spirit is thus fostered and developed and co-operation all along the line effected.



Bean Electric Turbine Pumps

The last word in deep well pump efficiency. Motor and pump built into a single unit. Fewer bearings and less working parts mean low first cost and low cost of upkeep.

No lubrication troubles because there are no under-surface bearings to lubricate. No trouble from sand or grit. No oil in the water to spoil the domestic supply.

Built in all sizes from 6" to 15". Each size delivering the maximum of water at the minimum of cost. Send the coupon.

Bean Spray Pump Co.,
101 W. Julian St., San Jose, Calif.
Please send me full description of the Bean Electric Turbine Pump.
Name .....
Address .....
50-P14

Bean Spray Pump Co.
101 West Julian St.,
SAN JOSE, CALIFORNIA
Eastern Factory:
Lansing, Mich.

Great Plans for Valencia Show

ALL Southern California is to co-operate this year in the presentation of the 1923 California Valencia Orange Show, to be held at Anaheim, May 22-30, inclusive, according to promises of entries and support received from various communities and bigger business interests allied to citrus culture in the Southland. With the founders of the show sponsoring it to the extent of $50,000 the exposition will be bigger and better than ever, according to Herman Stern, executive committee chairman, and the attendance goal has been set at 150,000 persons.

Every industry associated with orange culture and the various communities of Southern California that specialize in the raising of the Valencia fruit will participate in the exposition, which doubtless will be the most pretentious affair of its kind ever staged in Orange County. A mammoth tent, 130 by 250 feet in dimensions, will house the exhibits from these districts and a number of feature displays will lend color and beauty to the exhibition.

Adjoining the citrus display tent will be the industrial and automotive departments which will include the displays of 250 exhibitors. Nearly every car and tractor sold in this State will be represented in the latter division, while but little space remains unsold in the huge industrial tent.

Unusual entertainment features have been provided, according to the management.

Developing Colusa Land

FOUR thousand acres of land in Stony Creek Valley, including the townsite of Stonyford (Colusa County), are being developed by a company headed by L. L. Lowry. Annual alfalfa plantings of 900 acres are to be made and a block of the land set to fruit trees, the remainder being used for grain growing. Fouts Spring, near Stonyford, is also to be developed by Lowry and his associates.—M. L. WILSON.

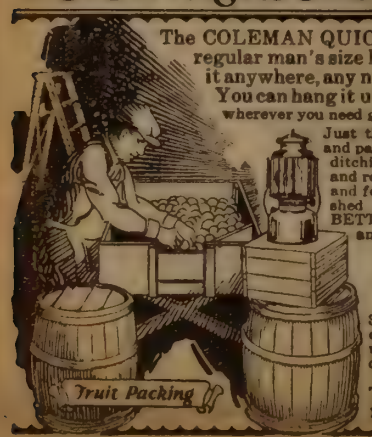
SAVE THE SHEEP MANURE

The sheep corrals of Tehama County are reported to contain a large quantity of valuable manure, which could be used to good advantage by the orchardists of that region. This kind of fertilizer is said to find ready sale in the southern part of the State at a cent a pound.

PLANT OREGON GRAPEVINES

Wasco grape growers have ordered 25,000 vines from an Oregon nursery company to plant next year. A large number of grape cuttings were imported from this State by California vineyardists and planted last spring. The reason for this "bringing coals to Newcastle" is said to be the difficulty of obtaining disease-free grapevines in California.

Here's *Night-time* Daylight!



The COLEMAN QUICK-LITE Lantern is a regular man's size helper. You can carry it anywhere, any night—in any weather. You can hang it up, set it down—take it wherever you need good light and plenty of it.

Just the light for fruit picking and packing; irrigation work and ditching; road grading; building and repair work; for use in barns and feed lots. Use it in your tool shed and garage—anywhere—BETTER LIGHT means EASIER and BETTER WORK.

Coleman Quick-Lite

"The Light of a Thousand Uses"

300 Candle Power. Makes its own gas from common gasoline. Lights with matches. Cost to use less than two cents a night. Sold by 30,000 dealers. If yours can't supply you, write us.

Address Desk OD-98

THE COLEMAN LAMP COMPANY,
120 S. Los Angeles St., LOS ANGELES, CAL.

Population Pushing Dairymen

By O. H. BARNHILL

IT IS true that Los Angeles County dairies are being pushed farther and farther out by enterprising subdividers," admitted E. L. White, Burbank's big dairyman. "Thirty-five years ago there was a dairy at Fifth and Olive street, where the new city library is to be built. Now even my plant, 12 miles out in the country, is threatened by approaching residence districts.

E. L. WHITE

"We dairymen are perfectly willing to move, but where shall we go? Possibly to the Antelope Valley. That is a good alfalfa country, but the cost of irrigation is high. During the summer months there alfalfa must be watered every week, because the very dry air induces excessive evaporation. Here at Burbank we need to irrigate but once a month and have an abundance of water for pumping, the lift being only 14 feet.

"Owens Valley, Inyo County, is another possible refuge for dairymen who are driven out by the rising tide of population. Milk is already shipped from that locality to Los Angeles, a distance of 250 miles. The consumer must pay the freight, which is a considerable item.

SUGGESTS DAIRY DISTRICTS

"The solution of this problem might be found by setting apart certain districts for the exclusive use of dairies and poultry plants. Localities which are least valuable for residential purposes could be chosen. The amount of space needed would not be great, since all the feed consumed could be shipped in from outside points."

Far from discouraging the subdivider, White has turned over to him 40 acres on the Burbank-Lankershim boulevard and contemplates devoting additional acreage to this purpose. Lots are being sold at a price which amounts to $4500 per acre. White's entire 320-acre ranch probably could be sold for $2000 an acre, which is four times what the owner considers it worth for producing dairy feed.

Mr. White was asked for his views regarding bovine tuberculosis and contagious abortion.

SELLS ABORTIVE COWS

"When one of my cows aborts she is consigned to the block. We make no exceptions, considering that it never pays to keep such cows. Their production is cut one-half, which means that the gross returns from one of these animals is reduced from $400 to $200, indicating a loss approximately as large as that sustained by selling the cow to a butcher for $50 and replacing her with one costing $150 to $200.

"The disease is contagious and, therefore, liable to spread to other cows in the same herd. A dairyman who has a much smaller herd than mine, and who tries to cure aborters, last year had 37 cows affected in this manner, while I had only eight.

"I believe the danger from 'T. B.' is overestimated. The difficulty in controlling the disease lies in finding honest, competent vetinarians to test animals. Only 85 per cent efficiency is claimed for such work and it has been proved that venal vetinarians have accepted bribes for passing infected cows.

PASTEURIZING DESTROYS GERMS

"Our milk is all pasteurized at the creamery, thus eliminating danger of infection. We would, however, be willing to have our cows tested, if it were possible to procure cows free from tuberculosis. This is not now possible, because frequently animals carrying 'T. B.' free certificates afterwards are found to be infected with this disease."

Mr. White's cows are kept in roomy 30-cow corrals on a bench slope with a southwest exposure. The enclosures are all connected with lanes leading to the big milk and feed barn, which has thirty stanchions on either side. The space between, from the ground up, is reserved for feed.

As the animals in a corral are released they quietly march to their places in the barn, where two milkers relieve them of their lacteal burden. As they return to their corral, other cows pass through another lane to the barn, the movement of 300 live "milk factories" being regulated like clockwork and almost continuous. The heaviest producers are milked three times a day, the others twice. Thirty-eight men are employed.

PUMP WATER AUTOMATICALLY

Water for drinking and other purposes is supplied by an electrically driven pump, which fills a pressure tank. The motor stops automatically when a pressure of 60 pounds is reached and "kicks in" again when the pressure falls to 30 pounds.

The heifers are pastured about four months of the year on the hills south of the San Fernando Valley. One hundred forty acres of alfalfa land is rented to increase the hay supply. Last year 400 tons of alfalfa hay was bought, the price paid averaging between $15 and $16.

Two wooden silos, one of which is giving way, are to be replaced with brick structures. One of the new silos will hold 280 tons and the other 350. The walls are to be of double layers of brick, encircled with hoops of slender steel rods. The brick silos will cost $1500 each, but will be worth the money, it is believed, because of their substantial and enduring character, and also because they will reduce the fire hazard, which must always be considered in connection with wooden construction.

COOLS MEAT AND MILK

The spacious two-room cement milk house is provided with an ice machine, which is used to cool the milk and farm meat supply. An outside door opens directly into the meat closet, in which a piece of beef has been kept in good condition since last July.

Although a part owner of the Glendale creamery, which handles his milk, Mr. White is a member of the Milk Producers' Association, being interested in securing good prices for his product. During war times the price rose to $1.50 per hundred pounds of milk, for each pound of butterfat. Recently the price has varied from 90 cents to $1, 4 per cent milk now bringing a little less than four cents a pound.

Solano Pump Irrigation Costly

[The following information is given in reply to an inquiry received from C. J. Brockman of San Diego, who read Mr. Gruhlke's irrigation article in a recent issue of ORCHARD and FARM and desired further information regarding the situation in Solano County.—THE EDITOR.]

THERE are 500 or 600 hundred pumping plants near Dixon. They are getting so close together that when a new well is put in it lowers the water table, and consequently the neighbors have to lower their wells in order to get water. This has been going on from year to year, and the water table has descended from 10 feet to 60 or 100, depending upon the location. This greatly increases the cost of pumping.

The larger the pump motor the cheaper the rate of electric current per kilowatt, but the more you must use to get that rate. One would think that a big pump would be cheaper on 40 acres than a small one. That, however, is not the case, as the rates are all figured on a reducing scale, depending on the quantity used per horsepower on the motor. The cheapest plan is to use a smaller motor than one would think advisable, and then to run it continuously night and day.

This gives a small head of water, takes longer to irrigate, and is less efficient in labor, but much more economical in power charges. However, most farmers use large motors and pumps in order to get over the ground quickly; consequently, their power charges are large.

The cost of $20 per acre is the high mark for pumping power. Many plants operate for half that, perhaps. Yet those that get the most alfalfa and are the best farmers are the ones who pay the maximum cost.

There is no comparison between ditch and pump irrigation when it comes to cost. If water can be obtained in sufficient quantity through ditches, this method is in every way preferable.

As to the kinds of pumps used here, all standard makes are in use. The deep-well pumps are the expensive ones. Many who have centrifugal pumps are taking them out and are putting in deep-well pumps as the water table recedes.—R. C. Gruhlke.

A Correction

TYPOGRAPHICAL errors are almost unavoidable in newspaper publishing. However, we regret that in Mr. O. H. Barnhill's article concerning the Petaluma Co-operative Creamery, recently published, it was stated erroneously that several hundred cows furnish milk for the plant, whereas the correct number is 12,000, according to W. B. Hopkins, Manager.

Profits From a Purebred

FIGURING butterfat at 40 cents a pound, the heifers which C. A. Beecher of Stockton raised from 22 cows bred to a purebred bull costing $250 each produced during their first year $413 more than their dams. Counting milk at 18 cents a gallon, the gain was $502. This record proves that the purebred bull more than paid for himself in his progeny's first producing year.

Oldest DE LAVAL SEPARATORS

Average 24 Years of Use

The most remarkable evidence, giving additional proof of the exceptional quality and durability of De Laval Cream Separators, was disclosed by the "Oldest Users Contest" which closed on April 7th. Thousands of old De Laval Separators from all parts of the North American continent were entered. We wish to thank all who participated in this contest for their splendid co-operation in securing the data, which gives an accurate idea of just how long a De Laval will last when properly cared for.

The average life of the "Oldest De Lavals," all of which are still being used, was a little over 24 years. The oldest De Laval entered is 32 years old and is owned by Joseph Larocque of Lancaster, Ont., Canada.

In view of the fact that the average life of cream separators other than De Lavals is about five years, it can readily be seen from such unquestionable proof that the De Laval is not only the best but four to five times cheaper than other cream separators—and, remember, the 1923 De Laval is better than ever, has over four times the capacity of these old machines, is greatly improved, costs less, and will last even longer.

The Prize Winners

States are first listed in alphabetical order, followed by the name of the winner, each of whom has received the prize of $25, their address, and the age of the De Laval which won first place in that state:

Ala., R. M. Davis, Talladega, 24 yrs.; Ariz., L. L. Prouty, Casa Grande, 19 yrs.; Ark., Medlock Dairy Farm, Arkadelphia, 29 yrs.; Cal., B. M. Martin, Newark, 18 yrs.; Colo., M. Miller, Westcliffe, 24 yrs.; Conn., Mrs. E. Lanz, Rockville, 31 yrs.; Del., C. D. Lamborn, Newark, 28 yrs.; Fla., Mrs. S. R. Pyles, Ocala, 12 yrs.; Ga., C. L. Foster, Dalton, 23 yrs.; Ida., P. G. Fairman, Jerome, 20 yrs.; Ill., F. G. Palmer, Yorkville, 28 yrs.; Ind., F. Molter, Lawrenceburg, 28 yrs.; Ia., M. Wollrob, Kalona, 31 yrs.; Kans., D. W. Morrow, Blue Rapids, 30 yrs.; Ky., H. M. O'Nan, Springfield, 27 yrs.; La., P. H. Sitger, New Orleans, 12 yrs.; Me., R. C. Briggs, Freedom, 24 yrs.; Md., Mrs. E. Holbrook, Owings Mills, 24 yrs.; Mass., W. D. Smith, Buckland, 27 yrs.; Mich., F. Downs, Nashville, 24 yrs.; Minn., C. H. Brueshoff, Norwood, 29 yrs.; Miss., W. H. Reese, Sessums, 18 yrs.; Mo., L. M. Lostz, Carl Junction, 23 yrs.; Mont., M. E. Nelson, Flatwillow, 24 yrs.; Neb., I. C. Nichols, Miller, 22 yrs.; Nev., J. Huttman, Fallon, 17 yrs.; N. H., E. L. Jewett, Sullivan, 25 yrs.; N. J., M. B. Astle, Vineland, 30 yrs.; N. M., C. W. Jackard, Hayden, 20 yrs.; N. Y., Mrs. J. P. Morris, Olean, 30 yrs.; N. C., A. B. McAulay, Huntersville, 24 yrs.; N. D., Fred Jenson, Norma, 25 yrs.; Ohio, Lee Nash, Xenia, 29 yrs.; Okla., Lee Armstrong, Seiling, 20 yrs.; Ore., Clinkinbeard Bros., Marshfield, 28 yrs.; Pa., M. Lazar, Sharpsville, 29 yrs.; R. I., A. F. Clark, Westerly, 28 yrs.; S. C., Mrs. J. E. McIver, Darlington, 18 yrs.; S. D., H. Moseman, White Lake, 27 yrs.; Tenn., D. B. Hancock, E. Chattanooga, 24 yrs.; Tex., Mrs. F. P. McClure, San Antonio, 22 yrs.; Utah, F. W. Cowley, Venice, 21 yrs.; Vt., Ashton Soule, St. Albans, 31 yrs.; Va., Mrs. G. Hylton, Floyd, 22 yrs.; Wash., M. Kintschi, Edwall, 23 yrs.; W. Va., J. W. Walker, Wellsburg, 27 yrs.; Wis., H. Petersen, Oconomowoc, 30 yrs.; Wyo., P. Catlin, Wheatland, 20 yrs.; Hawaii, H. Itten, Mt. View, 12 yrs.

The 1923 De Laval is better than ever

As good as these old De Laval Separators are, the 1923 De Laval is still better. Naturally much has been learned in the design and manufacture of cream separators during the past 40 years, and purchasers of present-day machines reap the benefit of such experience.

Twenty-five years ago a De Laval Separator of 250 lbs. capacity per hour cost $125—today one of the largest sized De Lavals with 1000 lbs. or four times the capacity per hour, can be bought for approximately the same amount of money, and one of about the same capacity can be bought for approximately half. In addition it has many improvements in design and construction, is made of better materials, does better work, is easier to handle and care for, and will last even longer. This applies to all sizes of present-day De Lavals.

If you are using an inferior or worn-out separator, you may be wasting enough butter-fat to pay for a new De Laval and not get it. You can buy a De Laval on such easy terms that it will pay for itself. See your De Laval Agent now or write us about getting a new one.

THE DE LAVAL PACIFIC CO.,
61 Beale St.,
San Francisco, Calif.

Sooner or later you will use a De Laval Cream Separator and Milker

FARMERS' CLASSIFIED MARKET PLACE

CLASSIFIED RATES

60 cents a line (average 7 words). For white space, cuts or display type, most is computed according to total space occupied by advertisements.

Advertisements must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

POULTRY

MR. AND MRS. POULTRY FARMER—

The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No secret chicks are hatched from those we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been organized. Prices for May are as follows:

	50	100
White Leghorns	$8.00	$14.50
Rhode Island Reds	9.00	18.00
Barred Plymouth Rocks	9.50	18.50
Anconas	9.00	18.00
Brown Leghorns	8.00	15.00
Buff Orpingtons	9.50	18.50

May we not have your order again this year? Conkey's Buttermilk Starting Food will raise healthy chicks.

ANSEL W. ROBISON,
1196-98 Market St., San Francisco, Calif.

P. S.—WE ARE THE PACIFIC COAST AGENTS FOR BUCKEYE INCUBATORS AND BROODERS. SEND FOR CATALOG.

PROFITABLE POULTRY and Co-Operative Electric Hatcheries. Thousands vigorous chicks, turks every week from 180-290 high egg-egg clear profit producing White, Brown, Buff Leghorns, Barred White Rocks, Reds, Anconas, Minorcas, Wyandottes, Brahmas, Andalusians. This season 25% of customers send repeat orders and many neighbors. "Never saw such vigor, rapid growth, beauty in chicks." Six orders come through him. "Raised every Turk last year, other w turks costing $10 more." "My turks beat everything in valley." It's Turk season! Our stock quality best. Write. Box O. 13, North Fair Oaks, Pasadena, Calif.

BABY CHICKS

The kind that live and thrive, lay and pay. We hatch from pure-bred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 15c; Reds, 19c; Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. McE-CHICK HATCHERIES, Dept. "L," Burbank, Calif. References: State Bank of Burbank.

CERTIFIED White Leghorn quality Chicks at Utility Prices. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $8.50 per 25, $6.50 per 50, $12 per 100. Special prices 500 to 1000 lots. Safe arrival guaranteed. No money in advance, you pay on delivery. Established 1908. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 452 Seventh St., Petaluma, Calif.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

PETALUMA HATCHERY—Established 1902. Choice White Leghorn chicks from selected heavy-laying breeding stock, inspected and accredited by Sonoma County Farm Bureau. Chicks during May and June, $12.50 per 100, $115 per 1000. We positively guarantee safe arrival and full count of good, strong chicks, and no questions asked. L. W. CLARK, Box 155, Petaluma, Calif.

BUFF LEGHORNS ONLY!

MAY AND JUNE HATCHES

a specialty. Tested breeders used. BABY CHICKS, $16 per hundred. Don't buy chicks till you get my free circular. MRS. W. T. WHEELER, Berkeley, Cal., Rt. 1, Box 496-E.

WHITE LEGHORN baby chicks from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: April, $12.50; May and June, $12. Safe arrival full count live, strong chicks guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 476 Sixth St., Petaluma, Calif.

BABY CHICKS from good stock, well mated. REDUCED PRICES April, May and June. White Leghorns, R. I. Reds, Barred Rocks. White Leghorn pullets 8 weeks old and older. Safe arrival guaranteed. The J. H. STUBBE POULTRY RANCH AND HATCHERY, P. O. Box 67-C, Palo Alto, Calif.

HANSON'S Pedigree S. C. White Leghorns. Over 200-egg flock average for 6 years. Over 221-egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalogue. J. A. HANSON, Corvallis, Oregon.

WATCH US GROW—Quality chicks. Booking orders now for the season of 1923. Brown and White Leghorns, Rhode Island Reds, Barred Rocks and Anconas. Order early. Ohlen's Hatchery, Campbell, Calif.

SOMETHING GOOD in WHITE LEGHORN CHIX. Best strains at reasonable prices. All popular varieties. Hatching each week. LINGO-DELL RANCH, Eleventh and Verdugo Sts., Burbank, Calif.

BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

Baby Chicks. Leading varieties, stand. bred, vigorous, heavy laying stock. Lowest prices, best quality; postage paid. Illustrated catalog free. Superior Poultry Co., Windsor, Mo.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

BROWN LEGHORN baby chicks, $16 per 100. Poultry Equipment Co., Burbank, Cal.

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HUSTON FARMS

YOLO COUNTY, CALIFORNIA.

One of the most beautiful ranches in this State, cut into tracts of 10, 20, 30 and 40 acres.

On the highway, nine miles from Davis, three hours by train or auto from San Francisco, 45 minutes from Sacramento.

No finer grape and fruit land in California; soil deep and rich; no hardpan nor alkali.

Bordered by beautiful orchards and vineyards. This land is level as a table top, with excellent irrigation facilities.

Price $250 Per Acre

After the initial payment no other payment on the principal need be made for three years and we can show you how to absolutely make the land pay for itself.

Send for booklet.

Free excursion to farms every Sunday.

An Ideal Dairy

A 400-acre dairy ranch in Contra Costa county, with fine 8-room dwelling, dairy barn with concrete floor for 120 cows, barns for hay and work stock, etc., two 150-ton silos, large milk house, chicken house, bunk house and other buildings; sheds, fine well, pump and tank; Dodge truck; and all other necessary machinery; 6 horses, 2 mules and 150 head of fine Holstein stock; in fact, everything ready to step right into. A real bargain for $75,000 on long and easy term payments.

For full particulars apply
J. J. MacARTHUR, S. F. REP.,
CALIFORNIA SUBDIVISION COMPANY,
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TELEPHONE SUTTER 2367.

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ONE ACRE AND INDEPENDENCE
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The Fine Art of Earning a Comfortable Living on One Acre in California. For those who desire to dwell in sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles. Write for literature.
CHARLES WEEKS, Owensmouth, Calif.

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We are offering a few choice acres of land, planted to figs three miles from the city of Stockton. The ideal location of this property gives it a real estate value far in excess of any other fig land offered the public. Write for our booklet, which will give you full information.

CLARKADOTA FIG PLANTATIONS,
201 Flatiron Building,
San Francisco, Calif.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land, deep, rich, tried soil, complete irrigation with cheap water, thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

FARMS WANTED

WANT to hear from owner having farm for sale. Give particulars and lowest price. JOHN J. BLACK, Chippewa Falls, Wisconsin.

FARM WANTED. Will buy immediately. Send particulars. MR. ADAMS, 1931 Forest St., Paris, Mo.

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

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ORCHARD homes in Paradise. Deep, fertile, irrigated fruit, nut, berry land; delightful, healthful climate, fine water, roads; electricity, telephones; on R. R.; three acres up, raw or improved. Booklet free. Box 02, Publicity Committee, Paradise, California.

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Have your Kodak finishing done by experts.

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Box 116, Los Angeles, Cal.

"We put the snap in snapshots."

Write for our new price list and how to get the free camera.

TANKS, PIPE AND WINDMILLS

REBUILT WINDMILLS, tanks, pumps, cylinders; surface irrigat. pipe all sizes, used, 8, 9 in., cheap. New galv. tanks, all sizes; large used redwood tanks. DEMMITT CO., 120 N. Main. Yards, 816 Yale, Los Angeles.

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SWITCHES, Transformations, Bobs, Curls, Puffs, Braids, Wigs, Toupees, etc., sent on approval, cash or credit. Combings made up. Agents wanted. BROWN & BROWN, 523 E. Broadway, Suite 8, Long Beach, Calif.

TURKEYS, DUCKS AND GEESE

WILD BLOODED TURKEYS—Eggs and stock for sale. Prices right. Small and large orders promptly taken care of. Jenkins, the Veteran, R. 3, Box 148, Burbank.

HART'S MAMMOTH BRONZE TURKEYS and eggs. Albert M. Hart, Clements, Calif.

HELP WANTED—Male

EARN $110 to $250 monthly, expenses paid, as Railway Traffic Inspector. Position guaranteed after 3 months' spare time study or money refunded. Excellent opportunities. Write for free booklet G-91. Stand. Business Training Inst., Buffalo, N. Y.

HELP WANTED—Instruction

HEMSTITCHING, Picoting attachment. Fits any mach. Artistic work. Illustration, descrip. B. Kraff, Box 896-DF, San Fran., Cal.

HOSE FOR SALE

HOSE SPECIAL

A limited supply of fresh "Pacific" 5-ply wrapped hose in 50-ft lengths, with couplings.
½-inch SIZE, $5 PER SECTION
¾-inch SIZE, $6 PER SECTION
ORDER WHILE IT LASTS
PACIFIC PIPE CO.,
203 HOWARD ST., SAN FRANCISCO

PLANTS AND BULBS

GIANT WINTER RHUBARB PLANTS—Now $1 per dozen. F. R. Walker, Puente, Calif.

CIGARS AND TOBACCO

KENTUCKY NATURAL LEAF TOBACCO—Chewing: 5 pounds, $1.75; 10 pounds, $3. Smoking: 5 pounds, $1.25; 10 pounds, $2; 20 pounds, $3.50. Send no money. Pay when received. FARMERS' CO-OPERATIVE TOBACCO UNION, Paducah, Ky.

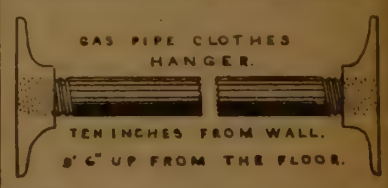
DIRECT FROM FACTORY—5-in. Cuban Twisters, long filler. Sweet as a nut. $4 per 100. Cigar clippings, 60c per lb. FRANK MILLER, 1208 W. 8th st., Los Angeles.

BEES AND HONEY

BEEKEEPING taught. Instruction lessons, dime each. Spencer Apiaries, Sawtelle, Cal.

Gas Pipe Clothes Hanger

THE best and most satisfactory rods for the clothes cupboard are made from gas pipe screwed into pipe flanges and cut to fit between two walls. The size of pipe to use depends upon the length of the rod. Small pipe will do for lengths up to 3 or 4 feet, but for a



clothes hanger rod 6 or 8 feet long, three-fourths inch pipe should be used.

The drawing shows the manner of connecting the flanges to the pipe. The pipe is cut carefuly to length and screwed into the flanges to make a close fit between the two walls. The flanges may or may not have screw holes, but every farmer has the necessary drills and counter sinks to make the holes fit the screws.

The hanger rods should be placed ten inches out from the wall and 5 feet 6 inches up from the floor.—H. A. SHEARER.

Accredited Hatchery Project Succeeds

POULTRYMEN who have been noting the progress of the Petaluma Accredited Hatchery project will be interested in the following report from Manager E. R. Temperli:

The 246,000 hens in Sonoma County which furnish hatching eggs for the 21 accredited hatcheries are under observation by the inspector maintained by the Sonoma County Farm Bureau poultry department. Since the end of the culling season last October, single and double pedigreed cockerels have been installed in the breeding flocks and have been giving most satisfactory service.

During the winter months special attention is given to the removal of colored and brown-breasted birds that appear after the molt; this year the work has been completed a full month in advance of last year, and the work has been done in a much more thorough manner. More than 6370 colored birds were removed from the breeding flocks, and over 2000 additional birds were discarded because they were not up to standard as breeders.

APPLICATIONS REJECTED

Since the hatching season has commenced six men have made application to sell their hatching eggs to Accredited Hatcheries and have been rejected because of their failure to cull their flocks during the past summer and also because their cock birds also lacked the necessary pedigree.

During the past winter there was at least 50 per cent less disease than during last year, which should speak well for the health of the baby chicks produced this season. Chickenpox appeared in only a few breeding flocks, and the sale of hatching eggs was discontinued until these flocks recovered. Most of these flocks were treated with vaccine and the vaccinated birds responded remarkably well to this treatment.

REQUIREMENTS THIS YEAR

The requirements for males for the hatching season beginning November 1, 1923, and ending November 1, 1924, are that the cocks shall be purebred, vigorous and healthy, and shall not be less than eight months of age, and must have a trapnest pedigree on the side of both the dam and sire's dam of 175 eggs or better. The different accredited hatcheries, realizing that they are going to use a large number of cockerels this coming year, already have placed their orders for cockerels throughout the Pacific regions with reliable breeders whose birds will meet the above requirements.

The Sonoma County Farm Bureau Accredited Hatchery project has developed into a real institution. There is close and hearty co-operation among the hatchery men, breeders and inspector. All are working for the betterment of the chick, and the poultrymen, of course, are the ones who are benefited.

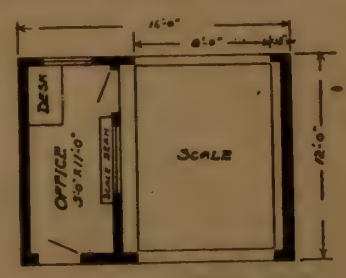
A Practical Scale House and Office

ONE farmer who built a farm office and scale house similar to the one shown in these illustrations had a sign painted and put up over the door which read: "Seldom Inn."

But he weighed what he bought as well as what he sold, so he must have made a good many visits to the scale house, and office. He kept seeds in the little office, and he tested them there for vitality and germination and examined them under the microscope for purity.

This scale house is 16 feet by 12 feet. The shape of the roof strengthens the building. It is difficult to make a light scale house or garage strong enough when both ends are left open. But a lean-to roof will brace it and improve the looks of the building, besides supplying a few conveniences not generally found.

Farm scales are growing larger and better; they had to. The weight of a loaded truck would smash an old-time scale with a timber foundation. In addition to supporting the weight, the



FLOOR PLAN

scale platform must have buffers to absorb the end thrust of stopping the truck at the right spot to be weighed, and to push the inertia into motion again when starting. The uneven weight of the two ends of the scale platform when the truck carries its load on the rear wheels is another kind of strain to be taken into account.

All of this means that the foundation for a farm scale must be made of concrete and made solid. The plan and dimensions will be supplied by the scale makers. These instructions must be followed carefully.

The building must be made to fit the scale, but this is easy after the scale pit is in. Like making doughnuts, you simply take so many holes and put rings of dough around them. Just so you take your scale pit and

build your house over it and allow a little room for the office.

The scale agent puts the scale in place, and the company is responsible for its efficiency.

For weighing livestock it is necessary to have panels made of one by six wooden strips, bolted at the intersections and hooked together at the corners when in use. They may be easily taken apart and hung on hooks against the walls of the building.

These panels should be made to fit into sockets in the floor of the scale weighing platform in order that the weight cannot be affected by the animals crowding against the sides of the enclosure. The weight of these panels is treated as tare.—HERBERT A. SHEARER.

SPERRY SUREGROW
MAKES POULTRY PROFITS GO UP
P.S.—PULLET SCRATCH

Peterman Deals in Queens

Royalty Is Holding Its Own on This San Joaquin County Farm

By TULARE FARMER

THE queen bee raiser is to the average beekeeper what the poultry breeder or the hatchery is to the average egg producer.

But, although the poultryman gets all his flock—usually as baby chicks—from the outside, the beekeeper gets only his queens. If he is contented with common stock he does not even have to do this, but breeding pays with bees as with other creatures, and therefore a few experts specialize on quality that can be passed on to the other fellow. There are said to be only eight or ten beekeepers in the State who make a specialty of queen bees. Something of how it is done ought to interest all progressive farmers.

H. Peterman of Lathrop is one of these specialists. Motorists traveling the main highway toward Tracy pass his door, with a neat stand labeled "The Bee Farm" in front, shading jars and cans of honey.

In reality that honey is not produced on the Peterman place. His bees devote their time to queen rearing, and the honey comes from other beekeepers who purchase queens and pay with honey. Nearly all the automobile traffic from the bay region into San Joaquin Valley passes by Mr. Peterman's door. Honey sales from March 1, 1922, to March 1, 1923, amounted to $3483.50, Mr. Peterman states.

Most of the queens, of course, are sold for cash, and as a matter of fact about two-thirds of his buyers live in other States, or in Canada. Peterman has been in the queen raising business six years and has shipped queens as far as to Vermont, Pennsylvania, Ohio and Canada. During the present season he has shipped to Oregon and Washington in lots of from 100 to 300. He sold and mailed out nearly 2500 laying queens last year.

Mr. Peterman has 260 strong colonies for raising queen cells, and 506 nuclei (or four-frame colonies) where he mates queens. The queens are all Italian and are all descended from two queens purchased in Indiana, one costing $10 and the other $12.

QUEENS CAREFULLY SELECTED

The rule is to go every day to the colonies where the two select queens are kept and to take the newly laid eggs and to put them in the queen cells of the one-frame colonies. They are cared for by the bees here until the queens hatch. The best of the queens hatching in a stand is kept until she is mated and started laying eggs; then she is shipped off to a regular beekeeper, who introduces her safely into a hive.

Thereafter, as long as she lives, all the workers raised in that hive will be of her blood and of that of the drone with which she mated. Since only high-class Italian bees are kept, the presumption is that her mate also is a highly-bred Italian bee.

The orders come, not for one queen, but for from 20 to 200 queens per season to be sent at different times. These queens average in cost about one dollar each, depending upon the number bought, and every good beekeeper plans to see that each queen kept is as well bred as possible.

Color is one measure of merit, particularly as proof of true breeding; gentleness is another—likewise form, quality and energy. Early and late working in the hive is another test, and the ability to store a large quantity of honey. Like begets like, and in this way the beekeepers are taking advantage of the benefits that come from good breeding.

Mr. Peterman and his wife conduct this remunerative business practically without help.

Mr. Peterman at work in his apiary. Last year he bred and sold 2500 queen bees.

Salt for Ailing Cows

WHERE rain is scant and some alkali in the soil is present, cattle do not seem to want salt and most of the horses and cows on this ranch have refused to notice it when put before them. A couple of weeks ago, however, one of the cows suddenly let up in her milk production without any sign of ailing.

The next morning the milk still was nearly gone; she was weak and seemed cold, though she still ate and chewed her cud. As the grass was green, we decided it was not constipation. The Government veterinary book said that reduction in milk flow usually accompanied fever, but that suppression of milk sometimes came without apparent cause.

On a chance I took out half a pound of rock salt. The invalid almost went crazy over it, although the other stock would not look at it. Whatever may have been the reason for the stopping of milk flow, this cow brightened up quickly after eating the salt, and a few days later was as well as ever.

In fact, since recovering she is twice as bright as she was in the first place. For some reason she still craves the salt, but is satisfied with a taste. The others still ignore it.

It is a rather interesting fact that several years ago I had a draft team that had been kept on poor pasture until they were half starved. They were almost crazy for salt until they had fattened up. There seems reason for believing that stock in poor health may need salt, while animals which are in good condition do not require it, and the amount of salt needed depends partly on location and the amount of salt in soil and grass.—TULARE FARMER.

Guineas as Policemen

"THE Guinea fowl is the policeman of the barnyard," says K. J. Murphy of Fuente (Los Angeles County), who maintains a small flock of these interesting fowls, which were hatched under a hen.

"The guineas make a terrific racket whenever any intruder enters the place," says their owner, and they will fight a dog or other invader. They are mighty good to eat, too, the meat having a delicate flavor. I understand there is a growing demand for the fowls from city commission merchants, and I believe more of them could be raised with profit. They are certainly good to have on a general farm, especially where a few chickens are kept some distance from the house or allowed the run of the place. However, I wouldn't advise anyone to keep them in town—unless he wanted to have trouble with the neighbors. They ARE noisy."

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Try this Crushed Strawberry Jam

For this jam it is necessary that *each berry* be broken up. Therefore, crush about 2 quarts ripe berries in separate portions, so that *each berry* is mashed. This allows fruit to quickly absorb the sugar during the short boil. Measure 4 level cups (2 lbs.) crushed berries into large kettle, add 7 level cups (3 lbs.) sugar and mix well. Use hottest fire and stir constantly before and while boiling. *Boil hard* for one full minute, remove from fire and stir in ½ bottle (scant ½ cup) CERTO. From time jam is taken off fire allow to stand not over 5 minutes, *by the clock*, before pouring. In the meantime skim, and stir occasionally to cool *slightly*. Then pour quickly. If in open glasses paraffin at once. If in jars seal at once and invert for 10 minutes to sterilize the tops. Use same recipe for Raspberry, Blackberry or Loganberry jam.

Producing Prize Grapes

Methods of Southern California Growers Who Raise Late Muscats

By GEORGE B. BOWERS

AT THIS season, when many grape growers are looking forward to fall fairs, it will be interesting to review the methods by which Roy C. Beard of Escondido (San Diego County) won first prize on Muscats at the State Fair last year. His achievement came as a distinct surprise to producers all over the State and it is rumored southern growers are out this year to disprove the claim of the great central valleys to supremacy in growing other varieties.

"Grape harvest in the Escondido valley begins in the first week of September," says Beard, "but my bunches exhibited at Berkeley were not picked from the vine until November 14. Their preservation in clusters was made possible by covering the vine in the latter part of August to protect the berries from the sun and the early fall rains.

"This was my first year. I had no specially prepared covers, old raisin trays were used. There does not appear to be any mystery in the method. I covered the vines as soon as I found the berries edible.

"Their large size was due to two reasons—irrigation and continued growth permitted by the protection from the ripening influence of the sun. Muscat grapes exposed to the sun after ripening grow yellowish and then become raisins. My Muscats retained their bloom and looked like those of September. I believe that I might have had better results had I exercised greater care and chosen a more suitable covering.

BELIEVES IN IRRIGATION

"Grape growers of Escondido are not accustomed to irrigation. My grapes were irrigated several times during the growing season. I believe irrigation highly profitable and plan to irrigate my entire crop this year."

A discussion of Mr. Beard's success brought out the fact that in the sheltered Poway Valley, south of Escondido, there is a grower, O. H. Nelson, who specializes in late Muscats. It was from him that additional data were sought. He seemed surprised that his vineyard should attract attention. He, too, disclaimed all knowledge of any secret information and methods.

"It is all very simple," he said. "Just as soon as the Muscat berries contain enough sugar for raisin making, cover the vines with raisin trays. I figure that it cost me about $40 per acre to set the coverings properly."

Mr. Nelson also irrigates when he considers the natural moisture supply inadequate.

Nelson has specialized in late Muscats since 1890. He has had several failures. Once the berries were too green; they wilted and molded. Another time they were too ripe. A poor quality of raisins resulted.

He called attention to the precaution necessary to prevent the covering from touching the bunches, both heat and pressure being detrimental. Other rules to be observed are that the roof must be waterproof and wide enough to prevent wetting under the vines. The openings were to the east and west, toward the prevailing wind, so as to permit the proper circulation of air under the shelter. Once covered the vine should not be disturbed until the fruit is desired for the market.

With proper care in covering the fruit will stand three inches of rain without injury. Mr. Nelson's crop picked on November 28 had gone through both rain and frost.

ENORMOUS PROFITS CITED

Do late grapes pay? It is a well-known fact that Muscats do not prove profitable in cold storage, therefore fresh fruit disappears from the market early. Here are actual figures:

A count of the Poway vineyard showed 307 vines per acre, said to be 15 years old. Each vine averaged 47 pounds of marketable fruit, making a total of 14,429 pounds per acre. Grapes sold at wholesale for 7 cents yielded $1010.03. The best early market offered $250 per acre. After adding $40 for covering, there was still $720.53 extra profit.

This year it is believed more late Muscats will be produced for the trade.

Agricultural Credits

(Continued from Page 3)

much should not be expected immediately from the Intermediate Credit Banks. Business judgment would dictate that they proceed with care and establish themselves in a way that will assure the confidence of the investing public. The very fact that the banks are organized and ready for business may have a beneficial effect that will be reflected in the service and accommodations other banks may render farmers.

Those administering the Intermediate Credit Banks desire that both farmer and banker thoroughly understand what credit banks can do and what they cannot do under the law. In that way will they be able to render maximum service.

NATIONAL CREDIT CORPORATIONS

Another important part of the agricultural credits act of 1923 provides for the organization of corporations to be known as national agricultural credit corporations. These corporations will be chartered by and be under the supervision of the Comptroller of the Currency. They will be privately owned—no Government ownership whatever. Under certain regulations banks may become stockholders in these corporations.

These corporations may loan direct to individuals or corporations on paper secured by warehouse receipts covering agricultural products or chattel mortgage on livestock. They will eventually, it is believed, place the livestock loan business on a much higher basis than it is at present. With these corporations examined and supervised by the same authority administering the national bank act and the livestock inspected by inspectors licensed by the Department of Agriculture cattle loan paper should find a wider market.

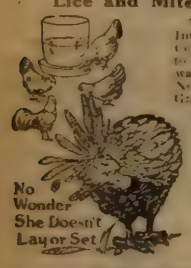
It would seem that nothing has been left undone by Congress to provide ways and means of getting the farmer into debt. It is up to all of us to co-operate in such a way as to make these new agencies helpful to the farmer and not injurious, as they might be without proper administration.

New Way to Rid Poultry of Lice

Rev. G. R. Mente Tells of Amazing Discovery Which Keeps Hens and Chicks Free From All Vermin

"I have used your remarkable Lice and Mite Remedy with fine results," writes Rev. G. R. Mente, Methodist Parsonage, New Washington, Ohio. "It has put a stop to the poultry losses in this community. You are a great benefactor to poultry raisers."

Lice and Mites Go Like Magic



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SEND NO MONEY. Just your name and address to Imperial Laboratories, Dept. 7289, Kansas City, Mo., and they will send you by return mail two regular $1 bottles of Imperial Lice and Mite Remedy (double strength). When the package containing the regular $2 quantity arrives, pay the postman only $1 and a few cents postage. Use one yourself to rid your own flock of these pests, and sell the other to a neighbor thus getting yours free. Or, a large size Trial Bottle for only 50c.

If you have a large flock, or have neighbors who wish to go in with you, this Special Introductory Offer applies on 4 of the regular $1 size bottles, at an additional saving. A large size Trial Package of Imperial White Diarrhea Tablets included free. Just also if you want the regular $4 quantity for only $1.75. Readers risk no money, as Imperial Laboratories are fully responsible and nationally known distributers of poultry remedies. They will refund the cost on any of the above quantities ordered, promptly on request, any time within 30 days.

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How Shall the Gardener Be Paid?

HERE is a problem that vexes many city property owners and suburbanites: Shall the caretaker be paid by the month or by the hour? I believe in the hourly basis.

Many home owners who take pride in their grounds employ gardeners by the week, month or year and believe they are saving money. As a matter of fact, this may be the most expensive deal. In the case of part time employment, it encourages the practice of contracting to care for a large number of places, with the result that all are more or less neglected.

Furthermore, the gardener who is expected to put in a certain number of hours each day, week or month, is likely to loiter when there is little to do, in order to fill in the time. But when the busy season arrives, or there is pruning and spraying to be done, he may not be available for overtime work.

Other problems are involved when a gardener gives all his time to one place. Very often such a man on fixed salary gets into a rut and loses his sense of perspective. He has no opportunity to make comparisons with other places. He may grow slovenly, "puttery" and narrow. Such men enjoy the confidence of their busy employers until, perhaps, an "outsider" is called in to do some pruning, fertilizing or spraying; then their shortcomings are made apparent both to themselves and to the owners.

In and about Los Angeles especially there is a growing tendency to employ a gardener by the hour for ordinary work about the place, leaving the tasks requiring technical knowledge and experience to "specialists," who know their business and waste no time.—E. S. CALLAWAY.

Summer Pruning

(Continued from Page 2)

shoot, which is usually termed a water sprout, has attained a length of six inches or thereabouts, in the spring, it should be pinched back to a length of three or four inches.

Soon it will start again, and after the growth has attained a length of 8 or 10 inches, it should again be pinched back to 5 or 6 inches. Again it will grow out for a third time, and should be pinched back so that a spur 8 to 10 inches long will be the result at the end of the season. Such spurs may be branched more or less and fruit bearing often takes place the first season after their formation.

This effect cannot be satisfactorily attained by dormant pruning; that is to say, the water sprout, if allowed to grow, and then cut back to a length of 8 or 10 inches while the tree is dormant, will not bear fruit until some years later if it lives at all. Very often such sprouts, being soft, die from excessive evaporation.

Summer pruning, if done with care, may be very beneficial, but the writer wishes again to caution against any system which will result in a heavy loss of the best foliage that is found on a tree during the growing season.

Potato Queen

MRS. CARL NEILSEN, Sonoma County potato producer, has been pronounced by Eugene Grubb, California's potato expert, to be the best potato grower he has even known, which is saying a good deal.

The Neilsen ranch produces annually 23,000 bags of potatoes, most of which are sold for seed at attractive prices. Yields of 200 sacks per acre are secured.

Mr. and Mrs. Neilsen, who have been growing potatoes for ten years, introduced the British Queen variety into California. They have learned the importance of clean soil and say it is useless to try to grow first class potatoes on lupine-infested land. They sold their crop early this year, before outside shipments glutted the market.

A grading machine sorts spuds according to weight, turning out 300 to 400 sacks a day, with the help of three men, and has proved a great labor saver.—KATHLEEN RODD.

GOAT CREAM—$1 A POUND

Goat cream brings $1 a pound in Portland, goat's milk, 40 cents. The supply is said to be insufficient to supply the demand.

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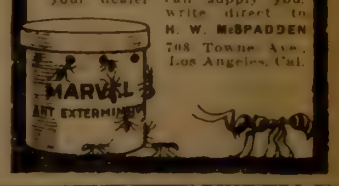

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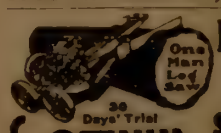

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How a Doctor Made a Farmer of a Lawyer

And Now Everybody's Happy

THAT ill-health may be a stepping stone to success is strikingly illustrated by the experience of Fred W. Kelsey. A supposedly discouraging edict of the family physician led not only to the better health, but to improved financial condition as well. Here's the simple story—just facts and no frills. —*The Editor.*

By ALBERT J. MASON

THIS doctor made a farmer of Fred Kelsey of El Monte (Los Angeles County), and now the former patient is mighty glad of it.

Kelsey, a six-year graduate of an Eastern university and law college, broke down under the strain of indoor work and a heavy practice. At the age of 45 he bowed to the medical edict, closed his office, disposed of his city property and moved to a five-acre "ranch," suburban to Los Angeles.

This was less than four years ago, and at that time the erstwhile attorney didn't know much about local agricultural conditions. True, he had lived upon a farm in his youth and had studied many questions relating to agriculture in the East, but his years of legal practice had robbed him of contact with the soil.

Fortunately, though, he approached his problems with an open mind. One of his first calls took him to the farm adviser's office, where he absorbed all the suggestions advanced, and unlike many who have achieved less conspicuous success, acted upon most of them.

He was advised to grow specialties which would command a high market price and at least one of which would produce almost immediate returns. He was told it would be unwise to put all his eggs in one basket (this merely confirming his own belief). He was directed to experienced farmers who had made a success of intensive farming in the district which he chose for his home.

After due observation and deduction, Mr. Kelsey decided to plant Kadota figs, Concord grapes and rhubarb—rather an unusual combination, but we shall see how successful!

This decision reached, he was relieved of much mental uncertainty. But his physical troubles were not over. In fact, no sooner was the new project under way than he was ordered to bed, where he remained practically helpless for several months.

DEVELOPING THE LITTLE FARM

This is where Mrs. Kelsey properly enters the present story, for although she had been his inspiration during many other crises, she now took the reins into her capable hands, and despite the fact that she was city-bred, and without experience in farming, undertook the planting of the first crop.

Under her direction, more than 2000 rhubarb cuttings were set out. She planned the bungalow home and superintended its construction; she supervised the planting of the shrubbery, family orchard, and flowers which now adorn the attractive country place. From his sick-bed Mr. Kelsey offered advice and encouragement, but even his knowledge had been gained largely by study and brief observation.

"That was a bad year," he admitted recently, with reminiscent smile. "But we weren't afraid to ask questions, nor to seek advice. And we were determined to see our gamble through.

"Finally, however, when we were ready to cash in on our investment, and to market our first cutting of rhubarb, we received what seemed a discouraging blow. The commission men almost refused to handle our product, saying its quality was so poor as to make it practically unmarketable."

How this situation was met makes an interesting chapter in our little story. Mr. Kelsey realized that the deficiency was due to the condition of his soil. It had been leased for years to truck gardeners, who had depleted its fertility. Having gone this far, however, he decided to take the final plunge.

"There is only one thing to do," he told his wife, "and that is to fertilize." Whereupon they reached an important decision. Although they were operating partly upon borrowed money, they purchased $1000 worth of barnyard manure, which was applied to the land in time to improve the rhubarb that same season. As a result they sold more than $3800 worth, and made their first start towards agricultural success. Later crops brought as much or more through the sale of roots for propagation.

The next step was to set out fig trees. Kadotas were chosen because of the belief that they were best suited to local conditions, and would most quickly yield a valuable cash crop for fresh marketing. The trees were set 15 feet apart in rows 30 feet apart, and the rhubarb was maintained as an intercrop.

NURSERY BUSINESS DEVELOPS

By now Mr. Kelsey's health was so improved by the rest and fresh air that he was able to go ahead with his development plans. During the second year he began to see the opportunities for selling nursery stock, and because of the fine production and good health of his rhubarb plants was successful in marketing large quantities of root divisions. Last year he sold more than 40,000 cuttings from his own plants, at an average price of $65 a thousand.

This development suggested the sale of young fig trees. Cuttings from his own trees were set out in nursery rows, and within two years more than 10,000 little fig trees had been disposed of at good prices.

With returning health and financial success came other events crowding fast. Soon one-half of the five-acre place was sold for more than the original cost of the entire little farm. Rapid development of adjoining acreage, and the establishment of a business center on the boulevard nearby, suggested the possibilities for a little real estate business "on the side." This grew so rapidly that a company was formed and an office opened about two blocks from the home. His legal experience proved a valuable asset to Kelsey in this business.

Now, after less than four years in his new environment, Fred Kelsey feels he has good reason to thank the doctors who ordered him out into the open. It would be hard to convince any casual acquaintance that he had ever been ill, and as for financial returns——

"I see great possibilities ahead both in real estate development and in the nursery business," says the former professional city man. "But what interests me most is the production of profitable crops upon this high-priced land. I am convinced that for this locality, Kadota figs and Concord grapes are the best money makers. It has proved rather cold here for the rhubarb, and, although it has been profitable, I lost a large crop last year by frost. Hereafter, in growing rhubarb, I shall seek a warmer location."

GRAPES AS INTERCROP

The rhubarb, formerly grown between rows of fig trees, has been supplanted by grapes, set 8 feet apart in rows 10 feet apart.

"I found," says Kelsey, "that although the rhubarb did very well as an intercrop while the trees were small, after the third year, there was conflict in irrigation. The rhubarb needed water in the fall, just at the time when it should be withheld from the trees to encourage them to become dormant.

"I feel sure, however, that I have the right combination in the figs and grapes. My neighbor on the south has realized about $1000 an acre from his three acres of Concords, and finds a regular and insistent demand for this fruit.

"As for the figs, one five-year-old tree near here yielded last year more than $15 worth of fruit, and I am figuring on at least $10 a tree from my 170 trees during their fourth year. This, I feel, is a conservative estimate, considering the yields already secured and the wonderful development of the young trees.

"I believe it is possible to realize a net profit of $2000 an acre or more from this combination after the vines and trees are in full bearing, and thus to make a good living upon a very small acreage of high-priced land."

No, Mr. Kelsey isn't yearning to return to his city home and law practice; and as for his wife: "I came out here with some misgivings," she confessed, "and primarily, of course, for my husband's health. Now I feel that our apparent misfortune was in reality a stroke of good luck. I find so much pleasure in seeing things grow." She looked up at the pretty climbing rose over the doorway of her bungalow home and took a deep breath of the clean, cool country air. "In fact, do you know, I almost feel strange when I visit the city!"

Top, Fred Kelsey in his fig orchard. Above, Mr. and Mrs. Kelsey before their bungalow home.

Concord grapes and rhubarb pay big profits.

Hard Work Wins Reward in State Land Colony

THE optimistic subdivider and developer of California's agricultural lands envisions a prosperous empire composed of forty-acre irrigated farms. The realization of this dream involves the solution of several knotty problems.

Capital is necessary—but how much? Just what kind of farming will succeed on small areas? How long does it take to get onto "easy street"?

The best way to judge what can be done is by noting what has been accomplished. H. A. Rodney arrived at the Durham (Butte County) State Land Settlement four years ago, with the avowed intention of transforming 40 acres of irrigated alfalfa land into a profitable farm.

He had $5000 worth of capital, consisting of cash, livestock and farming equipment. In addition, he was possessed of successful agricultural experience and a determination to succeed, regardless of cost, an ambition which was fully shared by his capable wife.

DECIDES ON DAIRYING

The newcomer decided to specialize in dairying. He knew this branch of farming meant hard, dirty work seven days in the week, 52 weeks in the year, but he was also aware that it meant an assured monthly income right from the start and that dairying involves less risk than almost any other kind of agriculture.

The land was priced at $250 per acre —$10,000 for 40 acres. The State required a cash payment of only $850 and subsequent yearly payments of similar size.

"No, that didn't make a very big hole in our capital," admitted Rodney, "but think of the other things besides land we needed to make our farming project a 'going' concern: buildings, livestock, machinery, fencing, feed and other things too numerous to mention.

"Our dwelling house cost $1800; one barn $500 and another $1300; three horses and implements, $1000; fencing, $250; silo, $675; total, $5520. This does not include our 'string' of milk cows, feed, household goods and many other things needed to put our dairy farm into operation. We managed, however, to get along at first with what we could obtain by using cash and credit to the best advantage, afterwards paying out as best we could."

SILO SOLVES FEED PROBLEM

The new silo was the cornerstone upon which Rodney built his agricultural edifice. It solved the feed problem by converting green corn into palatable and nutritious provender, which served as a necessary supplementary cow feed, alfalfa being the main stay.

An ordinary redwood silo, 36 by 12 feet, would have cost $922, according to figures obtained at that time, but a more substantial and enduring one was constructed of concrete, reinforced with steel, for $675. It holds 100 tons of "corn kraut," a very satisfactory filler for bovine paunches.

"Rodney fills his 100-ton silo with a five-acre corn crop," says George Kreutzer, superintendent of the colony, who has taken a keen interest in the operations of this hard-working colonist. "The cost of production is only $3.45 per ton, which includes interest on land, taxes, irrigation water, plowing, seeding, cultivation, harvesting, hauling and putting into the silo—everything except interest on the silo.

"Without silage, cows require 30 pounds of hay per day. By feeding 30 to 40 pounds of silage daily, the allowance of hay may be cut in half, while the cows will have better health and give more milk than when fed an exclusive diet of dry roughage."

ALFALFA YIELDS WELL

Alfalfa is cut five times a year, yielding six to ten tons per acre. Last year it was valued at $12 in the field and $15 in the barn.

Irrigation water has cost only 60 to 79 cents per acre for each irrigation. A well 27 feet deep supplies water for animals and domestic use, also the dairy. A pumping plant was installed at a cost of $250 and a 16,000-gallon concrete tank built for $50.

As many as twenty cows have been milked at one time and their milk sold for $300 to $400 per month. Five dollar-a-day cows in February were producing a monthly income of $150.

The milk is sold co-operatively in Chico, eight miles distant, and at the time mentioned was netting producers 20 cents a gallon. It is first cooled with water dripping onto the container from an overhead trough and then taken to the community refrigerator, described in a recent issue of ORCHARD and FARM.

"We are replacing our grade cows with purebred Holsteins," explained Rodney, "because the latter are so much more profitable. Take the calves, for example: A grade or scrub dairy calf a few days old is worth only $2 for veal. I tried keeping one a couple of months and found it drank in that time $19 worth of milk and brought only $13 on the block. A purebred calf will sell for $50."

A large number of grades were disposed of last year. One of them brought $175, which shows they were pretty high grades.

The Rodney herd now consists of ten purebred Holstein cows, six grades, a herd sire, four bull calves and two heifers. The bull, Prince Alcartra Korndyke VI, is a grandson of the famous Tilly and cost $500. Bonita Hartog Goben of Glen Era II, is one of the best cows and was giving 70 pounds of milk per day in February. Poland China hogs play a profitable second fiddle to the cows.

FIGURING THE PROFIT

The cattle are valued at $5000, the cost price; improvements and other property, $7000; equity in land, $3500; total assets, $15,500.

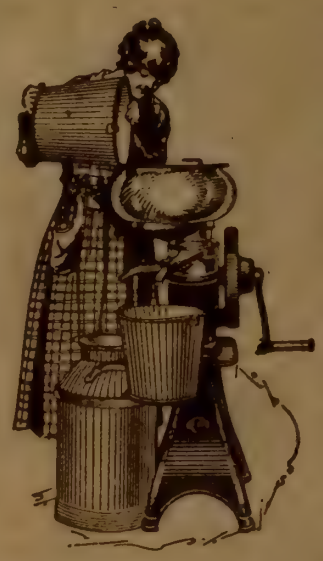
Subtracting $2500 debts leaves $13,000 net worth, which is $8000 more than the $5000 with which operations were begun four years ago, indicating that this settler has made a living and $2000 a year over, on an average.

"Have we worked hard? I'll say we have! My wife and I have been on the job, night and day, ever since we came here four years ago. My wife has dressed like a man and worked like one, wading through mud and manure to help milk and care for the cows. My boy here used to carry the water by hand up that ladder to fill the trough for cooling milk, before we could afford to put in the pump.

"It has been a long, hard climb, but we feel that we are nearing the top of the grade and can afford to take things a little easier. We are getting a foothold in the purebred stock business, which we know from experience can be made profitable to both buyer and seller."

McCormick-Deering Primrose
BALL-BEARING
Cream Separators

PRIMROSE Cream Separators have been making a good name for themselves in all the dairying sections of the country. Their good work is usually taken for granted, but if you will turn in wherever you see the sign "Primrose Cream Separator Used on This Farm," and make inquiries, you will find liberal praise for the Primrose. Everywhere is proof of close skimming, long wear, and easy operation. Read this evidence:



Mr. C. W. Coon, Colesburg, Ia., Feb. 26, 1923.
McCormick-Deering Dealer, Colesburg, Ia.

Dear Sir:—You will no doubt be interested in knowing about the Primrose Cream Separator which you sold me 5 years ago and is today giving such splendid satisfaction.

I just returned from the Colesburg creamery and was told that my cream test was the highest in a year's average over the 300 other patrons bringing their cream to this station. The cream test averaged 44% during the year 1922 which is 3% higher than the next highest average test.

At the same time our skimmilk test was less than 1-100 of 1%, so we were sure that the Primrose was getting all the cream.

The repair expense on this Primrose separator has been only $1.50. Anybody looking for a close-skimming, economical cream separator does well to buy a Primrose—for it's a machine that can't be beat. Yours very truly, [Signed] J. W. Platt & Son.

[At Custer, Michigan recently the dealer held a Primrose Service Day and had a factory expert on hand to give whatever help might be needed. Of 200 Primroses sold locally in the past ten years, only 11 were brought in needing repairs or adjustment. Of this number the biggest repair bill was 89 cents. Such a record speaks for itself.]

THAT is the sort of work the Primrose has been doing for farmers. See the note at left also. Now, with ball bearings and other improvements, the McCormick-Deering Primrose Cream Separator is all the more qualified to save cream and money and time for new owners. Made in 5 sizes: hand and power operated. The McCormick-Deering dealer will show you this ball-bearing machine.

INTERNATIONAL HARVESTER COMPANY
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606 So. Michigan Ave. Chicago, Ill.

ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

MAY 27, 1923

How Halford Makes Money Raising Ducks

By ALBERT J. MASON

HARRY HALFORD likes ducks. His success is sufficient indication of this fact, not to mention the way he has of opening the incubator door and "talking" to the little fellows. He specializes in White Pekins.

Halford's suburban duck farm, at Inglewood (Los Angeles County), where he maintains an average of 1000 breeding birds, was the outgrowth of an idea that came to him three years ago while he was engaged in the feed business. Dealing almost daily with poultrymen, he became interested in their problems, and having a natural liking for ducks, gave special attention to the feeding of these fowls.

"The way to make money on market or 'green' ducks is to fatten them quickly on cheap feed," says Halford. And here is the formula he uses:

MASH—One gallon rolled barley, 1½ gallons bran, ½ gallon feed meal. Add beef scrap to the amount of one-fifth the total bulk, cotton seed meal to the amount of one-tenth, and a little charcoal and salt. Some sifted sand is included in the mash for both young and old ducks. This mixture is fed "crumbly-wet," twice daily—all the ducks will clean up.

Many duck raisers assert rolled barley is not a good feed. Halford maintains it is one of the best. So there you are!

Green barley is fed every day at noon, his experience having shown the vitality and prolificacy of the breeding stock are improved thereby.

The ducks are maintained in rather large pens, with open-front sheds for shelter, and have access for a short time once or twice each day to a small cement pond.

The market stuff is sold at 10 to 12 weeks of age, the local demand coming largely from the Oriental races and the Jewish people.

Other sources of income from the Halford duck farm are baby ducks, sold like baby chicks, eggs both for setting and for market, and mature birds sold as breeding stock. A special demand for the baby ducks develops each year at Easter, thousands being killed for stuffing. These bring from 20 to 35 cents each.

Many a novice, Halford says, makes the mistake of starting with baby ducks from eggs of immature fowls. Although the Pekin is precocious, and will breed before the end of the first year, 2-year-olds are more desirable for the production of hatching eggs. Ducklings from the eggs of younger fowls frequently are weal and stunted and subject to disease and heavy loss, asserts Halford.

The average duck of this breed will lay about 160 eggs in a season. As a rule they lay 30 eggs and then rest a few days, laying another 30, and so on. Five of the older ducks on the Halford place last year laid 196 eggs each, and 93 young ducks laid a total of 16,000 eggs.

"How would you advise a novice to start in the business?" Halford was asked.

"Probably the best and cheapest way is to buy good baby ducks," was the reply. "But it is necessary to get good ones and take care of them. I sold 1500 last year to one man, who hauled them nearly 40 miles in the hot sun and then turned them out in the open, with no shade or water. Naturally he lost most of them. Although the little fellows are hardier than baby chicks, they must have shade and water and must be gradually accustomed to new feed and environment.

"Once well started, they grow very rapidly, and there is very little loss from disease. They are not as clean as chickens, however, and if mud puddles are available, will spend much of their time in the dirty water. They should not be kept in the same yard as chickens, either."

Halford believes water for bathing is desirable, but has only a small cement pond and does not allow the ducks free access to it. By a system of movable gates or panels he allows the fowls in different pens to enter the pond, and it is his plan to give each duck an opportunity to swim from one to three times a day, according to the temperature. On hot days, they require more water. Fresh water for drinking is provided at all times, and the vessels are cleaned and sterilized regularly. The pens and shelters also are kept very clean and are disinfected frequently.

Halford's pens are fenced with 24-inch wire, but he states he would use higher fences in equipping another plant. Not long ago the place was raided by a dog which killed several of the ducks and so frightened the rest that many of them would not eat for three days. As this incident occurred during the laying season, serious interference with production and consequent additional heavy loss resulted.

Harry Halford and one of his big Pekin drakes. Above—Glimpses of the flock.

GUARD AGAINST DOGS

"The duck," says the Inglewood man, "is naturally very timid, nervous and excitable. The least noise at night sometimes frightens them so that they stampede into a corner of the shed and set up a terrific quacking. We keep a lighted lantern hanging in their quarters at night just to reassure them."

"What do you think of other breeds," asked the interviewer.

"Well," laughed Halford, "probably I am prejudiced in favor of these giant-type Pekins, but that really is the only breed to raise for market. The Muscovy, particularly the quackless strain, is becoming more popular, especially in cities where noise would be undesirable. But often it is impossible to sell Muscovies on the market. Their color is against them and they are so disagreeable to handle the commission men don't like to touch them. They have mean dispositions and will scratch like a cat. The Indian Runners are excellent layers, but not as popular for meat production, and although there is increasing demand for duck eggs, presumably for baking, only a few California growers make a specialty of egg production."

"Now, how about location? What do you consider the best situation for successful duck raising?"

"Well," he replied, "we must remember that the duck is a water fowl. Ducks seem to do best in cool, foggy districts. I would not recommend that anyone try to raise ducks on a large scale in the hot interior valleys. I think they are most profitable here in California in what you might call a half-way location; that is, not right on the ocean, where they are exposed to the salt air, nor yet far enough inland to be hot and dry."

As for the general market demand, Halford says it is very uncertain. The best returns come around Easter, when both baby and green ducks are wanted. There is a stiffening of prices also during the winter holidays, although at this season large numbers of dressed and live, mature fowls are shipped in from the Middle West.

"The discouraging factor here," Halford points out, "is the itinerant buyer who travels about through the suburbs and farming (Continued on Page 10)

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
MAY 27, 1923

Is Farming Still the World's Greatest Gamble?

What Progress Has Been Made in Reducing Producers' Risk? Farm Management Specialist Points Out Pitfalls and Remedies

By WM. REYNOLDS BUTLER

HOW often the average city dweller uses the stock expression, "the independent farmer." To all such the producer flings back: "Farming is the biggest gamble in the world. Compared to the advocates of Uncle Sam's $80,000,000,000 agricultural industry, Monte Carlo patrons, board of trade manipulators, and race track sports are mere tin horns and pikers."

WILLIAM R. BUTLER

Here are the "slick" little playfellows sitting in the game with John Farmer, the average American food producer: "Foxy" Weather, "Slipshod" Methods, "Pesky" Pests, "Sharky" Speculation, "Slick" Marketing Practices, "Bone Head" Legislation, "Dame" Social Unrest, "Shy Lotta" Credits, "Bum" Transportation and "Tough" Market Gluts.

"Read 'em and weep!" What a nice party! Has John a ghost of a chance among such company? He has. But first of all let us acquaint you more fully with his playmates. Let each tell his little hard luck story.

MEET "FOXY" WEATHER

Thoughtful Reader, meet "Foxy" Weather. Says "Foxy," "I am the average farmer's stiffest opponent. He never knows when I'm bluffing. He never used to have a chance with me. Each year John Farmer sits in the old hard game. The stakes are profits from his 80 billion dollar investment. I still stand a good chance in certain plays—in certain localities. Throughout the whole 365 days I keep him guessing.

"It used to be duck soup. I had the game all to myself. But now-a-days he has learned some new tricks, and where I used to play dry weather stunts he has all the best of me. Lately he has taken to using the soil auger to make his irrigation even more certain. In some seasons, though, I still have the jump on him—as when I dump early fall rains upon drying fruits, but he's using the dehydrator trick on me now and I stand to lose even that advantage.

"Then I try my trick of killing frosts, but he comes back with the smudge pot surprise and turns the tables on me. In the grain, corn and cotton belts I still slip in my sly tricks and get away with them. However, I find he is putting it over on me, even here, with some deft little plays like better tillage and cultivation, better drainage and flood control. I'm still in the game with him and the pickin's good, but not what it was when he was a novice."

INTRODUCING "SLIPSHOD"

Now comes "Slipshod" Methods. What luck? we ask. "Not as good as it once was," says he. What with land grant colleges, U. S. Department of Agriculture, Farm Extension Service, Experiment Stations, County Agents, Farm Management Studies, Farm Bookkeeping, Farm Press and all such coaches, John Farmer is improving his game and makes it hard for me to stay. It's not what it was, say ten or twenty years ago, but still I continue to stick in the game and collect the good end of my bets. I'll let you in on a secret: John doesn't appreciate what all these institutions are doing for him. When he does learn to take full advantage of their discoveries, good night!"

Who's this uncouth person with the hungry look? Let me introduce "Pesky" Pests, who is a "sidekick" of Plant and Animal Diseases and Predatory Animals. He is a shifty individual and not much of a talker. Let me tell you about him and his method of play. He still sits in the game with John Farmer and is a consistent winner—likewise persistent. He puts over some shady deals at every play and it's hard to catch him. But thanks to various agencies, above mentioned, John is learning new tricks right along that keep old "Pesky" guessing. Crop rotation, fumigation, insecticides, fungicides, tuberculin tests, vaccination, veterinary science and poison gas are some of the newer plays John uses. Animal and plant quarantine are strong tricks he employs with telling effect. "Pesky" is a nasty playmate and since a man is known by the company he keeps, John Farmer is doing his best to "break" this undesirable opponent.

And now we come to "Sharky" Speculation. The dapper, well-fed gentleman, who sits at John's right, is "Sharky." Let "Sharky" explain his system to you.

WAS AN EASY MARK

"It's this way with me," says he, "I used to play John Farmer for the prize boob. The Bucket Shop Boys, grain gamblers, and Sure Thing Experts taught me the game. John was too busy down on the farm to keep up with us and we played him for all he was worth—sometimes more. We had scouts out on the ranges and grain farms and all over the world. We got the dope on supply and demand. We juggled the market reports and he was none the wiser. We played in futures and he didn't know what it was all about. They were the good old days and many a fat killing we made.

"But, say, it's getting to be a different story now. The American Farm Bureau is queering our style. The Bureau of Crop Estimates, Market Reporting Service, Weather Bureau, Co-operative Marketing Associations, Livestock Shipping Associations, Co-operative Breeders' Associations, Co-operative Creameries and Legislative Control Measures are taking all the joy out of life for me and are teaching John Farmer some clever plays. Believe me, he is getting wiser every day. No, the game holds no interest for yours truly and soon I'll be looking for some other pastures. I guess I know when I'm nearly licked. But as long as I can grab a pot now and then I'm going to stick around."

The next speaker on the program is "Slick" Marketing Practices. "Slick" belongs in the same class as "Sharky" Speculation. Many a clever trick he has played in the game with John Farmer. Chief among his antics are juggling grain grades, doubtful shrinks in livestock shipped to market, misrepresentation as to market demands, over and under-supply flapdoodle, excessive dockage on grain, livestock and fruit shipments, exorbitant railroad rates, brokerage and commission charges and all those clever manipulations put over on formerly ignorant and gullible John.

"SLICK" PRACTICES SPEAK

Hear then the bleatings of "Slick" Marketing Practices. "Oh, what a wollop I am getting these days. How I pine for those good old times. Since Johnny lined up in his Farm Bureau, co-operative shipping and marketing associations I have a sinking sensation every time I pick up my cards, for John is on to my game and there's slim pickin's now for me. The co-ops with a lot of big advertising and standardized products, and a lot of legislation to back 'em, are hiring keen minds at fat salaries to run me out of the game. They're too many for me and there's no kick in playing with John any more; no rake-off coming my way. I'll soon rate as an "also ran."

"And I used to rate as a first-class gambler and politician," orates "Bone Head" Legislation. "In the good old days we never worried much about the farmer vote. John Farmer was too busy to devote much time or study to political issues. His efforts along these lines usually consisted in attending political speeches and rallies.

"Our silver-tongued orators could swing the farm vote with the usual stock hokum. But, gee, them days are gone forever.

"John Farmer finds time now while riding his tractor, pruning his orchard or pailing cows with a milking machine to do a little thinking on his own account and, believe me, he thinks deep and clear!

"No bluffing goes now with John. Since the co-operation bee got in his bonnet he has learned to think, plan and act en masse. And see what such team work has done to State and National legislation. See what the American Farm Bureau Departments of Research, Information and Legislation have done to me. So strong and insistent have the demands of the Farm Bloc become that there's no side stepping now!

"I lie awake nights studying John's style and try to stay in the game. But somehow it is getting too complicated for me. John is wise to every trick that used to work so easily in the good old days."

BEHOLD THE VAMPIRE

Now who's here in all her makeup, plucked eyebrows, bobbed hair and vampish ways? 'Pon my soul, it's "Dame" Social Unrest, puffing at her cigaret and sipping cocktails! What havoc she has wrought these long years of war and peace! She lured men off the farms into factories. Erstwhile contented farm folks, drunk with inflated foodstuff and land prices, were vamped into renting the old home place and retiring to the great white way where "The Dame's" sister, "Queenie" Jazz holds sway. She plays a mean hand against John. Due to her subtle influence, all sorts of social ills have taken root, and surveys are being made in order to determine how to keep them away from the farms. We now refer back to the findings of Roosevelt's Country Life Commission to see what can be done about it. Rural Social Life has a tough time competing with "Dame" Social Unrest. This unprincipled person is Mr. and Mrs. John Farmer's wiliest opponents. Maybe when John sees how empty, artificial and shallow the "Dame" is and she ceases to thrill him, he'll get back to earth and forget her. At any rate many sober minds are at work on how to bring about her downfall, and John himself, sensing her evil influence, is showing a tendency to give her the cold shoulder.

ANOTHER FEMININE PLAYER

Here's another feminine player in the little game of chance. She is a demure little thing and they dub her "Shy Lotta" Credits. She is the opposite of "Dame" Social Unrest—so coy and baby-faced. She has caused John big losses quite frequently of late years. Because of her way of "holding out" on him and winning big stakes by squeezing tactics, it was found necessary for Congress to revive the War Finance Corporation to stake John in the game. Yes, and the Federal Farm Loan and Reserve Banks have had to raise the ante to keep John sitting in. "Shy" Credits has caused John to pawn his watch and chain to overcome her lucky winning streak. But with the new rural credits legislation, John has an ace that should eliminate her from the game!

And who's this unkempt, dissipated, seedy person? Don't you recognize him? That's "Bum" Transportation. He's caused John many a sleepless night and many heavy losses. John's wheat has suffered a heavy price cut for want of adequate transportation, combined with high freight rates. We all know what "Bum" Transportation did to the fresh fruit and especially the grape shippers in California last season. "Bum" has an alias—"Alibi." He "passed the buck" to government regulation, strikes and everything but his own evil ways.

But reduced rates, more rolling stock, less meddling with the railroads, water-way transportation, the farm truck, and kindred aides of John Farmer are slowing down "Bum" Transportation's lead and forcing him to show his hand. Ere long he, too, may find himself in the class for also rans.

Last, but not least of all, our merry poker party, is "Tough" Market Gluts. He has had a run of luck for quite some time. See what he did to potato and alfalfa growing; remember how wheat and other grain was dammed up at terminals, and what havoc he wrought in the marts of livestock. He has been taught his tricks and staked in the game by all sorts of selfish agencies.

NEW WORLD MARKETS

While John has been fretting about lost European trade, Herbert Hoover, Ralph Merritt, Eugene Meyer and others of John's friends have been telling him of markets to be found in South America, Asia, the Orient and Australia. It was through such advice the California rice carry-over was moved at a profit to the Orient. The triumph of co-operative effort in orderly marketing has produced that worried look on the visage of "Tough" Market Gluts and soon he, too, should be eliminated from the game against John Farmer.

Now that we are all acquainted, what are the chances of the Average American Farmer staying in the game? It will always be more or less of a gamble, that much we know. But it is a hopeful sign that a number of States as well as the U. S. Department of Agriculture are taking stock of the general farm situation.

The American Farm Bureau Federation and other real farm groups are inspiring farmers to think as never before. Some really constructive leaders have been developed. Farm management surveys during the past ten years now can be summarized and an honest diagnosis of American agriculture made. All these things afford hope based on demonstrated results.

PROOF OF PROGRESS

But hopeful as co-operative effort and thought among farm groups may be, much of the responsibility for the gamble in farming rests with the individual man on the land. Better business methods and a happy mixture of elbow grease and gray matter by the farmer himself are going to reduce still more the risk that always has attended tilling of the soil and management of flocks and herds. The farmer's opportunity for self help is now present as never before. After all is said and done an acre of ground is only as big as the man who farms it. And when we consider how John and his friends have crippled his wily opponents within the past decade, who can dare to say that we are not making encouraging progress?

Courage! We Are Progressing.

IN the life of almost every food producer there comes a time when he says to himself: "This is almost a hopeless game; the cards are stacked against the farmer. He works harder and receives less for his labor than any other producer. What's the use?"

If we were a nation of quitters, there would be few men on the land, but Americans don't quit. As a matter of fact, victory is in sight. It is easy to lose sight of the progress we have made, but Mr. Butler's entertaining article should lend encouragement to every one who feels the tiller-of-the-soil is butting his head against a stone wall.

—*The Editor.*

ORCHARD and FARM

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

IMPORTANT AVOCADO DISCOVERY

The discovery of the secret of making avocadoes bear, described in Orchard and Farm by R. W. Hodgson of the Extension Service, University of California, is of the greatest importance, since it offers a solution of one of the most difficult problems connected with the commercial production of this valuable fruit.

Dr. A. B. Stout, of the New York Botanical Gardens, who recently made the discovery at Pomona College, also claims to have made an important finding regarding the way in which gard'n [illegible] affects the fecundity of fruit trees. This operation is said to result in nutritional disturbances which cause the overlapping of the period when the pistils are receptive and the stamens are discharging pollen, causing fertilization and the setting of fruit.

ANSWERING RABBIT QUESTIONS

George Green, secretary of the Southern California Rabbit and Pet Stock Association, has been engaged by ORCHARD and FARM to answer inquiries regarding the care and breeding of rabbits, also to write articles upon this interesting and important subject.

Mr. Green has had 40 years' experience in raising rabbits and is a licensed registrar of the National Rabbit Breeders' and Fanciers' Association of America, Inc. His animals usually win a large share of the prizes for which they compete.

Rabbits are considered ideal for back yard meat production, because they can be kept in a small space, do not disturb the neighbors, are comparatively free from disease and insect pests and make very attractive pets. Recently the making of fur garments out of rabbit hides has been developed into an extensive industry.

PULLING FOR PARADISE

One by one new duties are being undertaken by the enterprising Farm Bureau, one of the latest being community boosting. In the Paradise section of Butte County, which is located in the foothills 20 miles east of Chico, the local farm center employs the secretary of the publicity committee to use every fair and honorable means to attract settlers to that favored locality.

"Pulling for Paradise" is a popular pursuit in this community of orchard homes, "where every prospect pleases"—and men are far from vile. It goes without saying that Paradise farmers are good co-operators and are able fully to inform inquirers regarding the various advantages of their district.

Other communities might take a tip from Paradise. Settlers are naturally attracted to a district where farmers, rather than townspeople, do the boosting.

BAR PATENT STOCK REMEDY.

The recent refusal of the Government to grant a license for the sale in Indiana of an alleged remedy for hog cholera, tuberculosis and other swine diseases, manufactured and sold by the John Dobry Company of Cedar Rapids, Iowa, calls attention to the worthlessness of such medicines.

The decision of the Government resulted from a trial held in the Federal Court of the northern Iowa district before Judge George C. Scott before a jury composed mostly of Iowa farmers. The case was decided largely as a result of tests made by Dr. D. B. Clark of the Indiana Experiment Station. The medicine was found to be composed of a large amount of arsenic and a few common drugs and to possess no curative or preventive properties.

The chief harm done by such fake compounds is that their use results in delaying the employment of serum treatment until it is too late to effect a cure. One farmer lost $800 worth of hogs in this way and many others have suffered smaller losses.

CONTROLLING FLOOD WATERS

Of the $7,400,000 expended during the past few years for flood control and water conservation in Los Angeles district, only $1,062,000, or less than one-fifth of the total sum, has been spent for saving surplus water, according to J. W. Reagan, chief engineer of the project.

"Most of the taxpayers' money has been spent for temporary construction, to protect Long Beach and Los Angeles harbor," declares a prominent official of the Extension Service, who is working with the Farm Bureau to conserve the water supply of Los Angeles County. "These wooden breakwaters probably will not last ten years, when another $6,000,000 will be needed to replace them.

"It would be much better to stop the trouble at its source by constructing additional dams of rock and concrete at the mouth of mountain canyons. This would not only afford a permanent solution of the flood problem, but would conserve an immense amount of much-needed irrigation water, which now is allowed to run into the ocean."

"What's New?"—Keeping Abreast of Agricultural Progress

Find Sweeter Sweet Potatoes

A SWEET potato that is claimed to be 50 per cent sweeter than the common varieties—Yellow Jersey and Nancy Hall—is being tested in Los Angles County by the Department of Agriculture. A fashionable Los Angeles restaurant which specializes on sweet potatoes bought the entire local crop of the new variety last year.

Condensing More Goat Milk

TO meet the increased demand for goat milk a condensery is to be built on the Bralef stock ranch, near Santa Rosa. Dr. Paul Sandfort of San Rafael will have charge of the bacterio-biological laboratory, which will be the only one, it is said, maintained by a goat milk company.—KATHLEEN RODD.

One Bush Does $10,000 Damage

AN outbreak of wheat stem rust caused by a single barberry bush resulted in a loss of approximately $10,000, according to the U. S. Department of Agriculture. The yield of wheat was reduced more than one-third on 18 farms, the total acreage being 963. The loss of grain was estimated at 12,520 bushels, worth $1 a bushel.

Receives New Chinese Varieties

NEW varieties of beans, sorghum, millet and wheat have been received at the State Experiment Station from a Government experiment station in South Manchuria, for testing purposes, in exchange for a similar collection sent from Davis. The Chinese varieties were produced in a region where climatic conditions are similar to those prevailing in some portions of California.

California Pear Prices Highest

HIGHER prices were received for pears last year by California growers than by orchardists in other States, according to the California Pear Growers' Association. No. 1 Bartletts brought $71 a ton for the first pool and about $50 for the second, the last shipment being caught in a glutted Eastern market. Oregon pear growers received $45 to $60 a ton, New York $33 and Washington $38.

Grapevines in Cold Storage

BECAUSE of unfavorable weather and pressing duties on his various ranches, J. G. Williams of Goleta (Santa Barbara County) was unable to plant at the usual time several thousand rooted table-grapevines, purchased early last spring. The vines were placed in cold storage at a temperature of about 40° F., and kept successfully until May first, when they were set out in the field.—J. C. K.

California Seedless Apple

"WE HAD a very large Bellflower apple tree which bore fruit that was both seedless and coreless," writes Jennie R. Babcock of Whittier. "Many people saw the apples, which were a great curiosity. The tree was so close to the edge of the lot we cut it back to a stump four or five feet high. New shoots are beginning to grow and we are wondering if it would be worth while to leave them."

A Canadian nurseryman is reported to have offered $1,000,000 for a seedless, coreless apple of good quality.

Septic Tank Demonstrations

THE widespread interest in septic tanks has resulted in the Los Angeles farm adviser's office making arrangements for holding during the first week of June four demonstrations, at which E. J. Stirniman of the Agricultural Engineering Department of the College of Agriculture will show how these necessary underground reservoirs are constructed. The cost is said to be approximately the same as that of cesspools, although the latter are vastly inferior to septic tanks.

Butte Beekeepers Show Fight

AS a result of having lost large sums of money through the invasion of outsiders, Butte County beekeepers have agreed to donate 10 per cent of their colonies for use in "freezing out" apiarists who refuse to recognize the unwritten law against crowding too many bees on one location.

This agreement gives the Butte County Beekeepers' Association control of between 600 and 700 colonies, which will be placed close to those of outsiders and crowd the latter off the home range. This method will not be employed against apiarists who show reasonable consideration for the rights of resident beekeepers, in selecting pasturage for their honey gatherers.—RICE.

Is Cultivation Unnecessary?

BUTTE County farmers are spending many thousands of dollars unnecessarily and wasting weeks of valuable time in cultivating orchards to maintain a dust mulch, according to the University of California, which holds that a dust mulch does not conserve moisture, contrary to the generally accepted belief. The University reports:

"That weeds, not capillary movement of moisture, and surface evaporation are the chief robbers of moisture in California orchards and vineyards is indicated by experiments conducted by the Division of Agricultural Engineering and U. S. Department of Agriculture. Cultivation has little, if any, effect on soil moisture conservation, except through the removal and prevention of weed growth."—RICE.

Fumigating Walnut Kernels

THE California Walnut Growers' Association decided to vacuum fumigate its entire supply of walnut kernels, a half million pounds. The meats thus treated were to be placed in cold storage and shipped to dealers in insect-proof containers.

Dr. Elwood Mead in Australia

DR. ELWOOD MEAD, California's land colonization authority, has accepted an invitation from the Government of New South Wales to consult with officials regarding a $30,000,000 Australian land settlement project. Dr. Mead plans to visit Java and possibly India before returning to the United States.

Three Hundred Fighting Thrips

THREE HUNDRED spray machines were used in the spring campaign against thrips in the citrus orchards of Tulare County. The weather was extremely favorable for the development of this pest, and all other insects injurious to fruit trees, also shot-hole fungus and little leaf, according to F. R. Brann, horticultural commissioner.

Promoting Pickle Production

THE Roscoe Haegelin Pickle Company is planning to conduct a campaign to stimulate the production of cucumbers in Sonoma County. "Owing to favorable climatic conditions and comparative freedom from disease, California from now on will be more than able to hold its own against Michigan pickle producers," declares an official of the company.—KATHLEEN RODD.

Veterinarians Inspect Meat

DURING the first three months of the present year veterinarians employed by the State Department of Agriculture inspected the carcasses of 55,473 animals slaughtered for food. Purchasers of wholesome meats are cautioned to look for this stamp: "CAL. INSP'D & PSD." California is said to have the most extensive meat inspection service in the United States.

Prunes Cheap at Private Sale

A NUMBER of prune growers who do not belong to a co-operative marketing organization have recently sold their 1922 crop for 3½c, 4½c, 5c and 6c a pound, while an independent apricot grower was unable to obtain 14c a pound for dried fruit of good quality, according to the California Prune and Apricot Growers' Association. The latter has donated a carload of prunes to relief workers in Asia Minor.

Watch for Codlin Moth Eggs

IT IS of the utmost importance according to the Extension Service, to begin spraying or dusting with arsenate of lead for codlin moth before the eggs hatch, which begins about June 1, in Southern California. The exact time depends upon the season and can be determined only by keeping close watch for the eggs. The latter appear on leaves, twig or fruit as round or oval lemon-colored specks about the size of a pinhead. The fruit or nuts should be covered with poison, ready for the young worms when they hatch.

Acute Water Shortage Feared

WITHIN ten years there will be an acute water shortage in the Los Angeles district if the present rate of growth is maintained, according to J. W. Reagan, chief engineer of the flood control department, who points out the need of funds for the construction of three storage reservoirs: Pacoima (near San Fernando), Putting Stone (near San Dimas) and Tujunga Canyon.

At a cost of $1,062,000 three permanent storage dams (Devil's Gate, San Dimas and Live Oak—have already been constructed. For temporary flood control, largely wooden piling, $6,200,000 has been expended.

Make War on Yellow Thistle

SYDNEY J. STOKES, Lake County horticultural commissioner, has declared war on yellow star thistle and has outlined a definite campaign for the eradication of this pest. In order to prevent the weeds from seeding, the ground will be burned over and scraped.

The horticultural commissioner of Solano County is reported to have cleaned up, a few years ago, 60 miles of county roads between Napa Valejo, Benicia and Fairfax, by spraying the weeds with a chemical solution which killed not only the tops but the roots. In addition to all kinds of thistles, wild artichokes and various other kinds of weeds were exterminated.

Poisoning Flea Beetles

POISONING flea beetles with arsenate of lead is recommended by the Extension Service, which has found the dusting method particularly desirable. One part of powdered lead arsenate to three parts of hydrated lime or sulphur is advised. The last named material is used where the injury is confined to grapevines, in order to aid in controlling mildew.

The present season is said to be the first one in five years that the strawberry flea beetle has been present in Southern California in injurious numbers. Many cases have been reported where this insect destroyed practically all the foliage and buds of grapevines. Young deciduous fruit orchards and a great variety of other crops also have suffered serious beetle damage.

Twenty Years of Deciduous Fruit Growing

Beginners Are Advised Carefully to Study Varieties and Environment

[Editor's Note—The following article, based on an interview with one of California's pioneer fruit producers, includes not only much sound advice for the novice who is about to enter the business, but also many observations of timely interest to experienced growers.]

THE two most common and disastrous mistakes of fruit growers are: selection of unfortunate locations and planting wrong varieties, in the opinion of A. L. Drowan of Ojai (Ventura County), veteran producer of "cots" and other decidous fruits.

A. L. DROWAN

"Thousands of acres in California," asserts Mr. Drowan, "are planted to crops or varieties totally unsuited to the existing soil and climatic conditions. This State is made up of almost as many different environmental combinations as there are farming districts. No general rule can be applied to all sections of the State nor even all parts of one county.

"The prospective fruit producer should study the methods of those who have engaged in corresponding lines under similar conditions. Or if this is impossible, he should consult successful growers and authorities in various districts and then draw his own conclusions. In California a road, an arroyo or a stream may be the dividing line between heavy frost and freedom from cold; or between heavy adobe and light loam; or between deep alluvial soil and hardpan.

"One section may be free from strong winds; an adjoining section may be swept by severe storms. No one should plant fruit in any part of California without first ascertaining local conditions and making a careful study of the results obtained by established growers."

ADVOCATES HAPPY MEDIUM

Mr. Drowan is an advocate of the "happy medium" system of orcharding. Long before the University abandoned tree butchery in favor of long pruning, he refused to cut back his trees according to the general practice. Nor has he gone to the other extreme of leaving them practically unpruned. A few trees handled experimentally in this manner convinced him of the value of the modified long pruning system advocated by Professor Weldon. "Pruning, like other orchard practices," Drowan points out, "should be adapted to local conditions. Near the coast less foliage is needed than in the interior, where shade is such an important factor."

In thinning, also, the Ventura orchardist advocates moderation. "I believe," he said, "some of the authorities are making a mistake in recommending too severe thinning. This practice results in such a loss of tonnage that the difference in prices obtained for the resultant fancy fruit does not offset the loss in volume. We should strive, rather, for a large percentage of 'extra choice,' with plenty of 'choice' and some 'standards' to make up the tonnage."

Drowan's remarks applied, of course, more to drying fruit, although he believes some canning districts are being advised to thin too severely.

DROWAN IS LARGE OPERATOR

Ventura County includes some of the most profitable apricot orchards in the State. Although the Ojai Valley acreage is rather limited, soil and climatic conditions here seem to be exceptionally favorable for "cots." The Drowan apricot orchards, consisting of some 65 acres of trees, ranging in age from 3 to 30 years, are in what is described locally as "adobe shale," a heavy soil with sufficient decomposed shale to offset its 'dobe characteristics.

Mr. Drowan also raises pears, prunes, almonds and peaches, having more than 200 acres in fruit. One 30-year-old apricot tree on his place yielded last year 42 boxes of fruit, he stated, while one old pear tree produced 54 boxes.

Apricot orchards in the Ventura-Santa Paula section are still profitable at the age of 30 to 40 years.

Mr. Drowan is not a member of a marketing association, although he is interested in the launching of the new Southern California peach and apricot association. The purpose of the latter largely is to deal with canneries, in order to establish a fair price, he says. The canneries are assisting, rather than opposing, the movement, Mr. Drowan states, because they prefer to deal on a known basis with the majority of the growers. Heretofore the cannery buyer, in contracting fruit, has had no assurance that another buyer would not deal with other growers at a lower or higher figure, nor have the producers had any means of knowing the real value of their fruit.

It is said the growers could be paid $10 a ton more without increasing the cost to the canneries more than one-fourth of a cent a can!

"What we need," said Mr. Drowan, "is assurance of simply a fair profit every year. I think both growers and buyers would prefer to abandon speculative methods if it were possible to stabilize the market on a moderate basis. But the growers would defeat their own object if they attempted arbitrarily to set a price higher than conditions justified. Costly experience in the past has proved this point. It is possible, in fact, to injure an industry for years afterward by 'kiting' prices upward to such a point that the public refuses to buy. Once drawn away from any product, the consuming public is slow to return to it."

"What do you think of the outlook for the future?" Mr. Drowan was asked.

"It depends a good deal upon developments in Europe," was the reply. "We must have some outlet for our low-grade fruits, of which there was a considerable 'carry-over' last year. Until conditions in Europe are such that we can sell to foreign countries again, a portion of our crop is bound to be a drug on the market. That is why thinning is advisable, especially this year; but even so, I maintain it is a mistake to strive for 100 per cent fancy or extra choice grades. We should try to hold up the tonnage without producing too large a percentage of low or medium grades, and with as few culls as possible. But as there is sure to be a heavy tonnage of low grades anyway, every grower should interest himself in the improvement of foreign markets and should do anything in his power to assist in bringing back the former demand."

Asked why he had not become a member of a State marketing association, Mr. Drowan stated he had not been in sympathy with the methods of management. "Some of our associations," he said, "have been too much on the speculative order. They have not been stable enough in their methods. They have carried too many high-priced men who were not earning their salaries. I believe in paying a man well, but only in accordance to his ability and what he produces. Perhaps we are on the eve of reform which will result in more conservative handling of the affairs of our associations."

DOESN'T FEAR OVERPRODUCTION

Drowan has been raising fruit in Southern California for more than 20 years. During this time, he says, he never has felt the least doubt about California's increasing supremacy as a fruit-growing center. Nor does he fear overproduction. "Some of our orchardists who feel we are going to flood the markets with our products," he said, "should take an occasional trip East. They would find most of the fruit districts of the East and Middle West generally declining; they would see that these States cannot compete with California's climatic conditions; they would find the population in the crowded centers growing by leaps and bounds; they would learn that people are eating more and more fruit and vegetables, and less meat, pastry and other heavy foods.

"Yes, indeed, California has almost a natural monopoly in some of her products. The man who purposes to become a fruit producer in this State need only make wise selection of the location for his project, study the best cultural practices, and apply common sense business methods in order to build his own prosperous future."—J. C. K.

Valley Ford's Big Dairy Show

Sonoma-Marin's Successful Community Fair Becomes Important Annual Event

By M. B. BOISSEVAIN

Marin County Farm Adviser

THE First Western Sonoma-Marin Dairy Cattle Show, held at Valley Ford last summer, was such an unqualified success that the farmers of that district have decided to make it an annual event. Sheep, hogs, rabbits and chickens, in addition to dairy stock, will be exhibited. Permanent buildings are being erected to shelter the show, which is to be held the first three days of June.

A score of farmers financed the coming exhibition with liberal subscriptions. A month before the opening day 150 cattle had been entered in competition for premiums. Business men are taking a keen interest in the 1923 event and are lending every assistance to make it a success.

FARMERS DONATED LABOR

The method of financing the fair last year was unique and surprisingly successful. Every dairyman in the district and many of the business men were asked to loan money to finance the show. Most of the subscriptions were for $5 and none were more than $10. In this manner $500 was raised. It was understood that if the fair was not financially profitable the guarantors would lose the small sums advanced, but if it paid well enough the money was to be returned to those who advanced it.

All work connected with the show was donated. It was a community co-operative project, made successful by good management and a splendid spirit of helpfulness. The men put up the big tent, constructed fences and refreshment booths, and hauled stock to and from the show, all without a cent of pay. The good women of the community baked bread, pies, cake, beans, etc., made and served coffee to the hungry workers, all free of charge.

In order to appeal to the man who milks cows for a living, classes for grade cows were introduced. Production records, as well as the usual points on which cattle are judged, were counted in scoring, for the purpose of recognizing the work of cow-testing associations. Entries were not received from outside of Marin and Sonoma counties, in order to protect exhibitors from professional showmen. Concessions were made a strictly side issue.

Two hundred seventeen dairy cattle were shown, a remarkable number for one community, besides many other animals. An aged grade Jersey cow, Old Kitty, attracted much favorable attention. This animal was 24 years old and was entered with her 22nd calf at foot. At 19 years of age she made a record of 600 pounds of butterfat, according to a cow-testing association.

The fair paid expenses and enough over to return not only the farmers' $500 but the $920 which business men advanced for livestock premiums. This was the first time in the history of Valley Ford that donations were returned. The prizes paid exhibitors totaled $1023.

"The success of the show cannot be credited to any one person," said C. A. LeBaron of the Dairyman's Bank at Valley Ford, who managed the enterprise. "The whole community got behind it and it went across big."

Permanent Buildings Are to Replace Temporary Tents

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES

DEPARTMENT MEN MEET AGAIN.

When Secretary of Agriculture Wallace was entertained at breakfast in San Francisco recently by the California Dairy Council, the occasion brought together two men of the department who had drifted far apart in world affairs, but who had known each other well in Washington. They were B. H. Rawl, formerly chief of the dairy division and now assistant general manager of the California Central Creameries, and E. E. Kaufman, the man who is responsible for our crop statistics in California.

It was good to hear them "reminisce" on the day in Washington when the vigorous Roosevelt was President. Both Rawl and Kaufman have been residents of Berkeley for many months, but their paths previously had not crossed.

MILK NUTRITION 'SPARK PLUGS.'

Dr. Lafayette Mendel of Yale University is recognized as a benefactor of the dairy industry. He is a research scientist, one of the discoverers of vitamines, which are so abundant in milk. Dr. Mendel is not a dreamy-looking research man, but a live, American type, who knows how to translate deep stuff into language which the common herd understands.

At the California Dairy Council meeting in Modesto he called the vitamine the "spark plug" of human nutrition. The body needs food, but it also needs a spark plug, just as an internal combustion engine needs spark plugs as well as gasoline. Dr. Mendel said they were discovering more vitamines each day, and humorously remarked:

"We use letters to name them—there are only 26 letters in the alphabet—but if we need more you can grow 'em out here in California."

CALIFORNIA LOSING BIG MAN.

Dr. Elwood Mead, head of the Rural Institutions Division in the University of California and best known as the man who worked out new ideas in land colonization, has gone to Australia. He left late in April and will return in the fall, probably in October. Dr. Mead was called by the Government of New South Wales to advise in their vast colonization plans there. News comes also from London that the leaders of the Zionist movement appeal to Dr. Mead to go to Palestine and help straighten out things there.

Thus it is that California's great authority on this most important phase of agricultural development is in demand for work in various parts of the world. Although California has a most acute colonization problem, she has failed to realize her need and her opportunity. The problem and the big man to solve it are here, but we fuss around, vainly trying to people our farm lands on sales plans that are obsolete.

HOLDEN—SAFE FARMING MAN.

P. G. Holden, the "safe farming man," dropped in the other day and we had a long and interesting chat. Holden is out in California making an intimate study of co-operative marketing. He is quite some observer. He is here at a time when more or less fur has been flying, so he should be able to judge as to the difficulties as well as the virtues of the co-operative idea.

Holden is head of the educational department of the International Harvester Company, and is a sizable, adaptable man, with personality and great capabilities. His "better corn" campaigns in Iowa were so pronounced in their success and his prominence as a benefactor of the farmer so great that at one time he was almost nominated for Governor of Iowa. Professor Holden was at Ames, and for a number of years was head of the Soil Physics Department of the University of Illinois.

Just think! The International Harvester Company has seventy-five persons in its educational department, headed by Holden. The work of this department is not guided by commercialism, Professor Holden states, but is based upon the theory that a corporation is simply a large individual which, like any other, must devote a part of its efforts to the betterment of civilization.

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What Readers Want to Know

EGG-EATING CHICKENS

Several of our chickens have acquired the habit of eating two or three eggs a day. Is there any way of breaking this habit?—WILLIAM WINTER, Napa County.

We know of no remedy for chickens that have acquired the egg-eating habit—except to chop off their heads. Usually this habit results from an unbalanced diet. The hens crave protein, which is not contained in their feed. This may be supplied by feeding beef scraps or similar material.

SHIPPING GOATS TO ARIZONA

Are there any inspection fees or other charges on goats shipped from California to Arizona? We have seen them advertised as low as $10 to $15. —MRS. G. H. WITTE, Arizona.

Inspection of goats is required before the animals enter Canada, but not for interstate shipments.

Buying a fresh milk goat at the price you mention is something of a lottery. If practicable, would suggest that you have an acquaintance inspect any goat which you may think of purchasing. Be sure to have the milk tasted. Some goats give splendid, sweet milk, while the milk of others has a strong, unpleasant taste.—ROSE SAUNDERS.

BARN SPECIFICATIONS

Can you furnish plans and blueprints of the barn described in the Jan. 7 issue of ORCHARD and FARM?—HUGO SCHULTE, New Mexico.

It is not possible for us to furnish you with a blueprint of this barn, but the following data may prove of interest to you:

The barn has wings 16 feet wide. The hay bay is 24 feet wide, with 20-foot posts. The wings or sheds have 4 by 4 posts 8 feet on cehters. The low walls are 8 feet high. The hay bay posts are 4 by 6, 8 feet on center, with 6 by 6 corner posts.

The rafters are 2 by 6's, 20 feet long. Shingles are 4½ inches to the weather. The foundation is of concrete, 6 inches wide and 18 inches deep. The boards are a 1 by 12 redwood. Framing lumber is No. 1 Douglas fir.

This barn has ranged in cost, including all labor and material, cement, gravel, lumber, hardware and painting, between $700 and $850 in this district for a barn 32 feet long.—MAX E. COOK.

BUILDING UP BEES IN WINTER

I am a beekeeper in New Brunswick, Canada, and am thinking of moving to Southern California. Here we pack our bees during the winter, when the hives are covered with several feet of snow. In California, is there any chance of building up swarms of bees and getting a honey crop during the winter season? At present I am apiarist at the experiment station here.—E. E. BURDEN, Canada.

You will find conditions vastly different here. Bees are wintered outside, with no thought of packing, although protection from the spring winds is a good thing. The building-up period begins December 10.

In early seasons you might begin to make sales of package bees in February. In some seasons there is a light crop of surplus honey from manzanita and eucalyptus during the winter months.

There are always chances to engage with practical beekeepers during the working season.—J. D. BIXBY SR.

LADYBIRDS IN ORCHARDS

Please give directions for handling ladybirds in orchards.—EVERETT CAROTHERS, Riverside County.

I assume that you refer to the common black-spotted red ladybird, *Hippodamia convergens*, which is sometimes found in large quantities in the mountains. You may, perhaps, know that the State Department of Agriculture carried on extensive experimental work on this insect in connection with its practical use, by means of its control for various kinds of aphides.

Our conclusions, which were reached after an extensive investigation, and which were also corroborated by the United States Department of Agriculture, were that very little value was gained by the artificial colonization of these insects in the orchards. The reason for this is apparently that the ladybirds are so active that they will not remain where they are placed for any length of time, migration taking place before they deposit their eggs.

We have, therefore, discontinued this work as a function of the department. There are, however, some growers who believe that they are able to accomplish results of value by the use of these insects, particularly in the Imperial Valley, and you may be able to get in touch with some of these growers who may be willing to give the insects a further trial. I have no idea what the ladybirds will be worth, since we have never sold them.

Our method of handling these insects was somewhat as follows:

The ladybirds were collected in the mountains and shipped to a central point, where they were placed in a dark room with one window. The insects were attracted to the light, and in this way left the rubbish with which they were collected and gathered near the window. They were then scooped up and placed in boxes about a foot square, having a screen on two sides and being filled with excelsior, at the rate of about one quart per box.

They should then be placed in the coolest location that can be found and should occasionally be sprinkled with water. Naturally, they should be colonized in the fields at the earliest possible moment, since it is difficult to keep them for more than a month or so.—HARRY S. SMITH.

HONEY YIELDS AND PRICES

I am thinking of adding bees to present business, making honey production a side line. Would you advise this step? What is the average price of honey and yield per colony?—F. K. PAUL, Sonoma County.

I hesitate to encourage a beginner to invest in beekeeping as a business proposition in your locality. You are very close to tidewater, with little mountain forage to give a surplus crop, and unless you have a very large acreage of alfalfa available you are likely to lose out. In most tidewater sections fogs and cold winds prevent a secretion of nectar, even if the range is abundant.

Fruit bloom yields considerable honey, if conditions are favorable, but it is usually all consumed by the bees, which at this period are breeding rapidly. Fruit bloom honey is dark colored and rather strong in flavor.

The average yield of extracted honey in California is 59 pounds per colony.

The average cost of production for Southern California for the year 1922 has been figured at 10c per pound, owing to high cost of labor and containers. Cost of production depends upon two factors: price of labor and abundance of crop. In 1920 one producer's crop cost him 5c per pound. The next year was almost a failure and 25c per pound would not have paid the costs of production for the small quantity harvested.

The honey crop of 1922 has moved off very slowly at prices ranging from 7c to 10c. As a source of pleasure and a help to the family economy, a few colonies about the place are very desirable. They are especially useful in pollenizing fruit blooms. J. D. BIXBY SR.

WALNUT INFORMATION

Please give me some information regarding walnut growing.—H. HURTUBIS, Kern County.

Walnuts are usually planted from 50 feet to 60 feet apart. If planted 50 feet apart, according to the square system, there would be 17 trees per acre. If planted 55 feet there would be 14, and if planted 60 feet, only 12. Probably the best distance for planting is about 55 feet.

Walnuts do best on a rather deep soil, although we find them on a great variety of soils in Southern California. Like all other trees, they will respond to good soil and should not be planted where the soil is shallow and lacking in plant food.

In regard to good districts in California for growing the walnut a number might be mentioned. In the vicinity of El Monte and Whittier (Los Angeles County) there are many very fine groves; also near Santa Paula (Ventura County) walnut growing has been a great success.

The English walnut may be grown from seed, in which case you would have a seedling English walnut. However, there are certain varieties, such as Eureka, Placentia and Ehrhart, which are budded into seedling trees, usually of the black walnut, in which case you would have budded varieties of English walnut. Nurserymen's prices of trees of different sizes range from $1.75 for the smallest size to $2.25 for trees 10 to 12 feet tall.

In regard to production and net returns, I would refer you to a bulletin recently published by the University of California, written by Dr. L. D. Batchelor. This bulletin is No. 352 and can be procured from the Agricultural Experiment Station at Berkeley for the asking.

According to this authority, the average yield per acre of walnuts in California is 800 pounds; net profit per acre, $32; value of orchard, $700. Competent growers may hope to increase the acreage value to $1000 and the yield to 1200 pounds, with a net profit of $72 per acre.—G. P. WELDON.

HOME FARM HAPPENINGS

By ONE OF US

FINE CONDITION FOR ALFALFA PLANTING—We got some land checked up and seeded to alfalfa early in March. Then day after day there was dry north wind.

The alfalfa did not start and we got all ready to irrigate it. But with April came nearly three inches of rain—the most nearly ideal condition for alfalfa seeding we have had since the development of the ranch was started.

KILLING CODLING MOTHS

Spraying with arsenate of lead is one farm job that is almost a waste of money if it is not done pretty thoroughly—which is the way John does it. He is mighty fussy about spraying at the proper season.

John sprays four times: first, when the blossom petals are falling; second, when the young pears start to crook over and turn down; third and fourth, about two weeks apart, to keep the worms from entering the seeds. John is very careful to get a bit of the spray into the end of every blossom.

Codling moths fly at night. If you look for moths at this time you can see thousands of them flying in the orchard. Some folks trap moths by attracting them to lights suspended over pans filled with kerosene.

CASEIN SPREADS SPRAY

We are adding one and one-half pounds of casein spreader to 200 gallons of arsenic spray, to make the latter cover the fruit and leaves more perfectly. It is desirable to have a speck of arsenic ready for the tender young worm as soon as he hatches.

Big growers use arsenate of lead in paste form. They claim it makes a smoother spray than the powder, but for a small farmer it is a mean job to take paste out of a 300-pound barrel, weigh the stuff, and then slop around with it. Like as not you'll get too little or too much and in disgust decide to "let 'er go."

It's human nature not to be particular with a nasty job. For convenience, we get powdered arsenate in four-pound paper bags—just enough for a tankful of dope.

JOHN'S EXPERIENCE WITH BEES

—John had a great time a few days ago with a swarm of bees. This river bottom country we live in is full of bees.

In an old building near us the woodpeckers have made a hole and the bees have gone in.

One of these outfits swarmed—and John was determined to catch them.

Some time ago he got some regular hives so as to be ready to put together—even the nails came in the package. He got the bees settled in a tree—by throwing dirt up among them and hammering on a tin pan—then got busy fixing the hive.

Just as he was ready to cut the limb and shake the bees down into the hive, they got uneasy and started out. And that was the last of them. But John is ready for the next swarm.

Some bee men came along recently and wanted John to pay them $2.50 per stand to put a lot of bees in the prune orchard. This was after the prunes had all bloomed and set—an immense crop.

They started to tell him what a great thing it would be for the orchard now. It was worth the money to hear what John told them. First, he wanted to know just how big a sucker they thought he was, anyway—to be paying for putting bees in an orchard to pollenize blossoms after the fruit was all set—and in a river bottom that is literally full of bees.

John had a bee man on the ranch one time and had more trouble with him than any one we ever had around. Some bee men are temperamental, apparently—and John has it in for them on general principles. But some day we will be in the bee business ourselves—maybe.

BOY BREEDS DUROC JERSEYS

Sidney M. Epperson, aged 14, farms 20 acres near Woodland and keeps 75 Duroc Jersey hogs. He recently purchased two pure breds, one being a gilt bred to the world's grand champion, Great Orion Sensation. "No scrubs for me," declares young Epperson, who is studying agricultural courses at the Woodland High School.

SHIP TRAINLOAD OF FAT STEERS

Twenty-eight carloads of fat steers were recently shipped from Baker, Ore., to the Union Stockyards at Salt Lake City, from which point some were forwarded to the Los Angeles Stockyards.

SELLING EGGS IN NEW YORK

An Eastern poultryman says the way Western eggs sell in New York is enough to make a New Englander's head swim. Seeing 800 cases sell in 14 minutes one day and 1200 cases disposed of in 20 minutes another day were sights which astonished the Easterner.

PULLET BEGINS BUSINESS EARLY

Three Rhode Island pullets belonging to O. M. Downing, Fowler (Fresno County), began laying eggs before they were four months old, according to the owner. Can anyone beat this precocity record? The Downing pullets were given green feed and soaked grain, but no mash.

ELECTRIFY FARM HOMES

Only one in ten of the 3,000,000 American farm homes is using electricity. A single horsepower motor is sufficient to run either a washing machine, churn, separator, corn sheller or milking machine and at the same time heat a three-pound flatiron, electrical experts say.

Yeast-fermented mash for your growing birds—

CAUTION: Do not be misled by imitations. Fleischmann's Pure Dry Yeast is *all* yeast—yeast in its most concentrated form. It contains no corn meal or other fillers. To be sure of results order Fleischmann's Pure Dry Yeast — using coupon below or ordering from any Fleischmann agent in over 1000 cities.

The remarkable advance in feeding that turns them quickly into profitable laying stock

Your growing birds—hatched this spring. Will they *pay?*

You feed them and care for them through all these months. When they grow into pullets, will they repay you for your trouble and expense?

That depends, most of all, on what they are fed. A balanced ration is necessary, of course. But birds often fail to do their best on the most carefully prepared mash —*simply because they do not assimilate all they eat.*

Fleischmann's Pure Dry Yeast, newly-developed especially for feeding stock and poultry, offers a remarkable means of enabling the fowl to turn every bit of its food into flesh and strength, vitality and productiveness. This new yeast is now offered by The Fleischmann Company as the biggest advance in poultry feeding in recent years.

Makes the feed easier to digest

As a fermentative agent, it acts on the mash in a way similar to digestion itself. Part of the work of digestion is thus already accomplished even before the food goes into the fowl's mouth. It is much more quickly assimilated, therefore, and assures a far more vigorous and productive bird.

If you want your young birds to grow rapidly into vigorous, active pullets that will give eggs all next winter and yet retain their vitality for the following season—then to mature into good layers of fertile and hatchable eggs, and become mothers of sturdy chicks—now is the time to begin feeding Fleischmann's Pure Dry Yeast to your flock! If there is diarrhea in your flock, feed a yeast-fermented mash and the malady will disappear in three days.

Surprising results

All over the country poultry raisers are today having remarkable success with Fleischmann's Pure Dry Yeast.

"My five week old flock," writes Jacob Gerlach, of Toms River, N. J., "look to everybody seven weeks old."

"About six or seven weeks ago," writes Raymond B. Keuper, of Newport, Ky., "we started to feed Fleischmann's Pure Dry Yeast to our flock of about 35 hens. At that time we were getting two and three eggs a day, but since using the yeast the egg production has steadily mounted to from 16 to 24 eggs a day." His hens, he adds, have been transformed from "dull and lazy to active and alert."

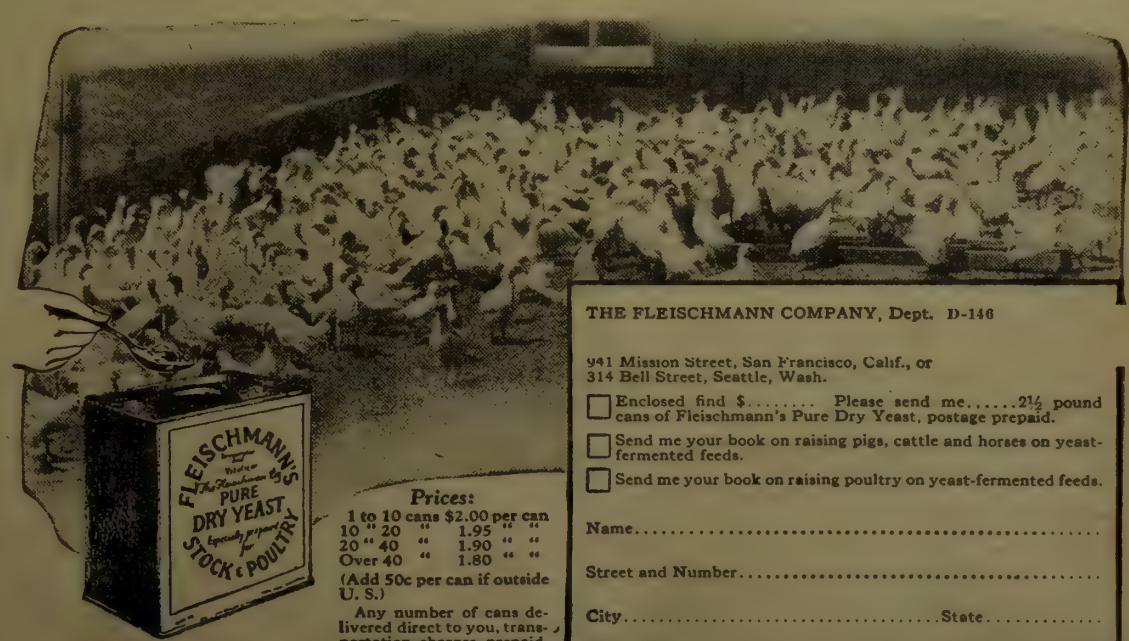
We are now prepared to make immediate delivery of Fleischmann's Pure Dry Yeast in 2½ pound cans, direct to you. Pin a $2 bill or money order to the coupon and mail it today!

Fleischmann's Pure Dry Yeast costs less than two cents a tablespoonful. One tablespoonful daily to every ten hens or fifty baby chicks. For month-old chicks and half-grown birds, two tablespoonfuls to every 50, or one per cent by weight of the dry mash. First dissolve the yeast in water or milk, then stir it into the feed, letting the wet mixture stand and ferment 24 to 48 hours before feeding. It is also possible to feed yeast with a dry mash or in drinking water. Complete directions with every can.

Fleischmann's Pure Dry Yeast is guaranteed to do exactly what is claimed for it—or your money will be refunded.

Send for these booklets!

Fleischmann's Pure Dry Yeast can be profitably used for fermenting feeds for all farm animals. If you are interested in swine, cattle or poultry breeding, you will want copies of our new booklets — giving full details of this remarkable new development in animal nutrition. Check on the coupon which booklet you want.



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10 " 20 " 1.95 " "
20 " 40 " 1.90 " "
Over 40 " 1.80 " "
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☐ Send me your book on raising poultry on yeast-fermented feeds.

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During June only I will sell at greatly reduced prices Red Top Steel Fence and Farm Fencing to reduce stocks now on hand in my warehouses in Los Angeles and Oakland. This is positively my only sale this year. Buy fencing now and save money! I PAY THE FREIGHT.

Send for my FREE Catalog and Price List Today! During this sale, WHILE THEY LAST, I will give away—

Free One Red Top Post Driver with each order for 100 or more posts. This new one-man post driver makes fence building easy. Only one to a customer.

Free One 100-lb Keg of Farmers' Nails, assorted sizes, 2-penny to 60-penny, 1 to 6 inches long, with each order for 200 rds. or more of woven wire fencing. Only one keg to a customer.

All my standard fencing in the sale at lowered prices, including—

Stiff-Stay Fencing. Wrap-Stay Fencing Red Top Steel Fence Posts. Poultry Fencing.

Hundreds of farmers will welcome this news. They know my regular prices are low. Think of the saving when low prices are cut even lower. Send for my FREE catalog and price list now. Buy fencing in June—and save!

HARRY BAYLIES, The Fence Man,

Dept. 114, 431 Pacific Finance Bldg., Los Angeles, Cal.

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POULTRY

MR. AND MRS. POULTRY FARMER—The baby chick season is just starting, and so many of our customers have complimented us on the quality of the chicks they purchased from us last year that I feel at liberty to address you at this time for your order. No better chicks are hatched than those we handle. No pullet eggs are used, and every egg that goes into the incubators is selected from thoroughbred flocks that have been Hoganized. Prices for May are as follows:

	50	100
White Leghorns	$6.00	$11.50
Rhode Island Reds	9.00	18.00
Barred Plymouth Rocks	9.50	18.50
Anconas	8.00	18.00
Brown Leghorns	8.00	15.00
Buff Orpingtons	9.50	18.50

May we not have your order again this year. Conkey's Buttermilk Starting Food will raise healthy chicks.

ANSEL W. ROBISON,
1196-98 Market St., San Francisco, Calif.

P. S.—WE ARE THE PACIFIC COAST AGENTS FOR BUCKEYE INCUBATORS AND BROODERS. SEND FOR CATALOG.

PROFITABLE POULTRY and Co-Operative Electric Hatcheries. Thousands vigorous chicks, turks every week from 180-290 high winter-egg, clear profit producing White, Brown, Buff Leghorns, Barred, White Rocks, Reds, Anconas, Minorcas, Wyandottes, Brahmas, Andalusians. This season 25% of customers send repeat orders and many neighbors. "Never saw such vigor, rapid growth, beauty in chicks." Six orders came through him. "Raised every Turk last year, outgrew turks costing $10 more." "My turks beat everything in valley." It's Turk Season! Our price, quality best. Write Box O 13, Nortl. Fair Oaks, Pasadena, Calif.

BABY CHICKS

The kind that live and thrive, lay and pay. We hatch from pure-bred, specially selected, high egg-record flocks. Hens have been closely culled and mated to cockerels from 250-egg strains. Our high-quality chicks will make you the biggest, quickest profits. Leghorns, 12½c; Reds, 16½c; Barred Rocks, 17½c; White Wyandottes, 25c. Safe delivery guaranteed. We also sell incubators, brooders and supplies, and can make prompt delivery. ELECTRIC HATCHERIES, Dept. "L," Burbank, Calif. References: State Bank of Burbank.

CERTIFIED White Leghorn quality Chicks at Utility Prices. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.50 per 50, $12 per 100. Special prices 500 to 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 7th st., Petaluma, Calif.

BABY CHICKS—12th year specializing in properly incubated chicks—the better grade that live and thrive. White Leghorns, Brown and Buff Leghorns, Rhode Island Reds, Barred Plymouth Rocks, Anconas, Black Minorcas, White Wyandottes, Blue Andalusians. Safe arrival guaranteed. Free circular. Order early. McDonald Poultry Ranch & Hatchery, Route 1, Box 246, King Road, San Jose, Calif.

PETALUMA HATCHERY—Established 1902. Chicks White Leghorn chicks from selected heavy-laying breeding stock, inspected and accredited by Sonoma County Farm Bureau. Chicks during May and June, $12.50 per 100, $115 per 1000. We positively guarantee safe arrival and full count of good, strong chicks, and no questions asked. L. W. CLARK, Box 155, Petaluma, Calif.

BUFF LEGHORNS ONLY!

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a specialty. Rested breeders used. BABY CHICKS, $16 per hundred. Don't buy chicks till you get my free circular. MRS. W. T. WHEELER, Berkeley, Cal., Rt. 1, Box 496-E.

WHITE LEGHORN baby chicks from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: April, $12.50; May and June, $12. Safe arrival full count live, strong chicks guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER setting catalog. J. A. Hanson, Corvallis, Ore.

HANSON'S Pedigree S. C. White Leghorns. Over 200-egg flock average for 6 years. Over 221-egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalog. J. A. Hanson, Corvallis, Calif.

BABY CHICKS from good stock, well mated. REDUCED PRICES May, June. W. Leghorns, R. I. Reds, Barred Rocks. Safe arrival guaranteed. Fine lot W. Leghorn pullets, any quantity. The J. H. Stubbe Poultry Ranch and Hatchery, P. O. Box 67C, Palo Alto, Cal.

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SOMETHING GOOD in WHITE LEGHORN CHIX—Best strains at reasonable prices. All popular varieties. Hatching each week. LINGO-DEL RANCH, Eleventh and Verdugo Sts., Burbank, Calif.

BABY CHICKS. Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 940 South Main St., Los Angeles, Calif.

Baby Chicks. Leading varieties, stand. bred, vigorous, heavy laying stock. Lowest prices, best quality; postage paid. Illustrated catalog free. Superior Poultry Co., Windsor, Mo.

SPENCER TURKEN, a new turkey-chicken. Large fowl, meat turkey flavor. Average 200 eggs. Booklet for stamp. SPENCER, R. 1, Santa Cruz, Calif.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

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BEEKEEPING taught. Instruction lessons, dime each. Spencer Apiaries, Sawtelle, Cal.

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Sweeping Reductions in All Departments

Three carloads of Sash and Doors.

Our stock of new and second-hand plumbing material is complete.

Let us submit our prices. We can save you money.

Lumber and Shingles

1x6 new boards for .....$25 per M
1x8, 10 and 12 for.....$26 per M
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Redwood rustic for.....$40 per M
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Sash and Windows

2.4x4.4 light sash .....$1.95 each
14 light French windows in pairs.
12 light double hung windows.
12 light French windows
6 light porch sash, 1⅛" and 1⅜"
5 light double hung windows, off center.
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We have a complete stock of the above always on hand, from 1.6x2.6 up to 4x5.1.

Plumbing

White enameled toilets, A1, complete, for..$26
Valve toilets, 1¼-in. connections $10
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Pipe and Fittings, galvanized and black, used and new.

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Paint, good quality, 21 colors.....$2.50 gal.
Paint, good quality, 19 colors.....$1.75 gal.
Send for color cards.

Second-hand office partitions with chipped plate glass at a bargain

10 wall beds, second-hand, complete with doors, at $22.50 each.

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New and refinished electric fixtures, second-hand wire, switches, knobs and all electric supplies at half price.

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Phones Market 7011 and Market 4264.

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We carry one of the largest stocks on the coast to select from, both of high-grade and medium price fixtures; also some defective ware, transportation damage. Write for prices and catalogue. We can save you money.

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HOSE SPECIAL

A limited supply of fresh "Pacific" 5-ply wrapped hose in 50-ft. lengths, with couplings.
½-inch SIZE $5 PER SECTION
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ORDER WHILE IT LASTS.

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GIANT WINTER RHUBARB PLANTS. Now $1 per dozen. F. R. Walker, Puente, Calif.

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WILD BLOODED TURKEYS—Eggs and stock for sale. Prices right. Small and large orders promptly taken care of. Jenkins, the Veteran, R. 3, Box 148, Burbank.

HART'S MAMMOTH BRONZE TURKEYS and eggs. Albert M. Hart, Clements, Calif.

BUILDING MATERIAL

BUILDING MATERIALS

NEW AND SECOND HAND

QUALITY GUARANTEED
QUANTITY UNLIMITED
LARGEST ASSORTMENT
A few of the principal items

NEW PERFECT STOCK

5 cross panel Doors, $2.85 to $3.90.
2 panel Pine Veneered, $3.
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Rabbeted Pairs, 20 light, $13.80 per pair.
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Screen Doors, galvanized, panel bottom, $3.75.
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French Cupboard Doors, $4 to $5 per pair.
2 light Windows, $1.75 and up.
All of above glazed. Hundreds of other styles, etc.
6 light Sash, $1.25 to $2.50.
Weather Shield outside or inside Paint, $2 per gallon.
10,000 rolls Ready Roofing, $1 to $3.50 per roll.
Poultry Netting, one and two mesh, galvanized, $2.10 to $14.60 per roll, 150 lin. feet
Barb Wire, $3.65 and $4.80 roll
Galvanized corrugated 26 gauge Iron, $6.75.
5 ft. perfect Tubs, $25 each.
Basins, $6.40 to $15.
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Boilers, Urinals, Hoppers, Pipe, Soil and Sewer Pipe, Malleable and Cast Fittings.
Nails, $4.40 base.

SPECIAL SALE

SECOND-HAND LUMBER

Good T. & G. Flooring, $30 per M.
Reject Flooring for sheathing, $20 per M
Short 2x4 mixed lengths, $18 per M.
Short 2x6 mixed lengths, $20 per M.
1,000,000 feet sound choice dimension stock at lowest prices.
Quantities second-hand doors, sash, plumbing, etc., etc.
We guarantee every shipment. Your satisfaction our largest advertising asset.
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THE CHARLES WEEKS SYSTEM OF INTENSIVE POULTRY AND BERRY FARMS
ONE ACRE AND INDEPENDENCE

The Fine Art of Earning a Comfortable Living on One Acre in California. For those who desire to dwell in sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 2 is now being established at Oxnemouth, California, 26 miles from Los Angeles. Write for literature.

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We are offering a few choice acres of land, planted to figs, three miles from the city of Stockton. The ideal location of this property gives it a real estate value far in excess of any other fig land offered the public. Write for our booklet, which will give you full information.

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AUTOMOBILE owners, garagemen, mechanics, send today for free copy America's most popular motor magazine. Contains helpful articles on overhauling, repairing, ignition, carburetors, batteries, etc. AUTOMOBILE DIGEST, 606 Butler Bldg., Cincinnati, O.

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CIGARS AND TOBACCO

KENTUCKY NATURAL LEAF TOBACCO—Chewing: 5 pounds, $1.75; 10 pounds, $3. Smoking: 5 pounds, $1.25; 10 pounds, $2; 20 pounds, $3.50. Send no money. Pay when received. FARMERS' CO-OPERATIVE TOBACCO UNION, Paducah, Ky.

DIRECT FROM FACTORY 5-in., Cuban Twisters, long filler. Sweet as a nut. $4 per 100. Cigar clippings 60c per lb. FRANK MILLER, 1208 W. 8th st., Los Angeles.

TANKS, PIPE AND WINDMILLS

REBUILT WINDMILLS, tanks, pumps, cylinders, surface irrigat. pipe all sizes, used, 3, 2 in., cheap. New galv. tanks all sizes, large used redwood tanks. DEMMITT CO., 120 N. Main, Yards, 816 Yale, Los Angeles.

Clean Chick House

AFTER a thorough sweeping of the entire interior of the building, with special reference to the rafters, mix a 1-50 solution of sheep dip and drench the room from the ceiling down. Scrub the floor until it is clean enough to serve as a food platter.

Then start the stove and run it for a week at a good temperature. This will hatch out any mites that may be in the cracks of the walls or floor. Give the room another drenching with sheep dip, this time to kill insects. After a thorough drying the building will be a safe place for chicks.

Instead of the fine chaff or sand usually advised, we use coarse straw—the coarser the better—for the brooding room. Chaff is apt to pack and make the floor moldy. Chicks will work holes into sand, which are death traps for the weaker ones, as they get into the holes and the other chicks pile on top of them and smother them.

Coarse straw permits air circulation beneath the chicks, keeps the floor dry, and lessens the danger of suffocation when the chicks pile up. The droppings work down into the litter, leaving the surface clean, which is not the case with chaff or sand. Once a day the straw should be well shaken up, then smoothed down for the night.—C. E. ARMSTRONG, Oregon.

Cement Poultry Troughs

I MAKE my own cement watering troughs. Use two boxes, one about two inches longer and wider than the other one. Put two inches of concrete in the bottom of the larger box. Then set in the smaller box and fill cement all around it to the depth you want the trough. Let this set and harden, filling the inner box with water.

After three days, knock the outside box carefully away. Then remove the inner box, taking it to pieces, if necessary. A cement trough made in this manner will last for years and is easily cleaned with a broom. For chicks and goslings, pastboard boxes may be used for forms instead of wooden boxes. You can make the troughs as deep or as shallow as you like.

Little Muscovy ducks like to play in shallow troughs of water. The latter should be swept out twice a day and refilled with fresh water.

A cement trough 2 feet wide, 3 feet long and 1 foot deep is large enough for a dozen grown ducks. This should be cleaned out at least once a day.—MRS. M. J. FLICKINGER.

Preparing Chick Land

LAND for raising little chickens should be kept sweet and clean, free from disease germs, and have plenty of fresh, green feed growing upon it. Don't attempt to raise chicks in an old yard, which may be infected with spores of disease.

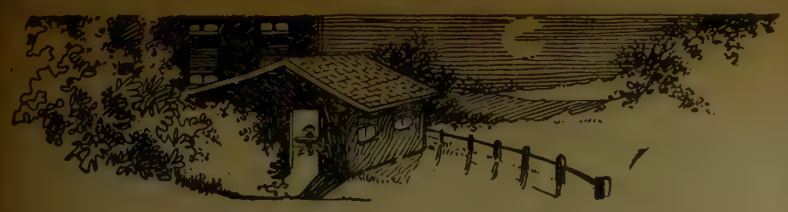
About three months before the chicks are to be turned onto the land it should be well sprinkled with air-slaked lime, which will kill almost any germs which may have been carried over from the previous season. Plow the ground, then spade up the corners, taking care that the entire surface has been turned under. Work the ground down smooth and level, as holes and ruts are dangerous places for little chicks.

Sow to any crop that will make tender, green feed. We sow the farther half of the yards to winter wheat and the part next to the brooder house to Dwarf Essex rape. The chicks relish the young rape, and the wheat soon provides shade for them and protection from hawks. Fruit trees are fine for the chicken yard.—C. E. ARMSTRONG, Oregon.

Convenient Brush Sled

ON THE Ihmsen ranch, at Victorville, Cal., a sled is used to haul prunings out of an 80-acre pear and apple orchard. This contrivance is made with a body 8 feet by 12 feet, on pine runners 3x6, seven feet long, placed four feet apart. Hauled by two horses, it has proved to be a great time-saver.

A rope two and a half times the length of the sled is fastened to the back of the bed and laid along its length. The brush is piled on top of this. When the load is hauled out where it is to be dumped the horses are unhitched and brought around to the rear and hooked to the rope, pulling the entire load off the sled in about 45 seconds. The entire cost of lumber and labor for this sled was less than $10.—C. H. GODSHALL.



Shrubs for Home Grounds

By E. S. CALLAWAY

FOR tall, columnar effects the Italian cypress is generally preferred. It is hardy, free from pests, clean and effective. At the time of planting it must be staked, providing support clear to the tip else a crooked trunk will result. It does not grow straight and staunch and for this reason often is planted in clumps of two and three, so that the shrubs will support each other.

As the cypress grows older it is apt to become too tall and ill-shaped. The leaders should be thinned out properly and they may have to be tied in, in order to keep the shrub neat and compact.

Be sure to get the true Italian cypress. It is more expensive than the other sorts, but is well worth the difference in price, having slender, stiff limbs, which grow in compact form. The Arizona and Monterey cypresses are too large for small grounds.

SHRUB FOR PILLAR EFFECTS

Eugenia Myrtifolia is one of the best pyramid-shaped shrubs. It is of medium height, symmetrical and clean. The new leaves are brownish green, changing to a grass green as they grow older. It is one of the best shrubs for pillar effects. It is not entirely hardy, but thrives in Southern California. It is expensive, but worth the cost.

The black-stemmed pittosporum takes on a pillar or tapering shape. It is always clean and thin-branched, with black-stemmed, olive-green leaves. Specimens with a central stem are fine to plant in corners or in front of pillars. Some varieties grow into small trees and can be trained in various shapes. Their chief beauty lies in leaf coloring, although they bear beautiful blossoms and berries.

Berried bushes lead in popularity, owing to their showiness, but are fitted only for deep corners and roomy spaces, as they will not stand severe cutting back.

RED BERRY IS EFFECTIVE

The red berry (cotoneaster pannosa) is a very common shrub for roomy places and when thinned out—not cut back—is loaded with bright red berries all winter. The leaves are gray-green and very effective in appearance.

The Christmas berry (crataegus) bears an even brighter red berry. The branches are stiffer and less pendulent, thorny, with leaves of a rich, dark green. A very attractive shrub, quite pest-free.

The yellow berry (cotoneaster augustifolia) is another very attractive bush, bearing loads of yellow berries; thorny, stiff, always clean and attractive.

The variegated pittosporum veronica and silver evonymus give hardy plants for special effects. The golden evonymus and golden privet are hardy, yellow-leaved shrubs.

The abelia is one of our best shrubs for foliage and blossoms. The hypericums, jasmines, barberries, brooms are preferred for yellow blossoms. The heathers, hibiscus, baby breath, bridal wreath, bottle brush, escallonias, hydrangeas, flowering almonds and peach are all good shrubs and very free from pests.

Fruit Tree Pruning Suggestions

IT REQUIRES more knowledge, experience and thought properly to prune a tree than to perform any other kind of orchard work. Pruning is both an art and a science, and should be considered as such, not only by the amateur orchardist, but by experienced horticulturists.

Too often trees are butchered by irresponsible, inexperienced laborers, whose only object is to finish the job as quickly as possible, regardless of results. Much pruning is done by contract at so much per tree. To the experienced orchardist this plan is unsatisfactory. During the past few years, however, it has been a case of getting the work done in any way possible, owing to the shortage of labor.

In order successfully to prune a fruit tree the workman should be in possession of a thorough understanding of the way in which the different trees bear. For example, the Tragedy, Sugar and French prune require little, if any, pruning after they reach maturity, while the Burbank, Wickson, Climax, Santa Rosa and many other varieties of plums require considerable pruning.

PROVING VALUE OF PRUNING

The need of this work may be demonstrated by failing to prune part of the foregoing varieties one or two seasons, then pruning all of the trees for two or three seasons, noting the tonnage of fruit produced by the pruned and nonpruned trees.

The matter of pruning must be considered from the time the tree is planted. The first few years are as important in the life of a fruit tree as they are in a child's life. This is the time when the foundation of the future productiveness of the tree and the physical, mental and moral character of the child are established. "As the twig is bent the tree is inclined."—W. S. KILLINGSWORTH.

Good Flowers for Shady Locations

The anemone or wind-flower will grow in the shady spot or in the sunshine, being a hardy perennial which reseeds itself year after year. It makes an excellent low border, growing only about a foot in height. The flowers are cup-shaped, pure white, white and yellow or pink, usually blooming from August to November.

The antirrhinum or snapdragon will grow nicely out doors in the partially shaded garden. It should be sown in flats in the interior counties and transplanted later. Give the plants about a foot of space in the garden. Though the antirrhinum is a tender perennial which will live through the cold weather if protected, it is usually treated as an annual and the seed is sown each year.

Scarletflax is a continuous producer of bright, crimson flowers. It is a self-seeder, growing about two feet high. It does very nicely in the shade, though blooming more profusely where there is sunshine during half the day. The plants should be set about a foot apart when transplanted, or thinned to that distance if the seeds are sown in the garden. It succeeds best in soil enriched with decomposed manure. In fact, well fertilized soil is preferred by most flowers.—HELEN TEMPLE.

Chick Feeding Method

WE FEED our chicks in cool rooms adjoining the warm rooms, the latter being 16 feet square and the former 4 by 16 feet. The floors of the feedrooms are covered with chaff, to force scratching exercise.

Chick feed is given at daylight. Every little bird must turn out for this event, to permit the warm room to be aired and the litter to be shaken up. The drinking troughs then are filled with buttermilk.

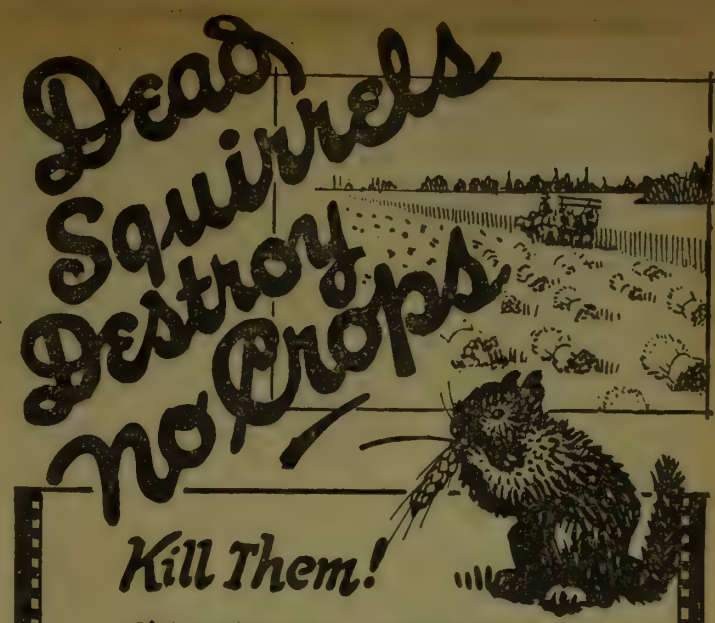
At 8 o'clock the chicks are given a plentiful supply of kale, and at 10 o'clock another feed of grain—wheat, oats and corn. A third light ration of chick feed is given at 2 o'clock and a final heavy one a half hour before dusk. The drinking troughs are refilled at 3 o'clock and a fresh supply of kale brought in.—C. E. ARMSTRONG.

Slitting the Bark

PERIODICALLY, we have discussions as to the advisability of cutting the bark of "tidebound" trees. Certain quack tree doctors have ruined many trees by indiscriminate use of the knife; some scientists laugh at the suggestion of such treatment. Others, however, as well as many practical growers, believe this plan both feasible and desirable under certain conditions. They point out it may be used to advantage for "bringing back" old neglected trees which have become barkbound, but even in such an orchard it is believed the work should be done in the spring in order to minimize danger of frost injury.

CALIFORNIA IMPORTS BUTTER

During February there were received at the San Francisco market 82,449 pounds of butter from outside States, principally Oregon, according to the California Dairy Council.



Kill Them!

CALCIUM CYANIDE

will do it!

Its use is simple—merely insert from 1½ to 2 ounces (a large spoonful) of flakes in every opening and cover the hole securely with a shovelful of earth. In contact with the moisture of the earth it generates Hydrocyanic Acid—an extremely poisonous gas, which diffuses quickly throughout the burrow and which no animal can withstand. There is no storage or handling problem with

Aero Brand Calcium Cyanide

It is non-explosive, non-inflammable, and is shipped in tight metal drums. 100 pounds will treat 800 to 1000 holes.

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25-pound drums—19c per pound
100-pound drums—18c per pound
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TERMS—Remittance with order; or sight draft with bill of lading for freight shipment; or by express C. O. D. Advise where shipment is to be made and whether by freight or express.

Write for further information or prices in carload lots.

It costs a dollar to feed a squirrel. *It costs two cents to kill him.*

ACCO — The perfect amsonate — Atmospheric nitrogen — 1907

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A trial is most convincing. The use of one trap leads to another. These traps are an absolute necessity in exterminating the deadly poisonous fly. Full directions accompany each trap, telling how to bait it to attract the flies.

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Pomona, Calif.

How to make Perfect Jam and Jelly

Anyone who will follow a simple CERTO recipe can now make perfect jam or jelly with any kind of fruit. CERTO, the jellifying property of fruit, is the reason. It contains no gelatine nor preservative and is highly endorsed by food authorities. With CERTO you preserve all the color, flavor and aroma of fully ripened fruit; boiling period is only one minute; no juice is boiled away, and expense by CERTO Process is less per jar than old method.

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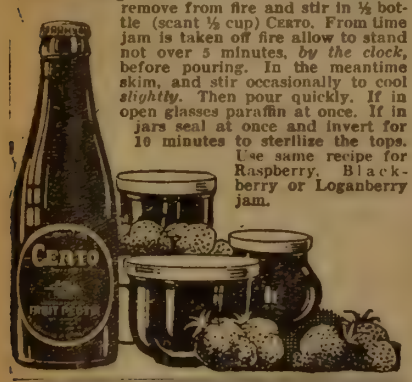
In Canada send 40c for trial bottle with *Recipe Book* to Douglas Packing Co., Ltd., Cobourg, Ontario, Canada

Try this Crushed Strawberry Jam

For this jam it is necessary that *each berry* be broken up. Therefore, crush about 2 quarts ripe berries in separate portions, so that *each berry* is mashed. This allows fruit to quickly absorb the sugar during the short boil. Measure 4 level cups (2 lbs.) crushed berries into large kettle, add 7 level cups (3 lbs.) sugar and mix well. Use hottest fire and stir constantly before and while boiling. *Boil hard* for one full minute, remove from fire and stir in ½ bottle (scant ½ cup) CERTO. From time jam is taken off fire allow to stand not over 5 minutes, *by the clock*, before pouring. In the meantime skim, and stir occasionally to cool *slightly*. Then pour quickly. If in open glasses paraffin at once. If in jars seal at once and invert for 10 minutes to sterilize the tops. Use same recipe for Raspberry, Blackberry or Loganberry jam.



Find Avocado Sterility Secret

Scientists Learn How to Make Avocadoes Bear. Successful Commercial Culture Believed Assured

By R. W. HODGSON

Extension Service, University of California

IT NOW appears that the principal obstacle to the success of avocado culture as a commercial enterprise has been finally overcome, or is in a fair way to be solved, as a result of pollenation studies made during recent months by Dr. A. B. Stout, director of the New York Botanical Gardens, who for the past year has been located at Pomona College, Claremont.

Ever since the avocado was introduced into California a most perplexing problem has been the peculiar behavior of individual trees, and sometimes solid blocks of trees, including two or three standard varieties. Consistent production of good crops is a quality which comparatively few varieties apparently have possessed.

Occasionally a heavy crop was produced and in certain localities good crops have been the rule, but taken by and large the crops borne have been far from satisfactory and altogether disappointing as compared with the tremendous crops produced by a few of the original parent trees.

FRUIT IS SELF-STERILE

Now it is all explained by the interesting findings made by Dr. Stout, which indicate rather conclusively that the majority of the varieties grown are self-sterile and require cross-pollenation for setting and maturing fruit.

The problem is further complicated, he finds, by the fact that certain varieties are practically inter-sterile and do not set fruit in large quantities, even though planted side by side. He also finds that certain varieties fail to set satisfactory crops when planted together, even though they are not inter-sterile.

This is due to the fact that the male and female parts of the flowers do not function during the same hours. At certain periods of the day the pistils are in a receptive condition. At this time, however, the stamens are not shedding pollen. Dr. Stout has determined a remarkable periodicity in this regard, and finds that not only does this hold true for practically every variety, but there are a number of varieties which, although inter-fertile, fail to set crops, even though planted together—on account of the fact that there is no overlapping of the two periods.

INTERPLANTING BENEFICIAL

It has been found that certain varieties do overlap satisfactorily, however, and these varieties, when planted together, rarely fail to produce heavy crops. Among those which can be said to be good cross-pollenizers are the Dickinson and the Fuerte. All principal varieties are now being tested in this regard, and within a few weeks Dr. Stout hopes to be able to offer a complete list of satisfactory pollenizing varieties.

Dr. Stout has learned that the influence of girdling, which has long been known frequently to aid in the setting of crops, is due primarily to the fact that the nutritional disturbance following girdling causes an overlapping of the period when the pistils are receptive and the stamens are discharging pollen, which results in the fertilization of flowers and the setting of fruit.

There is no doubt whatever but that these discoveries constitute the most important advances of recent years in avocado culture, and their application, it is believed, will have much to do with the rapid advancement of the industry.

It "Raises" Bread—Why Not Hogs?

Ordinary Yeast Proves Valuable Addition to Swine Ration on Santa Barbara County Ranch

AN AVERAGE increase in monthly gain of more than seven pounds, at the slight additional cost of 30 cents per head per month, as a result of feeding yeast to hogs, is reported by Thos. F. Dinsmore, manager of the famous Ortega Underhill Rancho, near Santa Barbara, Cal.

"Our experience has convinced me of the value of yeast in the swine ration," asserted Mr. Dinsmore recently, "and no doubt we shall get even better results with the dried yeast now used for poultry feeding. Our early experiments were conducted with the compressed cake used by bakers."

Three lots of Hampshire hogs were fed in the original experiment. In addition to the regular ration, the first pen received a light allowance of yeast, costing ½ cent a day. The second was given twice as much, and the third received a large quantity, costing 4 cents per head per day.

"At the beginning of the experiment these pigs were making an average monthly gain of 23 pounds," Mr. Dinsmore stated. "The first pen made a slight gain, the second increased to 32 pounds, and the third, although making enormous gains at first, finally showed such ill effects that two died, one had to be killed, and another was ruined for breeding or market. This latter animal developed a peculiar ailment which veterinarians diagnosed as breaking down of certain body cells, evidently due to overstimulation.

"Our natural conclusions, therefore, were that the moderate feeding was beneficial and the heavier dose very harmful," Mr. Dinsmore pointed out. "It is quite evident yeast is a sort of tonic, furnishing valuable vitamines and increasing the appetite. It seems also to bring about greater assimilation of the regular ration."

One valuable conclusion reached by Mr. Dinsmore is that even in small quantities yeast should not be fed consistently over a long period. "Two weeks on and two weeks off," is the rule finally adopted at the Underhill ranch.

It is explained that the tonic effect of the yeast continues for ten days or more after a two weeks' period of administration. Then the animals begin to "go back" if not given the yeast. Therefore it is administered for two weeks more, and again discontinued for an equal period. If fed constantly, without a "break," the yeast seems to lose some of its tonic properties, Mr. Dinsmore says, and the animals do not gain as rapidly as when fed according to the above plan.

"So impressed were we by the results obtained in our experiments," concluded the Santa Barbara stockman, "that we believe yeast may take the place of alfalfa in feeding or breeding establishments where pasture or green feeds are unavailable. No doubt it will prove very valuable, therefore, to farmers who operate upon high-priced land and who cannot depend upon a regular supply of green stuff."—J. C. K.

Feeding Yeast to Chicks and Ducks

SO many ORCHARD and FARM readers have written for directions for feeding yeast to ducks and chicks that I believe a description of the methods which have proved so successful will be of general interest:

Soak a package of any good yeast in a half-gallon of warm water. When all the yeast is soft, add a pint of mashed potatoes, and flour enough to make a soft batter. Let the mixture rise, then stir in enough cornmeal to make a stiff, crumbly mass.

Spread out on boards to dry. Do not spread on paper or cardboard, as these materials absorb moisture and strength. After drying, the material may be sacked and put away for use. If stored in a dry place it will keep a year.

Feed one pint of yeast crumbs mixed with bran or scraps of bread, wet scratch feed or any other kind of mash used, to one dozen hens or ducks. This is sufficient for one day. Feed nothing else on the day yeast is mixed with the mash. The yeast should be fed two or three days each week. I prefer a moist mixture.

For small chicks or goslings, simply crumb the yeast mixture fine and feed it three times a week. Of course other feed must be given on the days when yeast is not fed. I burn all pieces of boards and other wood scrap and mix the ashes and charcoal with the mash. I keep plenty of grit, sand, gravel and oyster shells where the chicks can pick up these materials whenever they wish. —MRS. M. J. FLICKINGER.

DRINK CIDER IN SUMMER

Tradition and sentiment unite in popularizing cider as a Thanksgiving beverage, but it is better suited for summer drinking, according to dietetic authorities. Although grape juice is consumed chiefly in the summer season, it is said to be a good blood food and therefore more suitable for winter consumption.

Halford's Ducks Pay

(Continued from Page 2)

districts, picking up small lots of ducks at his own price and then dumping them on the market in competition with the graded, selected, scientifically-fattened fowls of the commercial producers. But buyers are learning to know the good ducks and once a producer establishes a reputation he finds little difficulty in disposing of his stock. I never 'peddle' my birds. I don't take any stuff off the place until it is sold.

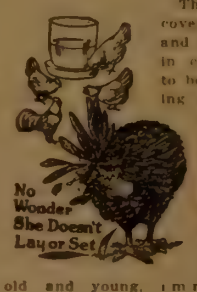
"I have one Jewish customer who buys 100 or more green ducks at a time and several Chinese dealers who are regular customers. The bulk of the green ducks are used by these two races, and unless consumption by the general public can be increased, I could not offer much encouragement to anyone who might consider large-scale production. However, I will say that the public is learning to appreciate the delicious qualities of young duck, and I believe the general demand will grow from year to year while more and more families are raising a few for their own use."

New Way to Rid Poultry of Lice

Rev. G. R. Mente Tells of Amazing Discovery Which Keeps Hens and Chicks Free From All Vermin

"I have used your remarkable Lice and Mite Remedy with fine results," writes Rev. G. R. Mente, Methodist Parsonage, New Washington, Ohio. "It has put a stop to the poultry losses in this community. You are a great benefactor to poultry raisers."

Lice and Mites Go Like Magic



This amazing new discovery is Imperial Lice and Mite Remedy. Comes in condensed liquid form, to be used in fowls' drinking water, a few drops at a time. No more Dusting, Spraying or Greasing.

Makes Lice, Mites, Ticks, Fleas, Blue Bugs and other vermin positively leave fowls like magic. Renders entire flock, old and young, immune to these expensive pests. Equally good for Chickens, Ducks, Turkeys, Geese and Pigeons. Guaranteed not to affect eggs or flesh of fowls in any way. Makes Hens, Pullets and Chicks healthier, sturdier and grow faster. A splendid summer egg tonic and blood purifier. More than 100,000 Poultry Raisers now keeping their flocks free from vermin, this new easy way.

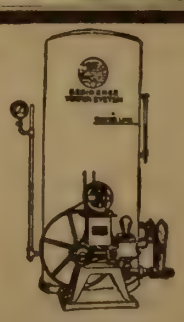
You Can Get Yours Free
(Regular $1 Size Bottle)

Imperial Laboratories, the manufacturers, are now making a Special Introductory Offer whereby you can obtain, absolutely free, a season's supply, for the average size flock, of this amazing new Lice and Mite Remedy.

SEND NO MONEY. Just your name and address to Imperial Laboratories, Dept. 7289, Kansas City, Mo., and they will send you by return mail two regular $1 bottles of Imperial Lice and Mite Remedy (double strength). When the package containing the regular $2 quantity arrives, pay the postman only $1 and a few cents postage. Use one yourself to rid your own flock of these pests, and sell the other to a neighbor thus getting yours free. Or, a large size Trial Bottle for only 50c.

Special to Large Users

If you have a large flock, or have neighbors who wish to go in with you, this Special Introductory Offer applies on 4 of the regular $1 size bottles, at an additional saving. A large size Trial Package of Imperial White Diarrhea Tablets included Free. Just state you want the regular $4 quantity for only $1.75. Readers risk no money, as Imperial Laboratories are fully responsible and nationally known distributers of poultry remedies. They will refund the cost on any of the above quantities ordered, promptly on request, any time within 30 days.



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in a sealed can that requires no refilling.

Enough to last the entire season.

Safe from children and pets.

Keeps ants out while exterminating.

Saves time and money.

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MARVEL ANT EXTERMINATOR

California Leads in Bean Yields and Prices

By ROBERT E. JONES

THE bean is an ordinary thing, but—as Abraham Lincoln once said of the common people—the Lord must have thought well of them, because he made so many. Doubtless you can remember when—with deep, youthful contempt—you informed Johnny, across the way, "You don't know beans." Even now, mention of a bean sandwich is presumed to provoke laughter, yet well-cooked brown beans, with a few slices of onion, encased in slices of generously buttered bread, are satisfying to a healthy appetite.

It really is not good form here in California to ridicule beans. A man who had the total money return from the 1922 bean crop, $17,918,000, could go into the chain banking business. California farmers received $17,918,000 for last year's crop.

California beans have shrunk somewhat in money importance, along with a lot of other things, during the past few years. A few years ago it was possible to show that the orange and the bean crop of California were of about equal importance in money value. In those days, as I remember, beans were selling at about $12 a sack and the total value of the California crop was approximately $50,000,000.

Those were the days of bean barons along the Sacramento River, where the bottom lands for miles and miles were carpeted with the deep green of the bean vine. There were men in those days who started with borrowed capital and became wealthy.

ORIENTAL BEAN SCANDAL

In those days, before folks began prying into the private life of King Tut and his love-lorn widow, we had a big bean scandal. Mongolian beans from Manchuria came into the United States from across the Pacific and reached the trade which had formerly absorbed the California crop. There was a big drop in price and California growers suffered big losses, for our farmers cannot compete with Oriental labor. That was the beginning of the end of big money in California. Some of our growers don't like to recall what happened to them then.

But even the jolt of those sad times did not displace California from its leadership among the bean growing States. California is still the most important bean producing State in the Union, measured by the amount of money received for the crop. California had 100,000 acress less in beans last year than did Michigan. The soil, however, is so rich and productive out here and the vine so bounteous in its yield under California skies, that 325,000 acres in California produced more beans than 458,000 acres in Michigan.

These are the facts, as stated by the conservative U. S. Department of Agriculture, California leads all the States in bean yields as well as prices received. Only eight States are important in bean growing.

Beans are grown in many parts of California. As many shapes, colors, sizes and varieties can be found here as are listed in the catalogues. For the whites, bayos, kidneys and cranberry beans, one must go to the river bottom lands of the Sacramento and San Joaquin Valleys. The more aristocratic lima is grown on the coastal lands of Southern California, mainly in Ventura County.

Among the odd varieties of beans grown in California are the Windsor (horse bean) and the garavanza, both of which find a ready market among Latin people. These two varieties can be grown in California through the winter, like peas. The horse bean, which as youngsters we were fonud of parching and chewing like an "all-day sucker," is much in favor among the Portuguese people of Alameda County, who plant them on the expensive land about Hayward. At one time Sacramento Valley farmers thought they would grow two crops of beans a year on the same land—horse and garavanza in winter and the other varieties in summer. This plan, however, has not been practiced very extensively.

DOUBLE CROPPING WITH BEANS

Throughout the interior of the State beans are generally planted in June. In some cases where the farmer is equipped for quick work and the season is favorable, it is possible to take off a crop of barley and then plant beans—after the land has been irrigated. But this practice requires a great deal of special attention. Beans mature in about four months and there is danger of early rains during the harvest season. Beans make a fine rotating crop to plant alternately with grain.

Grain yields are much larger on land which has produced beans the previous year, for beans are legumes and enrich the soil, instead of robbing it of fertility.

Bean Acreage, Yields and Prices

State.	Acres.	Bushels per acre.	Value of crop.	Value per acre.
New York	93,000	14.0	$ 4,948,000	$53.20
Michigan	458,000	10.5	17,553,000	38.32
Wisconsin	8,000	9.5	274,000	34.20
Colorado	81,000	5.0	1,782,000	22.00
New Mexico	45,000	3.0	608,000	13.30
Arizona	7,000	3.5	108,000	15.75
Idaho	26,000	14.0	1,238,000	47.60
California	325,000	14.7	17,918,000	55.12
Total	847,000	Avg. 11.4	Totl $44,429,000	Avg. $42.60

With an average yield of 14.7 bushels per acre, California leads the eight principal bean-producing States in production. This photograph was taken in Sutter County.

Giant threshing outfits have been devised to handle California's $17,000,000 bean crop. This one operates directly from the wind-row.

Vast acreages require large power units. Here is a cultivating scene in the Sacramento Valley, where, by tractor power, many rows at a time are tilled.

Thousands of sacks of beans go to market via the mighty Sacramento River. Here are some of Captain W. P. Dwyer's barges, loaded with their precious cargo.

A typical river bottom bean field. In some districts where conditions are favorable barley and beans may be grown on the same land in one year.

Community Activities

Team Work Reduces Rodent Population

By LEWIS Y. LEONARD

Agricultural Extension Service, University of California

RODENT control work has progressed satisfactorily in every part of California. So successful is it in fact that W. C. Jacobsen of the State Department of Agriculture estimates a saving of nearly $15,000,000 to the farmer in products.

Much of this work is made possible through community drives, in which the residents of a district turn out in force and cover a large acreage in a short time. Two standard substances are used: Carbon bisulfide gas and poisoned grain. There are seasons when the gas is satisfactory and even preferable. For community drives, however, the poison grain is more desirable, as the supplies are more easily carried, resulting in greater freedom for the workers.

On the day set for the drive, each person participating is given a sack of poisoned grain and assigned certain fields or areas. Each area is scrutinized carefully for hidden squirrel holes. About a tablespoonful of the poisoned grain is scattered in front of each hole. The hungry rodent upon emerging for food finds his desires easily satisfied, and the poison does the rest.

Many acres can be covered successfully in a day in this manner. While one drive a year may be good, a number are better in order to catch the animals which may have escaped previously. No drive is complete unless followed at lunch time by one of those delightful repasts spread by the wives of the workers and thoroughly enjoyed by all.

The grain is distributed at about this distance from the entrance. The poison does the rest.

Below—The man is holding in his hand the proper amount of poison grain for one squirrel hole.

This fire truck was secured by the formation of a district in North Sacramento, as described in article.

Fire Warden J. P. Yost shows how to fight a grass fire with the well known gunny sack.

Rural Fire Protection Problem Solved

UNLIKE the city resident, who is protected by high-pressure water systems and a convenient fire department, the farmer often is at the mercy of flames which may sweep his fields, hay stacks and buildings with devastating effect.

As the season advances grasses and grains ripen and dry, and the menace increases. Every year thousands of dollars loss is sustained through carelessness and lack of fire fighting equipment.

To secure such equipment is not as difficult or expensive as it may seem. The method is as follows: Secure a petition with the names of fifty taxpayers in the district, asking the Supervisors to appoint three fire commissioners. The commissioners call an election of the qualified electors of the district to vote a tax for a specified sum. The maximum sum that can be levied is one per cent of the assessed valuation of the property. If the vote carries, the county assessor assesses the amount against the property. The county treasurer is the custodian of the funds. The commissioners and election board serve without pay.

The funds thus raised may be used to buy such equipment as is deemed necessary for the district which is protected. The usual type is a twin chemical tank of about 60-gallon capicity, mounted on the chassis of an automobile of some good make. Additional equipment consists of hand extinguishers (2½ acid, tip-over style") rakes, hoes, sacks, ladders and axes. Practically any type of fire can be handled with this equipment.—L. Y. LEONARD.

This trailer protects the ranch of Fred Harvey, Galt, Cal. It may be hitched to any car.

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

JUNE 3, 1923

Building Up a Poor Farm With Good Cows

By O. H. BARNHILL

WHEN W. R. Harriman took charge of the Los Angeles County farm near Downey eight years ago he saw no reason why the principles of good farming should not be employed in its management. True, tax money could be used to cover up any losses resulting from poor methods, but why use poor methods?

For example, if it pays the private dairyman to use purebred sires and the best milk stock obtainable, why should not the county keep the same kind of animals? And if it is good policy for the farmer to use all the milk he needs in his family, why is it not equally desirable for county farm inmates to imbibe all the lacteal fluid they need?

Finding but one reasonable answer to these and similar questions, the new superintendent decided to put these policies in operation. He found that most of the 400 acres in the county farm needed two things badly; drainage and manure. An immense quantity of the latter is obtained from the 284 head of cattle kept on the farm. This fertilizer recently has been used to such good advantage in enriching the corn ground that the yield of silage has been increased 50 per cent. A large acreage of alfalfa is grown, which also helps to build up impoverished soil.

Part of the herd of high-grade Holstein cows which furnish plenty of fresh milk to the inmates of the Los Angeles County Farm. Old wooden and new concrete silos in the background.

DRAINAGLE PRESENTS PROBLEM

The drainage problem proved more difficult of solution. The only practicable plan, according to drainage engineers, is to open an outlet into the San Gabriel River. This involves large expense, which profitably can be met only by the formation of an irrigation district and assessing the cost equally to each acre benefited.

There was no difficulty in proving conclusively that drainage would pay big dividends on the cost, which was estimated at $46.50 per acre, payable in 15 years at the rate of $4.73 per year. But when it came to inducing a majority of the landowners in the 4000-acre district to assume the necessary liability to put the project through—Harriman and other drainage advocates found they had tackled a hard proposition.

All farmers are not good co-operators. Cases have been known where some of them who fought irrigation to the last wet ditch were afterwards made enormously wealthy by the very water which they tried to keep off their land. It has been the same with drainage.

EIGHT YEARS—THREE CROPS

A large tract which adjoins the county farm has grown but three crops in the past eight years, according to Mr. Harriman, because of surplus water. The five crops which could have been grown with the aid of irrigation would, it is estimated, have paid for the entire cost of the ditches several times over.

About 3000 acres between Downey, Artesia and Signal Hill need drainage and would be benefited equally with the owners of the County Farm by the proposed improvement.

There is a 35-acre field on the county farm which, because of lack of drainage, has produced no crops for many years. No dividends can be obtained from the taxpayers' money invested in this land, so long as the neighbors refuse to co-operate in an irrigation project. The value of drainage is being demonstrated by conducting tests on small tile-drained tracts, the superintendent points out.

Although the word "poor" is sometimes used in referring to the Los Angeles County farm, high quality superlatives are always employed in describing the splendid dairy herd which supplies milk and cream to the inmates and employees, also to the patients at the County Hospital and others, a total of 3200 persons. By the introduction of the best Holstein blood obtainable, coupled with expert care and feeding, both the quantity of milk and the butterfat content have increased steadily during the past few years, the latter now averaging nearly 400 pounds per cow.

Superintendent Harriman and two of his bovine favorites. The calf is Queen of the Valley Mead, sired by King Pontiac.

EXTENSIVE COW ACQUAINTANCE

Although the herd numbers nearly 300 animals, more than half of which are milk cows, Mr. Harriman appears to be familiar with the record of each individual and of the ancestors of many of the best animals. To hear him recite from memory scores of names celebrated in Holstein history, as he points out one magnificent cow after another, telling the exact number of pounds of milk and butterfat which she and her ancestors produced, is like listening to a bovine roll of honor and shows the keen personal interest the superintendent takes in this department of his work.

King Segis (Continued on Page 10)

Partial view of the dairy herd and buildings. The "cow kraut" tanks accommodate 1500 tons of silage. The main silos are concrete. Two large corrals are hard surfaced.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JUNE 3, 1923

Some Strange and Unique Forms of the Apple

World's Best Loved Plant Breeder Describes Odd Freaks of Fruit World —Some Valuable Recommendations and Prophesies

By LUTHER BURBANK

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IN apple breeding unique forms and other strange characteristics frequently are evolved. Sometimes a peculiar color and flavor are transmitted to a definite portion of the seedling fruit. One-half of an apple may be sweet, the other sour. Or one part (a half or a quarter or even less) may be of one distinct color and the remainder of some other, the line of demarcation between different colors and flavors being clear-cut. The so-called "sweet-sour" apple, although a freak, is not an unusual occurrence.

Among my first childhood memories is that of a Roxbury Russet tree growing in my father's orchard from which cions were taken and grafted upon a larger seedling tree. This Roxbury Russet, the fruit of which became red-striped for some unaccountable reason, when so grafted produced fruit with longitudinal stripes, with skin and flesh exactly like that of the striped seedling on which it was grafted, and in sections of varying breadth the fruit upon the Roxbury Russet graft—perhaps a fourth, a half or at times a whole apple—would be exactly similar to the striped seedling. Properly speaking, this was not what might be called a sweet-sour apple—both apples being measurably sour—yet the sections of different colored skin had a very perceptible difference in both flavor and color.

Another apple has been reported and even introduced by nurserymen as a sweet-sour apple which in most characteristics is like a Rhode Island Greening, having similar longitudinal sections of reddish colored skin under which the flesh has a sweet taste wholly distinct from that of the rest of the apple.

Other apples of a similar character have been reported and described from various parts of the United States. They are freaks—neither more nor less—and are interesting only from a scientific point of view, having no practical value whatever. They appear in the same way and doubtless arise from causes quite similar to those which give origin to variegated flowers—for instance, dahlias, carnations and other flowers.

THE "SEEDLESS" APPLE

Another curious freak is the seedless apple, so-called. The first one of this kind of which I had any knowledge grew on my grandfather's place, and, according to my best information, must have been bearing fruit more than 80 years ago. I think my grandfather obtained the grafts for this tree from near Philadelphia. Seedless apples have been reported from many sections and recently one has been widely exploited by a firm in the Middle West.

A seedless apple is not desirable unless the carpels also are eliminated so that the fruit is solid and free from any hard core, but so far no such apple exists anywhere. The elimination of the carpels is of much greater importance than the elimination of the seeds. The seedless apple referred to as growing on my grandfather's place was also a "bloomless apple," the flowers being without petals and thus imperceptible to the casual observer. Petals, however, are not essential organs for the production of fruit, serving the purpose only of guide marks for the bees to insure pollination.

An apple tree that would produce an abundance of fruit of high color, large size and good flavor without seeds or core certainly would be one of the most desirable acquisitions imaginable. That such an apple may some time be produced is not altogether impossible. But I should not recommend any one to delay planting an orchard in order to wait for this kind of an apple, and certainly should not recommend planting for profit any seedless apple which thus far has been reported.

GRAFTING UNPRODUCTIVE TREES

Many people unacquainted with horticultural methods are greatly astonished when informed that their unproductive trees—and even those bearing positively inedible fruits—may be grafted with the choicest varieties and made to produce fruits as large in size, as fine in flavor and color as can be produced by the best trees naturally bearing such fruit. There are in the United States millions of large, vigorous trees not worth one cent each as they now stand—and they never will be, no matter to what age and size they attain—which, if regrafted at a cost of from one to three dollars each, might easily yield a profit of from $5 to $10 or more every year in some valuable fruit. Could the loss and waste in our country be computed arising from permitting unproductive trees to cumber the soil the result would prove astounding! This is a case where grafting benefits the farmer or the fruit raiser as well as the middleman, the commission merchant and the politician.

APHIS-PROOF VARIETIES

In New Zealand great damage has been done to the apple orchards by the woolly aphis. This pest does but little harm while working on the tops of the trees except to give them an unsightly and unkempt appearance, but it does incalculable damage when it gets thoroughly at work upon the roots, where it is impossible to reach it with any spray or other insecticide, and its extermination soon becomes a serious problem.

Efforts have been made to produce apples which would be aphis-proof, as some of the American grapes have been proved to be phylloxera-proof. The Northern Spy has been discovered to be such a variety and it is extensively used as a stock in New Zealand. It has never become injured or affected by these insects, even when planted side by side with trees seriously affected. As stated, the principal damage by the woolly aphis or American blight, as it is often called, is upon the roots, therefore by grafting any variety on the Northern Spy roots a healthy root system may be obtained.

Unfortunately, seedlings of the Northern Spy do not carry this quality of aphis resistance, consequently some method must be devised whereby the Northern Spy can be enlisted to furnish roots not only for all other varieties, but as well for its own seedlings if experiments with them are contemplated. Apple trees do not root very readily from cuttings and even if they did the system of roots thus formed by most varieties is not first-rate.

PLAN OF PROPAGATION

To obtain a proper system of resistant roots the following method has been devised: Cuttings from the vigorous Northern Spy are placed in the soil and allowed to grow for a year or two until ample rootage has been developed, then these trees so formed are dug and their roots severed into small pieces upon which the grafts of any variety may be placed and thus provided with a resistant rootage. Having acquired a goodly stock of such trees, the operator may take cuttings from the ends of the roots in order to keep up the supply for grafting each season. By this method aphis-proof orchards can be started quite readily at comparatively small expense, and although the process is slightly more tedious and expensive than the ordinary way of raising an orchard yet, *(Continued on Page 9)*

Burbank Honored by Home Folk

LUTHER BURBANK, world famous and best loved plant breeder, is a conspicuous exception to the rule that "A prophet is not without honor save in his own country." The American people delight to show the high regard in which they hold this venerable evangel of better fruits, flowers and vegetables, who for half a century has labored unceasingly and unselfishly to make life better and brighter for mankind.

Their latest expression of appreciation was the holding by the residents of Sonoma County of a jubilee celebration, May 17-20, at Santa Rosa, the home of Burbank, to mark the fiftieth anniversary of the beginning of the great plant breeder's work. Although the event was confined to one county, the people of the entire Nation in spirit were present, paying silent tribute to the incomparable achievements of this tireless laborer in nature's vineyard.

Farm Bureau Federation on Firm Foundation, Says Hardison

California Executive Taboos "Hurrah" Tactics and Views Future With Confidence

By JAMES C. KNOLLIN

"I HONESTLY believe," said A. C. Hardison, president of the California Farm Bureau Federation, recently, "that our organization now enjoys more complete confidence on the part of both the public and its members than ever before."

This was his reply to my question, "What do you consider the greatest accomplishment of the Federation during the past six months?" In addition to his federation office, Mr. Hardison now holds an important official position in Governor Richardson's Agricultural Council.

A. C. HARDISON

Hardison is a substantial, conservative, yet constructive business man. When he took office less than a year ago, he outlined for the State Body what he termed a "safe and sane" policy. He emphasized at that time, and has insisted upon since, the necessity for democracy within the organization. Mr. Hardison believes such an institution as the Farm Bureau Federation should be truly representative, in all its activities, of the majority of the members; he feels that no one man, nor even small group of men, should take the responsibility for expressing its policies.

"We have endeavored in every possible way," said the farmers' leader, "to learn the true consensus of opinion of our members all over the State. We have encouraged each unit to feel that it had an equal voice with every other unit, in the management of Federation affairs. We have withheld action when possible until we were sure of the will of the majority. In other words, we have tried to build upon a sure foundation."

That this policy in no way has lessened the power of the organization is conceded. It is rumored, in fact, that some of the confusion in the affairs of certain co-operative marketing organizations has been influenced by the Farm Bureau.

Many farm bureau members are said to have expressed dissatisfaction with the centralized control of some of these great associations and to have thrown their influence with the element demanding reorganization. The recent upheavals among the big co-operatives, while regretted by agricultural leaders, may be for the ultimate good of the State, in Mr. Hardison's opinion, if they result in more democratic management, and representation of smaller groups of members. The lack of such representation, he points out, has caused the failure of many co-operative movements. One prominent producer cites the California Fruit Growers' Exchange as an example of democratic management, compared with what he terms the "oligarchy" set up by certain other organizations.

SELLING QUESTION PARAMOUNT

"The Farm Bureau Federation naturally must concern itself with co-operative marketing," explained the California executive. "This undoubtedly is the greatest subject before the farmers of America, and it has been of paramount importance in California. But we have not for a moment sought to destroy or cripple existing associations. To the contrary, our policy at present is to assist in every way to build up and strengthen the established marketing bureaus which have national distribution. We do discourage the formation of new, experimental selling organizations, realizing that the more such associations we have, the greater will be the opportunities for failure. To those growers of special commodities who feel the need of mutual protection and more orderly selling, we have suggested affiliation with the Federated Fruit and Vegetable Growers, which is sponsored by the American Farm Bureau Federation. For a small group of producers to attempt the national distribution of some special crop under present conditions is almost certain to result in disaster."

Mr. Hardison emphasized the necessity for volume in the selling of agricultural products. "To enter national markets successfully," he asserted, "requires the services of a big, well-balanced organization, adequately financed. Only their size and ability to command almost unlimited financial backing has saved some of our California associations on several occasions," he pointed out. "How unwise it is, therefore, for a small group of farmers to expect to finance the distribution of their specialty without sufficient volume or experience safely to enter the national field. And yet national distribution is necessary for many commodities of which comparatively a small volume is produced. It was partly to meet this condition that the Federated Fruit and Vegetable Growers was formed. Of course, where only state-wide distribution is needed, a local body safely may handle the situation."

Some of the marketing associations which have gone "on the rocks" and some which have had more or less hectic careers were sponsored by opportunists, Mr Hardison believes; that is, by men who were more interested in their own aggrandizement than in the general welfare of the members. "The only association which can survive," he insisted, "is the one built upon a firm foundation, and offering real, unselfish service to its members. We want to *(Continued on Page 10)*

ORCHARD and FARM

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

TIP FOR REAL ESTATE AGENTS. An orchard plat, with individual tree records, can be used with great advantage in selling a grove of fruit trees, believes W. A. Jones, Azusa orange grower, who has had some interesting experiences along this line.

"A dusty tramp through an orchard is not apt very favorably to impress a banker or other business man," points out this producer, "because he is unable intelligently to judge of what he sees. The trees may look all right, but will they bear profitable crops of fruit? How can he tell?

"But as a customer of this kind sits in your office with an orchard plat before him and looks at figures giving the yields of each tree for a series of years, he feels he is on familiar ground and is ready to do business. Teachers and other professional persons also can best be sold orchard properties in this manner."

WALNUTS, WALNUTS EVERYWHERE! That Southern California walnut growers may expect in future more and more competition from the central part of the State is the opinion of horticulturists who keep abreast of new developments.

The traveler through both the valley and coast districts finds much interest in walnut growing and a deeply rooted conviction that certain varieties will prove exceptionally valuable. It is pointed out the work of propagating walnuts and testing varieties is really in its infancy.

The Concord walnut has proved very profitable on the famous Curtner ranch, near San Jose. Some 25 acres of this variety, from 12 to 14 years old, have produced a steady, attractive income which, according to Weller Curtner, compares most favorably with the "cots," prunes and other products of the ranch.

The Concord also is meeting with considerable favor in the interior, where Paynes and Eurekas are more generally planted. Nurserymen report unusual interest in walnut stocks and one sees new plantings where a few years ago this product was not considered a commercial possibility.

WILL AIDING EUROPE HELP OUR FARMERS? The idea of rehabilitating Europe in order to aid American farmers is all "bosh," in the opinion of Ralph P. Merritt, executive head of the Sun-Maid Raisin Growers. "Suppose we did come to the financial rescue of Europe and aid her even more than we have done; what would be the result? The buying power of the European nations could be increased, perhaps, but so would their producing power," Merritt points out. "In the long run we would simply be helping Europe to her own production.

"Russia affords a good example of this situation. We have fed her starving millions, as an act of charity. And although no one with a spark of humanity regrets this relief work, the fact remains that our assistance was responsible largely for Russia's ability this year to plant a vast acreage of grain, which may be sufficient to upset the world's market. To carry our aid beyond the relief work we are conducting as a Christian duty would be a most short-sighted policy from the business viewpoint.

"Instead of looking to Europe for relief we should encourage our Eastern and Middle Western States to diversify, and in California should strengthen the already advantageous position of our specialty farmers by building up and improving our co-operative marketing associations. In my opinion the average Eastern farmer is in a precarious position, while our fruit growers and other specialists can face the future with all assurance and optimism," Merritt concluded.

IRRIGATION VERSUS DRY FARMING Because of the failure of a number of so-called dry farming enterprises in California, the opinion has become prevalent among farmers in other States that any such enterprise is doomed to failure here. They do not take into account the variation in climatic and soil conditions in this State. It is a fact there are many districts where farming without irrigation is not only successful but highly profitable as well.

In the Paso Robles section of San Luis Obispo County, for instance, almonds as well as apricots, peaches, pears and other fruits are raised on the very tops of the rolling hills without irrigation. The soil seems to have a peculiar quality of holding the winter rainfall like a sponge. And, oddly enough, the soil of the hills often is more fertile and appears to have greater moisture holding capacity than that of the valleys.

This is but one example of many similar enterprises which depend for their success upon local conditions. Dry farming or fruit growing when conditions are favorable should be encouraged, for it is generally conceded fruits produced without irrigation have keeping qualities and flavor of a high order.

The prospective buyer of land, however, should investigate very carefully before investing in any "dry" enterprise. Let the abandoned farms of certain sections stand as a monument to unwise promotion and as a warning to those who lend their ears to the siren songs of real estate promotors!

"What's New?"—Keeping Abreast of Agricultural Progress

Storing New Mexican Mohair

EDDY and Chaves Counties, New Mexico, have each stored twenty tons of mohair and Otero County thirty-seven tons, to be sold co-operatively. Mohair shipments to Boston in April brought 40 cents for inferior stock and $1.25 for fancy kid mohair.

Laxtonian Peas Paying Best

AS a result of a garden pea test conducted this year by the Imperial County Farm Bureau, the Laxtonian garden pea proved the most profitable variety. While the yield, 1316 pounds per acre, was not as great as the Stratagem, 1968 pounds, higher prices were secured, because Laxtonians were ready for picking a month earlier than the Stratagems.

Warming Up Alaska's Subsoil

THE permanent ice layer at Rampart, Alaska, 50 miles from the Arctic Circle, was lowered from eight inches to six feet by clearing the land of timber and moss and cultivating the soil. In the lower Yukon Valley, where some land has been cultivated 10 years, a well 25 feet deep was dug and no permanent ice encountered.

Co-operative Spraying Succeeds

THE San Lorenzo farm center (Santa Cruz County) has purchased a $400 spraying outfit and employs a man and team at $8 per day to do custom work for members of a co-operative spraying ring. The plan is said to be proving a great success, relieving members of what is generally considered one of the most difficult and disagreeable jobs on the farm.

Increasing Imperial Acreage

DURING the first three months of the present year Imperial County has planted 50,000 acres of alfalfa and imported 3,000,000 grapevines, 50,000 grapefruit trees, 500,000 asparagus plants and 1,000,000 strawberry plants. These importations, together with home-grown plants, were used to increase the asparagus fields 166 acres and the grapefruit groves 1000 acres.

New Cow Testing Associations

NEW cow testing associations recently have been formed in Santa Barbara and Madera Counties and others are being organized in Merced, San Diego and Tulare Counties. Cow testers not only ascertain the butterfat content of milk, but aid in the selection of purebred bulls, arrange for the sale of unprofitable cows, help select and introduce better heifers and cows, work out feed rations and induce members to build silos. California dairymen pay testers $75,000 a year.

Invents New Rotary Plow

A ROTARY plow, the invention of O. H. Green, San Jose, was demonstrated recently in the Santa Clara Valley. It is claimed for this unique implement that it will pulverize the soil in one operation, performing the work of plow, disc and harrow. Mr. Green plans to form a company for the sale of stock in small lots to a large number of individuals in his locality. It is purposed to manufacture the implement in sizes for team and tractor, and for various orchard and field operations.

Leaf Hoppers Invade Arizona

SWARMS of leaf hoppers are inflicting serious injury upon Arizona vineyards. E. S. Turville, Pinal County agent, reports success in trapping the insects in screen cages. Dr. E. G. Vorhies, State entomologist, is planning to co-operate with Mr. Turville in a spraying campaign against the destructive hoppers. They plant to use one part nicotine sulphate to 600 parts water. The spray is to be applied to the under side of the leaves with 200 pounds pressure. Other vineyardists are feeding the bugs arsenate of lead.

Farm Bureau Growing Fast

AS a result of the excellent work accomplished, the Santa Cruz County Farm Bureau now has 100 more members than last year, the total number being 675. A salaried secretary is employed. The nutrition project includes the serving of hot lunches in five country schools. This work is self-supporting and costs the children only 15 cents a week.

One interesting result of better feeding is appetite training. The Ocean View children, who are mostly Italian, did not at first like milk soups, but now prefer them.

Feeding Farmers Better Food

OLD style cooking schools, which specialized in angel cake, pie a la mode and other fancy foods, are giving way to training classes for leaders of Farm Bureau nutrition projects. Schools of this kind recently were held by the Extension Service in Kings, Stanislaus, Solano and Sacramento Counties and others planned for Yolo, Merced, San Joaquin Counties.

Leaders—who pass on the information gained to housekeepers in their communities—are shown how to save time and materials in the preparation of foods. They are also taught the importance of using more fresh fruits, vegetables and milk, as advised by leading dietitians and hygienic authorities.

June Poor Culling Month

JUNE is a poor month to cull hens, according to the Extension Service, which reports that 36 of the 85 flocks which were culled last year in June, having a production of 40 per cent or more at the time of culling, were not permanently improved by the process. On the other hand only six of the 125 flocks culled in July and August, which had records of 40 per cent or less, were failures, from the culling standpoint.

During the present year 150 culling demonstrations in 39 California counties are to be held by poultry specialists, while at least 100 more such demonstrations are expected to be held by agricultural extension agents.

Children Collect Cockleburs

THE children of Aromas (Monterey County) school district collected 70,000 cocklebur seedlings, in a campaign led by J. B. Hickman, horticultural commissioner, and assisted by school teachers, to rid that region of this troublesome pest. The pupil turning in the largest number of plants received a $1.50 prize; second, $1; third, 75c. The weeds were destroyed before going to seed.

"From the standpoint of educational value," Mr. Hickman points out, "no work can furnish more valuable training to the young country school pupil than to participate in the eradication of noxious weed pests. The economic value to a community of an anti-weed campaign has so many angles that few appreciate its real worth."

Good Horse Drivers Scarce

THE American Express Company is discontinuing the use of horses in favor of auto trucks, because of the difficulty of securing competent drivers, according to Mr. DeForest, manager of the horse department at San Francisco. Nearly all expressman can drive an auto, he says, but very few are able safely to drive a team of horses on a crowded city street. The express company is at present using 160 horses and has 50 out on pasture and feed.

A San Francisco transfer company has reduced the number of horses used to haul trucks from 1000 to 170 and purchased 35 auto trucks at $6000 each. Some of the larger trucks are moved with small tractors.

Thinning Fruit Now General

"FOR the first time thinning fruit is the rule, rather than the exception, in California," announces an Extension Service worker. "This is the result of a long-continued campaign in behalf of better and bigger fruit, conducted by the College of Agriculture, Farm Bureau and fruit canners. It was found extremely difficult to disabuse the producer's mind of the idea that it paid best to grow a considerable tonnage of small as well as large fruit. Severe thinning, they held, cut the yield down to an unprofitable point.

"The price gap between large and small fruit has continually widened, until now canners are paying only one-half as much for second-grade—small—peaches as for large sizes. Furthermore, they will accept only 10 per cent of second-grade fruit. Growers are simply forced to thin. The public will benefit by getting larger, finer fruit."

Cold Storage for Nursery Stock

THAT dormant trees, grape cuttings and other nursery stock may be placed in cold storage and maintained in good condition for some time after the regular planting season, is well known to most horticulturists.

Rather unusual, however, was the storage for several months of several thousand rooted grape vines on a Southern California ranch which operates its own cold storage plant.

The vines were ordered for March first planting, but weather conditions and other factors prevented doing the work at this time. The vines were held until early in May and appeared to be in perfect condition when finally set out. Of course, only later development will show whether they were injured, but it was generally believed that any injury which might result would be due to a possible hot "spell" shortly after planting, rather than to the storage. The temperature during the storage period was held at about 42 degrees.

Hay Balers Form Organization

CERTAIN large producers of grain hay in the Santa Clara Valley are much concerned over the activities of a new organization, said to have been formed for the purpose of raising the rate for custom baling. It is asserted the price for pressing lowland hay has been "boosted" from $1.85 to $2.50, and for the hill product, from $2 to $3 a ton, the grower furnishing wire.

One hay grower asserts a certain "organizer," who is responsible for the formation of the "association" is to receive 4 cents a ton royalty for signing up 80 per cent of the outfits, an arrangement which, this farmer asserts will net the "walking delegate" some $14,000.

Certain producers are of the opinion that the effect of the new prices will be to force the purchase of individual outfits by the larger growers or by a number of associated growers, and that in the long run the owners of custom machines will suffer by what he terms their own "greed." Operators of presses, however, point to increasing labor costs and decreasing labor efficiency as well as other items of expense, and assert they must have a higher rate in order to make money. Meanwhile there is considerable feeling over the matter and the possibility of open warfare is hinted.

Prepare for Drying Deciduous Fruits Now

Seasonable Suggestions on the Dehydration of an Important California Crop—Kind of Equipment Needed

By L. C. BARNARD

Division of Pomology, California College of Agriculture

DECIDUOUS fruits of all kinds, including grapes and figs, may be dried in the sun. Most of the drying in California is done in this manner. However, artificial evaporation and dehydration is increasing in favor rapidly, especially in those drying districts most apt to be caught by an "off" season or early fall rains. But as most of the largest sun drying sections of California have thus far escaped many continually disastrous seasons, it is doubtful if artificial drying will ever take the place now occupied by sun drying.

The dry yard should be close to cutting shed, on a clean field, sloping slightly away from the cutting shed and toward the dried fruit house. A southern exposure preferable, away from dusty roads.

Some growers use small wooden "horses" about two feet high in the dry yard to place the trays of sulphured fruit on, while others slope one end of the tray to the south by placing wooden horses or boxes under one end only, or placing the edge of each tray on the edge of the tray preceding it.

SIZE OF DRY YARD NEEDED

The area of dry yard generally required for each variety of fruit is as follows: Prunes, one acre of dry yard to 20 acres of full bearing trees; apricots, peaches and pears, one acre to 20 to 30 acres of full bearing trees.

Cutting table used at University Farm, Davis.

Most dry yards handling an acreage of five acres or more usually have a system of tracks, turntables, transfer trucks and tray cars. However, some growers sled their fruit to the dry yard or haul it on ordinary fruit trucks without the use of tracks. Some use a car made of part wood and part steel, and others of steel entirely.

Some are using a tray truck, which, by raising the handle when it is pushed in the sulphur house loaded with trays, will deposit these trays on a 2x6 foot form built along each side at the proper height. This enables the same car to be used again while sulphuring is taking place. Some growers use a car which has no transferring arrangement, but remains in the house with the fruit during the sulphuring period.

There are several types of tracks used: The ordinary portable steel track, with turntables, etc.; wooden tracks with edges reinforced by strap iron; and hardwood tracks. The steel track is the most expensive, but more permanent and gives the best results.

PERMANENT CUTTING TABLE

Types of cutting tables vary considerably. Some tables are composed simply of a tray supported at each end by lug boxes. The more permanent type of cutting table gives the best results. A cutting table designed and built by the writer during the summer of 1920 and used here at the University Farm will hold four 2x3-foot trays, three 3x3-foot trays, one 3x6-foot trays, one 3x7-foot tray or one 3x8-foot tray. There is a support on each side for boxes of fruit. One person stands at the side of each box, thus accommodating four cutters.

The type of cutting shed used by the various growers throughout the State ranges from a four-cornered frame, covered with willow boughs or palms, up to very elaborate concrete buildings. An ordinary wooden-frame structure of the size desired, covered with shingles or any material which will shed water, will answer the purpose. All four sides are generally left open, allowing free circulation of air and plenty of light. The shed should be large and able to shelter all drying equipment during the months when not in use.

USE PINE OR REDWOOD TRAYS

Trays are made in different sizes and in most cases of pine or redwood. They are usually three feet wide and four to eight feet in length, with sides closed; three feet square and 2x3, only sides closed. The smaller trays can be handled by one person when they are loaded, but the larger ones require two persons to move them about.

A few growers claim that redwood trays darken fruit. This has not been tested by the Division of Pomology, except in the case of apricots. This fruit dried on redwood trays shows no difference in color from those dried on pine, spruce, or fir. In the Banning and Hemet sections of Riverside County the majority of trays are made of redwood, as they warp less than the pine trays. Redwood trays, however, have a tendency to decay around the rusting nailheads.

Three sizes of field or lug boxes, holding 25, 40 and 50 pounds, net, are used. The lug box, which has all the corners reinforced with a three-cornered block, are the most satisfactory. In most cases the knife used for cutting the fruit is the ordinary kitchen paring knife.

The purpose of the sweat box is to equalize the moisture content between fruit which is too dry and that which is slightly moist after it is taken from the dry yard. Some growers use sweat boxes which are made of white pine and are usually about 10 inches deep, 4 feet long and 3 feet wide. Others simply dump the dried fruit in large rooms or bins in the dried fruit house, where it is later sacked for shipment.

Most fruits, except prunes and some grapes, are sulphured before drying in the sun. All fruits contain oxidase enzymes. When the fruit is cut for drying purposes and exposed to the air, these enzymes oxidize the natural coloring matter of the fruit, causing the fruit to turn dark or brownish, unless their action is prevented. The sulphuring process inactivates these enzymes and prevents darkening.

Types of sulphur houses vary considerably, some growers using an ordinary wooden frame covered with building paper. This frame is six inches or more larger in width and length than that of the trays being used and high enough to fit over about 25 to 30 trays. The sulphur is put in a pit dug in the ground at one end under this sulphur hood. Other growers use wooden sulphur houses lined with building paper. The more permanent types are made of brick or concrete.

ACTION OF SULPHUR EXPLAINED

When the sulphur burns in the sulphur house, sulphur dioxide gas is formed. This gas, being soluble in water, combines with the water and juices of the fruit, thereby forming sulphurous acid. The sulphurous acid, not only inactivates the oxidase enzymes, but also acts as a bleaching agent.

Some of the cells of the fruit are ruptured by the sulphurous acid, causing the cooked appearance found in sulphured fruit when broken and examined after sulphuring. The ruptured cells allow the juices to escape into the cup of the fruit. The sulphurous acid kills any insects or eggs which are present and prevents the action of molds or bacteria, thereby acting as a disinfectant and a preservative.

Box for sulphuring fruit.

The breaking down of some of the cells by the sulphurous acid also increases the speed of drying. The small amount of sulphurous acid retained in the dried fruit prevents deterioration during storage and is not injurious to the health in any way. Summarizing, the sulphuring process acts in the following manner:

Kills all forms of insect life, acts as a preservative and disinfectant, bleaches the fruit, prevents darkening by inactivating the enzymes, draws the juices from the cells into the cups, hastens the drying process by breaking down many of the cells, tends to preserve natural color of light colored fruits.

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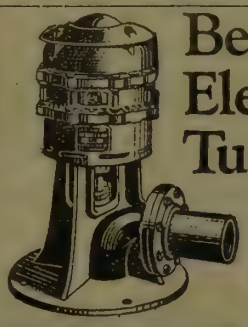

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Sheep Feeding Rack

HAY RACKS for sheep should have spindles or uprights seven inches apart, for the reason that seven inches is about right for a sheep to put its head through and to get away without hurting itself.

If the openings are less than seven inches lambs are likely to get fast and injure themselves trying to get out.

A seven-inch opening also is necessary for economy in feeding hay. If the openings are narrow a sheep will poke its nose in and secure a bite of hay. It will then back away and start across the yard with the hay in its mouth. As it eats and walks it steps on the hay and leaves part of it in the mud or manure. Sheep never eat hay that has been stepped on, unless they are starved to it. The reason mutton makes such good eating is because sheep are clean feeders.

FEEDING RACK FOR SHEEP

Still another reason for a seven-inch rack opening is the quiet way sheep have of feeding when they can stand with their heads buried in the hay. Hay does sheep more good when they enjoy their feed quietly. Sheep are easily frightened. They have been known to drop dead from the bark of a strange dog. They are easily frightened when their heads are buried in a feed rack of hay.

Feed racks like this one should be about 4 feet wide and 12 feet long. The floor should be set up from the ground about one foot.—H. A. SHEARER.

Hoover Requests Co-operation

IF shippers of fruit and other commodities promptly would load all cars to capacity; unload them as soon as possible; reduce reconsignment shipments and restrict to-order bills of lading; demand no more cars than can be promptly used—this would increase freight movement as effectively as the addition to the railway equipment of the country of 300,000 cars, 3000 locomotives and 10 per cent more trackage.

WILD HORSES RETURN

About one-third of the 600 wild horses which feed in the forest reserve of central Arizona have returned from the Indian country north of Winslow, whither they were taken last year. The mustangs had considerable difficulty in getting through fences on their return trip, it is said.

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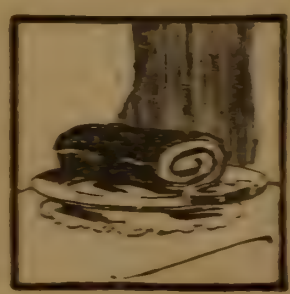
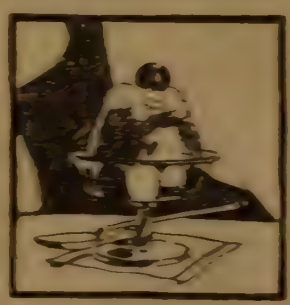


for baking



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[illegible]—R. A. BABBIN, Los Angeles County.

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BEST FIG VARIETIES

[illegible]—C. A. HINES, [illegible]

[illegible]—G. P. WILDMAN.

VALUE OF WOOD ASHES

[illegible]—G. P. WILDMAN.

GREEN GAGE PLUM SEEDLINGS

[illegible]—JAMES BRAN, Nevada.

[illegible]—G. P. WILDMAN.

SPRAYING TO FERTILIZE

[illegible]—ALBERT [illegible]

[illegible]—HONEY [illegible]

GUMMOSIS OF APRICOT TREES

[illegible]—G. P. WILDMAN.

CONCORD GRAPES AND WALNUTS

[illegible]—G. P. WILDMAN.

San Joaquin Cow Testing Pays

Farm Bureau Showing How County May Increase Dairy Revenue $1,000,000

THE 25,000 dairy cows in San Joaquin County produce an average of only 170 pounds of butterfat per year, while the 2000 cows being tested by the Farm Bureau yield 270 pounds of fat. If the production of all the cows in the county was equal to that of those being tested, it would mean 2,500,000 pounds more fat per year, worth $1,000,000.

To obtain this million-dollar increase in the yearly revenue of San Joaquin dairies is the ten-year goal set by the Farm Bureau's dairy department. George Wolf, the tester employed by the bureau, is sparing no effort to attain this very desirable goal. In the past two years the number of cows on test has been increased from 559 to 1989 and an immense amount of other dairy improvement work accomplished.

Public sales of tested cows have been held, exhibits made at the county fair, and an extensive educational campaign is being carried out. The co-operation of various agencies has been enlisted in

This little 700-pound Jersey, Girlie, the property of Mrs. E. J. Wilson, Ripon, made the best record of 666 competitors—11,029 pounds of milk, containing 564 pounds of butterfat.

a long-continued, persistent effort to show the public in general and dairymen in particular the advantage of keeping more and better cows in the proper way.

EMPHASIZING BETTER METHODS

Better breeding, feeding and testing are all emphasized. An impressive array of facts and figures has been prepared, showing conclusively the various advantages of dairying over other kinds of farming, the profit of using purebred sires, testing cows for butterfat and TB, feeding the proper rations, and caring for cows in the best possible manner.

In order to show the advantage of selling cows on their butterfat record, instead of general appearance, a sale of 19 tested cows and three bulls was held a year ago last summer. Although the animals were not of the best type nor in good condition, they brought an average price of $136, which was considered very satisfactory. Some scrubby looking cows were found to produce better than others of fine appearance, but the Babcock test enabled buyers to make intelligent purchases.

The Farm Bureau has set the following requirements for a public sale of dairy stock: All animals tuberculin tested and clean; all cows sired by purebred bulls; all cows milked the morning of the sale; all animals subject to retest for tuberculosis on the grounds, at buyer's expense; aged cows must have a minimum butterfat 10-month record of 300 pounds; third calf heifer, 287; second calf, 270; first, 250.

PROVING PROFIT AND LOSS

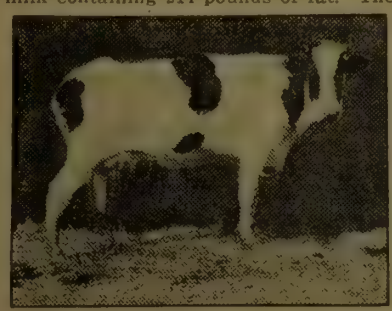
A survey and test of a 34-cow dairy revealed the fact that it cost an average of $120 a year to keep each cow, and that at 45 cents a pound for butterfat the cows must average 267 pounds in order to pay expenses. It was found that 22 of them averaged 310 pounds, enabling the owner to clear $233 a year on them, while the remaining 12 averaged but 231 pounds, losing their owner $193. Such figures as these show conclusively the advantages of testing, followed by weeding out poor individuals.

Jumbo, a beefy, scrubby looking cow belonging to G. A. Grant of Ripon, surprised everybody by producing better than 500 pounds of fat per year three years in succession. Each year her yield increased.

The folly of giving a cow no rest between lactation periods was demonstrated with Gertie's Sunshine of L. owned by N. H. Locke. In 1921 she gave 8300 pounds of milk, containing 522 pounds of fat, while the following year she produced only 6048 pounds of milk, which contained 326 pounds of fat.

The mistake of judging a cow by the volume of milk produced was illustrated by two cows, one of which in a year gave 47 gallons more milk than the other, yet her product was worth $18 less, because her milk tested only 2.94 per cent, while the other cow's milk tested 3.54.

The profit resulting from intelligent grain feeding was illustrated by F. M. Thorpe's cow, Bridget, which in 1921, without grain, produced 6133 pounds of milk containing 214 pounds of fat. The



Testing showed that this cow was being fed by its owner at a net loss of $2 a year.

next year she received three pounds of barley daily for nine months and gave 9672 pounds of milk and 377 pounds of fat. The grain cost $12 and the increased milk production was worth $73, indicating a profit of $61, due to grain feeding.

By such argument as these San Joaquin dairymen are going after that million-dollar increase in their annual income.—O. H. BARNHILL.

Books for Farmers

"Feeds and Feeding," by Henry & Morrison, the Henry-Morrison Company, Madison, Wis.

The eighteenth edition of this famous book, which has been called the "bible" of the stockman, is just off the press, and undoubtedly it contains more complete and up-to-date information on livestock nutrition and management than any other book ever issued. The co-authors are widely known as executives of the famous Wisconsin Agricultural College. A "de luxe" anniversary edition, profusely illustrated, is listed at $4.50, and the standard, unillustrated edition, sells at $3.85. This is the standard text-book in most universities of the United States and Canada, as well as many foreign countries, and is used by thousands of live stock breeders and feeders in figuring rations and determining the feeding value of various substances.

"The Potato," by William Stuart, Horticulturist, U. S. Department of Agriculture. Published by J. B. Lippincott & Co., Philadelphia.

This is one of the most complete treatises on the subject ever prepared and it is beautifully illustrated. A few sample chapter topics follow: The Potato as a World Crop and its Relative Importance in the United States; Potato Production in North America; Leading Environmental Influences in Potato Culture; Soil, Temperature and Moisture; The Soil and Its Preparation for the Crop; Food Requirements of the Crop and How Supplied; Crop Rotation; Varieties to Grow; Kind and Amount of Seed to Use, and Planting Methods; The Cultural Care of the Growing Crop; Potato Production in the South; Production in the North and West; Production Costs; Harvesting, Picking and Handling; Grading, Shipping and Marketing; Storage and Storage Shrinkage; Types of Storage Houses, Their Construction and Cost; Diseases and Their Control; Insect and Animal Parasites of the Potato and Methods of Controlling Them; Fungicides and Insecticides—Their Preparation, Use, Application and Resultant Benefits; Spray Equipment and Classification; Industrial Uses of the Potato in America and Foreign Countries; The Botany of the Potato; Origin and Early History; Breeding and Selection; Classification and Description of Commercial Varieties.

PLANT MALE COTTONWOODS

Driving a rusty naid in a cottonwood tree to prevent the bearing of "cotton" is on a par with splitting a cow's tail and inserting salt and treatment for "hollow horn." As long as a female—pistilate—cottonwood tree is alive it will produce a cottony substance, which enables the wind to distribute the seed. Neither seeds nor cotton, however, are produced by male—stamenate—trees, which are the ones which should be obtained from nurseries and planted.

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See the new 1923 De Laval at your local dealer's store. It is the best cream separator ever built. It has many improvements, skims cleaner, requires less care, and will last longer than any cream separator on the market.

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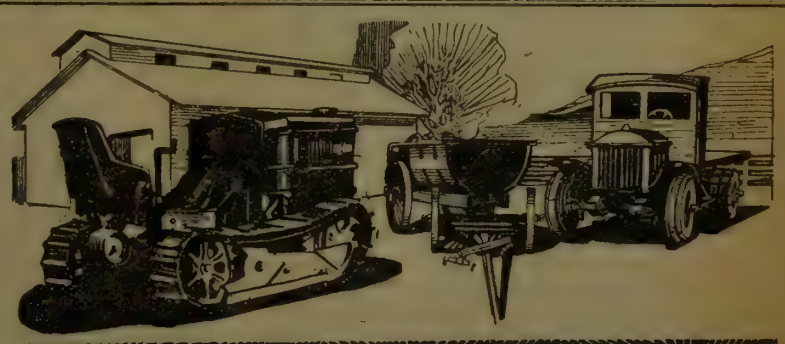

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CERTIFIED White Leghorn quality Chicks at Utility Prices. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.50 per 50; $12 per 100. Special prices 500 to 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 7th st., Petaluma, Calif.

WHITE LEGHORN baby chicks from selected flocks mated with males having pedigree record by sire's dam of 240-297 eggs per year. Price per 100: April, $12.50; May and June, $12. Safe arrival full count live, strong chicks guaranteed. Accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, 476 Sixth st., Petaluma, Cal.

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BABY CHICKS—Every day. Get your order in early. You know WHY. Send for prices. FANCIERS' EXCHANGE, 640 South Main St., Los Angeles, Calif.

Baby Chicks. Leading varieties, stand. bred, vigorous, heavy laying stock. Lowest prices, best quality; postage paid. Illustrated catalog free. Superior Poultry Co., Windsor, Mo.

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WILD BLOODED TURKEYS Eggs and stock for sale. Prices right. Small and large orders promptly taken care of. Jenkins, the Veteran, R. 3, Box 148, Burbank.

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CHARLES WEEKS, Owensmouth, Calif.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

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CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

WANT to hear from owner having farm for sale. Give particulars and lowest price. JOHN J. BLACK, Chippewa Falls, Wisconsin.

HELP WANTED—Male

EARN $110 to $250 monthly, expenses paid, as Railway Traffic Inspector. Position guaranteed after 3 months' spare time study, or money refunded. Excellent opportunities. Write for free booklet G-91, Standard Business Training Inst., Buffalo, N. Y.

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RAILWAY MAIL CLERKS—Start $130 mo.; exp. paid. Specimen examination questions free. Columbus Institute, H-7, Columbus, O.

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BUSINESS PERSONALS

STOVINK blackens HOT iron. Ask dealers. Distributors, Albion Reynolds, 456 W. 47th St., Los Angeles, G. Douglass, Box 376, Berkeley.

Oiling the Hogs

TO most readers the idea of oiling hogs, like an automobile or mowing machine, by means of a "squirt" can may appear, at first thought, ridiculous. This plan, however, is followed by one of the most successful breeders in Southern California. He uses a cheap grade of lubricating oil which, liberally applied along the backbone, soon spreads over the body, forming a thin film and assisting to rid the animals of lice. The oil is purchased in 100-gallon lots at a saving of 14 to 15 cents a gallon over the retail price.

"I like lubricating oil better than the usual crude product," says this progressive swine breeder, "because it spreads more easily, is not so gummy and sticky, and lasts longer. It seems just as effective as the crude. We use the oil can once or twice a month, principally in the rainy season, when the rubbing posts are rendered almost useless. We have found that the rains wash out the oil from the sacks with which we bind these posts, largely wasting it. In summer, however, we saturate the gunny sacks, and the hogs keep themselves well oiled."

The posts consist of "four-by-fours" set securely in the ground, and extending about 18 inches above the surface. Old gunny sacks are bound tightly about each post and the oil is poured liberally and frequently over all.

Another large operator soaks the rubbing posts with waste oil from tractor and automobile crankcases. This is cheaper, of course, but is discountenanced by the first named breeder, because of its "mussiness."—J. C. K.

Rural Teachers Uneducated

ONE of the teachers employed in the country schools of the United States never completed the four-year high school course and 10 out of every 100 have finished only the seventh and eighth grades, according to the Civic Development Department of the U. S. Chamber of Commerce. Lack of financial support is given as the cause for the inadequate training of rural teachers.

"Turkhen" Valuable New Fowl

A STORY is told of a skeptical backwoodsman who, upon seeing a giraffe for the first time, refused to believe his eyes, protesting, "I don't keer—they ain't no sich animule." Other people doubt the possibility of crossing turkeys with chickens, but George Schaefer of San Mateo is breeding a strange looking bird which he claims is the result of such a cross, partaking of the characteristics of each fowl. Here is his story of the origin of the Turkhen, as the new bird is called:

"The Turkhen carries its ancestry back to the royal Russian pheasantry which the Czar used to maintain. Here the black Siberian pheasant was crossed with the red turkey of Ukerania, producing a bird called "Halo Sacreds," of the Royal Orloff Turkhen.

"In 1916 three of these strange birds were brought to the United States via Vladivostok and purchased by myself for experimental breeding. They proved to be too small and the flavor of their meat too 'gamey.' In the fall of the year mentioned the male bird was mated with a Rhode Island Red hen.

"The progeny proved to be larger than the original stock. The flesh is very similar to that of the turkey, while the breast and legs are larger than those of the chicken and the meat more tender. The Turkhen has a bare, red neck like a turkey, talks like a turkey and walks like a pheasant. The males have a comb and crow like a rooster.

"This new fowl is without doubt the quickest growing of all farmyard birds, the cockerels in 20 weeks sometimes attaining a weight of six to seven pounds. The flesh is juicier, finer textured and tenderer than that of either chicken or turkey. Crossed with large breed of chickens, there is produced a wonderfully fine table fowl, with turkey-flavored flesh.

"The Turkhen is just the right size for the average family and can be produced much cheaper than a turkey, because of its quick growth and the fact that it does not waste feed and energy in growing many feathers. The birds are very vigorous and prolific, an average of 90 per cent of the eggs hatching each year for six seasons. The incubation period is three weeks. As egg producers they are above the average and if properly cared for will lay throughout the entire year."

These strange birds are part turkey, pheasant and chicken

GIVE NEW SWARMS HONEY

Long spells of cool, cloudy weather are often very hard on newly hived swarms: A comb of honey from an old colony often may save one from starvation.—J. D. B.

USE WIRE CLOTH STRAINER

It is only time and labor wasted to strain extracted honey through cheesecloth, in a dry climate. Strain through wire cloth, then skim the tank after the honey is thoroughly settled.

HOME FARM HAPPENINGS

By ONE OF US

SUTTER BUTTE LAND YIELDS $90 ACRE.—Actual figures are available on certain crops grown last year in Butte County under the Sutter Butte Canal. The average per acre value of six leadings crops was as follows:

Almonds, $525; beans, $47; grapes, $173; peaches, $515; prunes, $72; rice, $71.

The average returns from nearly 40,000 acres was almost $90 an acre, figuring all crops.

PEAR BLIGHT INCREASES RAPIDLY.—We cut out some pear blight that is starting on the tips of small branches. During the late fall and winter an attempt was made to get out every spot of blight. Each time we went through the orchard we made a double job of it, going through first one way and then coming right back in the opposite direction on the same row.

At the time of the first codling moth spray we found only two pieces of blight in 30 acres. Yet during May it was necessary to take out probably six or eight leads of blighted brush, mostly small limbs.

PRUNES PROMISE BIG CROP. We have an unusually heavy crop of prunes this year. No one seems to be able to account for the short crops in many orchards, but the persistent north wind and dry weather at blooming time is considered to have been one factor.

Our orchard, which is on river bottom, overflow land, made a vigorous growth last season and bore a big crop at the same time, an abundance of fertility and moisture being continually available.

This winter we gave the trees a thorough spraying with dormant soluble oil and Bordeaux mixture. This seemed to have the effect of wonderfully invigorating them.

The trees have more fruit set on them than they can carry. The branches already are touching the ground, having assumed that graceful willowy curve, which indicates a heavy load of fruit.

A good many prunes set on last year's wood. This is quite unusual, we understand, and a number of authorities who have seen them say they are the first prunes they have even seen growing on new wood. The fruit looks as though it would remain on the trees until ripe.

FOXTAIL BEARDS INJURE STOCK. Foxtail is a grass that makes fine feed in the winter, but it is an awful pest during May and June here in the Sacramento Valley.

Lambs are bothered the most. It sometimes seems that a lamb will deliberately walk up and stick its eye into a ripe foxtail head and get from one to three beards into the eye. At any rate John makes the rounds of the ewes and lambs every morning to look for sore eyes.

Only occasionally do we find an old ewe with a foxtail beard in her eye, but yearling bucks suffer frequently with these barbed "stickers."

Sheep with much wool on their faces have a great deal of trouble with foxtail, but even bare-faced lambs are not immune to injury from this weed pest.

Pigs also suffer from foxtail wounds, and once in a while a calf will pick up a beard. One of the best sows we have in the herd lost one eye when a pig from foxtail injury. For the information of those who will not buy a breeding animal with only one eye, will say that she has been a regular producer of two litters a year for three years, and is a splendid mother.

It is fine to be able to move stock away from foxtail fields as soon as the beards begin to harden. Some esteem this grass highly as a winter feed, but on the smaller valley farms its winter feed value is certainly far less than the damage it does in May.

If some university man could discover an easy way to get rid of foxtail when it ripens, Sacramento Valley farmers would be everlastingly grateful.

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Brand new blue steel, double safety automatics bought before recent tariff raise and offered at special price for a limited time. Regular $22.00, 25-calibre, 7-shot automatic, 4¼ in. long, our No. 898 110, special at $6.95.

Or regular $25.00 heavy service 32-calibre, 10 shot automatic, 5 in. long, our No. 898 120, special at $9.75. EXTRA MAGAZINE FREE with each gun. Both sizes shoot all standard cartridges.

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Money back promptly if Not Satisfied.
CONSUMERS CO., Dept. 898, 1265 Broadway, N. Y.

SPERRY
SURELAY
MEANS MORE EGGS
-ask your dealer

Controlling Walnut Black Sap

Simple Method for Eradicating Fungus Disease, Which Seriously Injures Nut Trees

By ROBERT W. HODGSON

WALNUT *Melaxuma* or "black sap," as it is commonly called—is a bark disease which since its discovery in Santa Barbara County some ten years ago gradually has been spreading throughout the walnut districts, until at the present time it may be found in all but the farthest interior sections.

This disease is much more injurious and virulent in the coastal districts, where it frequently causes the girdling of large branches and occasionally the death of the tree. In the inland districts it is apparently not so active and does not occasion such serious injury.

Under favorable climatic conditions, however, even in the interior sections this disease causes serious injury to walnut groves. The season of 1922 apparently was unusually favorable to black sap activity in the inland sections and many cases occurred where the bark areas killed were two to three feet long.

CAUSED BY WEAK FUNGUS

Black sap is caused by a fungus organism of rather weak parasitic character, which for many years has been known to affect willows along river bottoms. Some 10 or 12 years ago it apparently became adapted to walnut trees, although it is not as active on walnuts as it is on willows.

There is every evidence that this fungus does not become established on healthy bark, but gains entrance through a crack or wound which, although very small, is sufficient to afford an entrance. It frequently becomes established at the junction of the larger branches, where wind-strain produces slight cracks in the bark tissue.

It is sometimes found gaining entrance through wounds made by woodpeckers and sap suckers. One of the most common sources of infection is through bark areas weakened by sunburn. In many orchards there is a close relation between the presence of Melaxuma and sunburn injury.

The treatment for the disease, which was worked out by Dr. Fawcett of the Citrus Experiment Station, is comparatively simple and very satisfactory. It consists of cutting out the dead bark, the cuts being made so as to extend back an inch or so into the healthy bark. The wound is then treated with a good disinfectant, preferably bordeaux paste. The upper and lower ends of the cuts should be made at an acute angle, so as to provide for rapid healing over and to establish good drainage at the low end for the sour sap, which frequently accompanies this disease.

Where the disease is serious and the amount of treatment work large, it is recommended that the use of a small hatchet outlining a V-shaped cut at the lower ends of the wounds is very desirable as a preliminary treatment. This provides an outlet for the fermenting sap and frequently following such treatment the wounds will heal themselves without further treatment.

The seriousness of walnut black sap may be realized when it is pointed out that many orchards are now known where the percentage of infected trees is close to 75. The importance of an annual individual tree inspection as a means of detecting the disease in its early stages cannot be over-emphasized.

Burbank on Apples

(Continued From Page 3)

there can be no question that it will prove advantageous in the end. Since the Northern Spy is a remarkably strong grower, the transference of this property alone will justify the extra outlay if for no other purpose, as trees with an active, vigorous root system are much more profitable than if grown upon those that are inferior in this respect.

There are a number of other aphis-proof apples cultivated quite extensively in New Zealand, but having no advantage over the Northern Spy they have not been generally introduced in the market. Several of these were imported and grown on my place some 25 years ago and were quite widely distributed at the time, but an appreciation of the importance of providing against the woolly aphis had not yet been awakened.

About the same date I also introduced all the best varieties of apples that had originated in Australia and New Zealand. The grafts of these varieties were sent to me in the spring, which is the Australian fall. It was necessary to graft these cions into older trees to test the fruit, and some very curious results were observed. Most of them seemed positively surprised to find the winter over so soon and the spring now opening upon them, and some of them immediately put out buds or blossoms and continued to do so at intervals throughout the summer, but a few stubbornly declined to bud or blossom until nearly the beginning of the following spring. For two or three years thereafter they semed manifestly confused and disturbed, but after a while became adjusted to the new order of things and adapted themselves to our seasons. One or two of them have proved to be superior apples and are now thriving in Northern Sonoma and Mendocino counties.

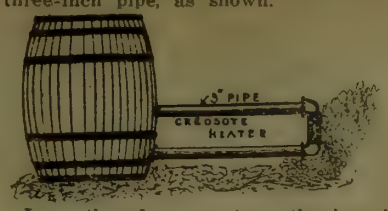
HINT TO PLANT BREEDERS

The apple breeder of the future probably will find the most ample field for profitable and philanthropic experiment in developing varieties suitable to certain localities where the apple does not now thrive or developing varieties that are immune to insect and fungus diseases—at least, to most of them. Material progress already has been attained in certain localities. For instance, the Wealthy and other hardy apples have been produced in the cold Northwest and are revolutionizing the fruit industry of that section of our country. Apples can now be grown abundantly and of good quality where 25 or 30 years ago no good apple would thrive.

In my experiments with apples not only were the varieties mentioned in this chapter used, but many hundred others of the best cultivated varieties; also numerous other species of the wild and the cultivated crab from Northern, Central and Southern Europe, Japan, China, South America and Africa.

Creosote Heater

A BARREL full of fence posts may be given a hot foot bath of creosote by connecting a heater made of three-inch pipe, as shown.



Long threads are cut on the barrel ends of the pipe and double lock nuts are used to make tight joints. Beveled washers or gaskets are needed to fit the slant of the barrel staves, so the heater pipes will lie about on a level. The lower pipe should slope up slightly to the fire. The upper pipe should slope up slightly to the barrel.

An old heating stove may be used to confine the fire and hold it around the bended end of the heater pipe.

—H. A. SHEARER.

HONEY SHOULD BE HIGH

Containers are high priced, labor is higher, and an apiary requires the investment of a considerable sum of money. Sugar, the basic bee feed, is high and going higher. Bear these facts in mind when the honey buyer is trying to obtain your product at a low price.

—J. D. B.

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Write at once for full information about the 2-Ton or about the larger "Caterpillar" Tractors, 5-Ton, Western 10-Ton or the big power "75."

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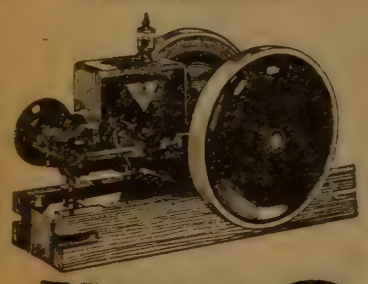

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61 Beale Street
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Science's Discovery Routs Chicken Lice

Mineralized Water Gets Rid of Dusting or Spraying—Birds Delouse Themselves—Fine for Baby Chicks and All Poultry

A recent discovery promises to revolutionize all the commonly accepted methods for keeping poultry free from lice and mites. This wonderful product keeps the poultry always lice-free without the poultry raiser doing any work. It is the simplest, easiest, surest and best method ever discovered.

Hick's Lice-Go, which is the name of this remarkable lice remedy, is dropped in the chicken's drinking water. Taken into the system of the bird, it comes out through the oil glands of the skin and every louse or mite leaves the body. It is guaranteed to help the hatchability of the eggs and cannot injure the flavor of the eggs or meat. Is harmless to chicks and does not affect the plumage. A few days' treatment at the start and then a little added to the drinking water each month is all that is necessary.

Send No Money, just your name and address to Chas. M. Hick & Company, Dept. 443, 1018 So. Wabash Ave., Chicago, Ill. A card will do. Mr. Hick is so confident that Hick's Lice-Go will get rid of every louse or mite that he will send you two large double-strength $1.00 packages for the price of one. When they arrive, pay postman only $1.00 and postage. Sell one to your neighbor and get yours free. If you are not absolutely satisfied after 30 days' trial, your money will be refunded. This offer is guaranteed by two big Chicago banks, who say that Mr. Hick will do exactly as he agrees without question or argument. Write today before this remarkable trial offer is withdrawn.

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The New BULLETINS

The following bulletins issued by the United States Department of Agriculture will be found to contain interesting and valuable data. Any one of these may be obtained free of charge by addressing the Division of Publications, U. S. Department of Agriculture, Washington, D. C. Order by number.

The Deterioration of Felled Western Yellow Pine on Insect-Control Projects. 1140
Federal Legislation, Regulations and Rulings Affecting Land-Grant Colleges and Experiment Stations. 251
Symptoms of Wheat Rosette Compared With Those Produced by Certain Insects. 1177
Corn and Its Uses as Food. 1236
The Club Wheats. 1203
Apple-Orchard Renovation. 1284
Use of Water by Spring Wheat on the Great Plains. 1004
The Barrier Factors in Gipsy Moth Tree-Banding Material. 1142
Good Proportions in the Diet. 1313
Motor Trucks on Corn Belt Farms. 1314
Homemade Apple and Citrus Pectin Extracts and their Use in Jelly Making. 254
The Influence of Copper Sprays on the Yield and Composition of Irish Potato Tubers. 1146
Cleaning Milking Machines. 1315

CALIFORNIA CIRCULARS

The following are a list of bulletins which have been issued by the California Agricultural College and will be sent free upon request:

California State Dairy Cow Competition. 351
The Small-Seeded Horse Bean. 257
A Self-Mixing Dusting Machine for Applying Dry Insecticides and Fungicides. 357
Thinning Deciduous Fruits. 258
Black Measles, Water Berries and Related Vine Troubles. 358
A Study of Sidedraft and Tractor Hitches. 349
Leguminous Plants as Organic Fertilizers in California Agriculture. 255

SPECIAL PUBLICATIONS

The State Department of Agriculture at Sacramento offer the following special publications. They may be obtained by addressing G. H. Hecke, director of State Department of Agriculture, Sacramento:

Commercial Fertilizers. No. 35
Economic Poisons. No. 34

Hardison's Views

(Continued From Page 3)

see substantially the same sort of management of co-operative associations that we advocate for our federation."

"What has happened to the National Federation?" we asked.

"Nothing," was the answer. "It is stronger than ever, and is doing great work, especially at Washington. Much of the favorable legislation passed by Congress during the last session was due directly to the influence of our National body. But it is not quite as well advertised, perhaps, as formerly. In fact, it has passed the stage where it must make itself known. It is recognized now as a National power which speaks with a voice of authority. Nor have California producers been told as much of late about the American Federation. No doubt that is why some local farmers have gained the idea that it was weakening.

CALIFORNIA IS INDEPENDENT

"As a matter of fact, however, we are not nearly as much concerned with the National body and its affairs as are most of the other States. In co-operative marketing, for instance, we are so far ahead of other States that we can afford to be a bit independent. It seems we do not have to go East for ideas; rather, others must come to us. I do not mean we should withdraw our support of the American Federation—far from it. But I do mean that we should devote most of our energy to the solution of pressing local problems."

The conservative policy of the California Federation under President Hardison's administration is best illustrated by the methods of gaining members. Mr. Hardison does not believe in "Hurrah" campaigns, carried on under high pressure. "Such methods," he said, "bring into the organization many members who will not stick. It is better to have a little smaller membership and be on a solid, substantial basis, than to lay out a program based upon false pretenses, and then be forced to abandon part of it. I am trying to encourage policies which make for permanence. I do not believe in whirlwind membership campaigns, accompanied by brass bands, high power orations and other factors associated with so-called drives. Rather, let us all work constantly for more members of the right sort.

Mr. Hardison has given unselfishly of his time to the welfare of the California Federation. Seeing the vast amount of work to be done, he hopes to establish a central office in charge of an executive secretary, who shall be paid a salary commensurate with his responsibilities and ability. A real "dirt" farmer may hold the helm as president without giving all, or practically all, of his time to Federation affairs.

Mr. Hardison, himself, is a farmer of big accomplishments, as well as a successful business man. His Santa Paula office is open always to those intersted in the welfare of agriculture, and he spends considerable time traveling about the State, seeking to gain the expression of general opinion which he values so highly.

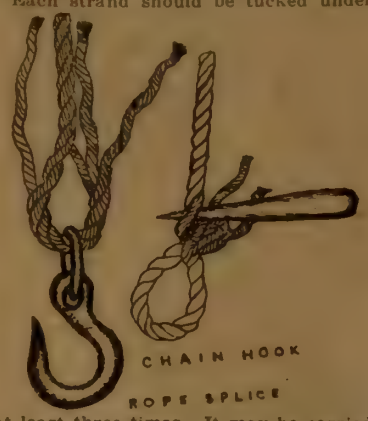
In Hardison, California farmers have a cool-headed, substantial leader. The officers of the Federation are chosen by voting and should have the unstinted support of every California farmer. The first step is to join the local farm bureau. Are YOU a member?

Hook Rope Splice

ROPE splicing must be indulged in sometimes on a farm. It is well to know how to do the trick and to do it smoothly.

Rope splicing is nothing but tucking one strand of one rope under a strand of another rope. When making a chain splice, the process is the same except that you turn the rope back and splice into itself.

Each strand should be tucked under



at least three times. It may be carried farther to make a neater splice. To do a neat job you cut out part of each strand as you proceed. This plan tapers the splice down to the size of the original rope, and when it is nicely done one cannot tell where the splice ends.

The marlin spike is made of hard wood, scraped smooth clear down to the point. It is better to make a good one, then to keep it in the tool box to be ready for use next time.—H. A. SHEARER.

Building Poor Farm

(Continued from Page 2)

De Kol Mead is monarch of the herd, ably supported by King Korndyke Pontiac, a $2000 bull, and Colantha Aggie Prince Pontiac. Among the cows is one that has given 35 tons of milk in four years, the product of one year containing enough butterfat to make 1050 pounds of butter. Princess, a grade cow, produced 798 pounds of butterfat in 305 days, winning the championship in the contest conducted by the University of California.

Hollywood Lilith Palmyra Abbekerk holds the second highest record in her class, producing in 10 months, as a senior four-year-old, 22,245 pounds of milk, sufficiently rich to make 982 pounds of butter. This wonderful animal gave 125 pounds of milk in one day and 840 pounds in one week. For six months, beginning November 1, she has averaged 102 pounds per day.

SLIDING SCALE FOR RATIONS

The dairy department is capably managed by Frank Moore, who employs a sliding scale for feeding milk cows. All cows are given, in addition to hay in the feedlot, a base ration consisting of 20 to 25 pounds of silage, 6 pounds of grain, 7 pounds of beet pulp and 2 pounds of cottonseed meal. For each four pounds of milk above 40 pounds per day given by a cow, she is allowed an additional pound of grain at each feed, or three pounds per day.

The increased ration is indicated by marking opposite each cow's number the number of pounds to be added to her ration. For example, 138+2-lb., means that cow Number 138 is to be given eight pounds of grain, instead of six. The figures are placed above the stanchions.

Fifteen hundred pounds of silage, which is put up in two immense concrete silos and two old wooden ones, is fed each year, taking the place of high-priced pasturage, which it excels in feeding value. Two large corrals adjoining the dairy barns are hard surfaced, lack of drainage making this improvement imperative. Milking machines, supplemented with hand stripping, are used on all the cows. Two hundred gallons of milk is used daily on the farm by the 1100 inmates and 90 employees.

SHIPPING GARBANZOS

The Yaqui and Mayo Valleys of Western Mexico produced the past season 180,000 sacks of garbanzo beans, of which Spanish speaking people are especially fond.

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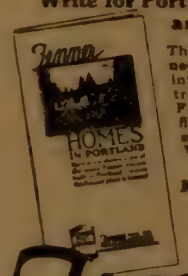

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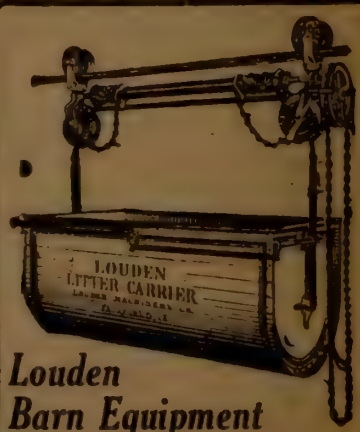

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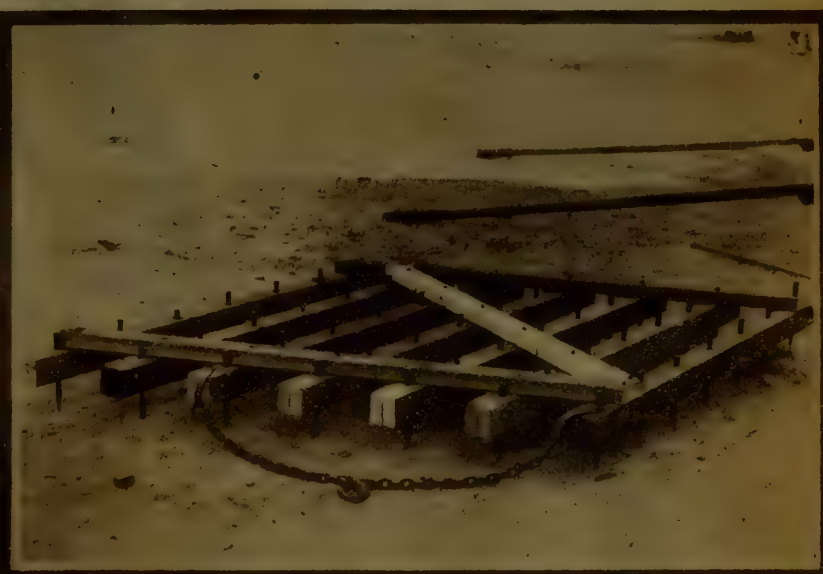
Progress & Production

This home-made Cyclone weeder is a product of the large, well-equipped machine and wood-working shop on the Joseph F. Lewis ranch near Camarillo (Ventura County). It is considered more effective than the old-style Acme harrow, which it somewhat resembles. The weeder is shown tilted up from the rear for cleaning rubbish off the knives. It is held in this position by a wooden prop, which drags behind attached to a short piece of chain.



Another product of the Lewis ranch. This home-made wooden harrow may look out of date, but for some kinds of work is preferred to the factory-made steel types, largely because of the greater size and the weight of each section. In order to facilitate removal of the teeth and to hold them more firmly in place, the 4x4's are split in two vertically by resawing, after the holes for the teeth have been made. Cross bolts near each tooth are loosened and tightened in removing and replacing the teeth.

An artesian will in the Surprise Valley (Modoc County) guarded by two pretty native water nymphs. Large crops of hay, grain, fruits and vegetables are grown here at an altitude of 4700 feet. The cornstalk cutter shown below, in action on the Longview poultry ranch near Chatsworth (Los Angeles County), is weighted down with iron disks on the wheels.

Soil demonstration on the lemon ranch of Edward Elander, Sespe Valley (Ventura County). Prof. J. W. Nelson, State soil specialist, is turning the soil auger. Mr. Elander is watching the job, while C. C. Saunton stands on Nelson's right.

Free

a new book that answers the biggest "why" in the poultry business

Do you know how long it takes a laying hen to digest her food? A hen not laying? A setting hen?

Do you know the real value of grit to the fowl?

Do you know what part vitamins play in the poultry ration?

Do you know what mineral requirements are necessary for poultry?

Do you know what effect a variety grain ration has on the cost of producing eggs?

Do you know the real value of green feed?

Do you know how to balance a ration?

Do you know why electric lights cause increased production?

Do you know why animal matter is needed in the ration?

Do you know the value of kaffir corn and milo maize in the scratch feed?

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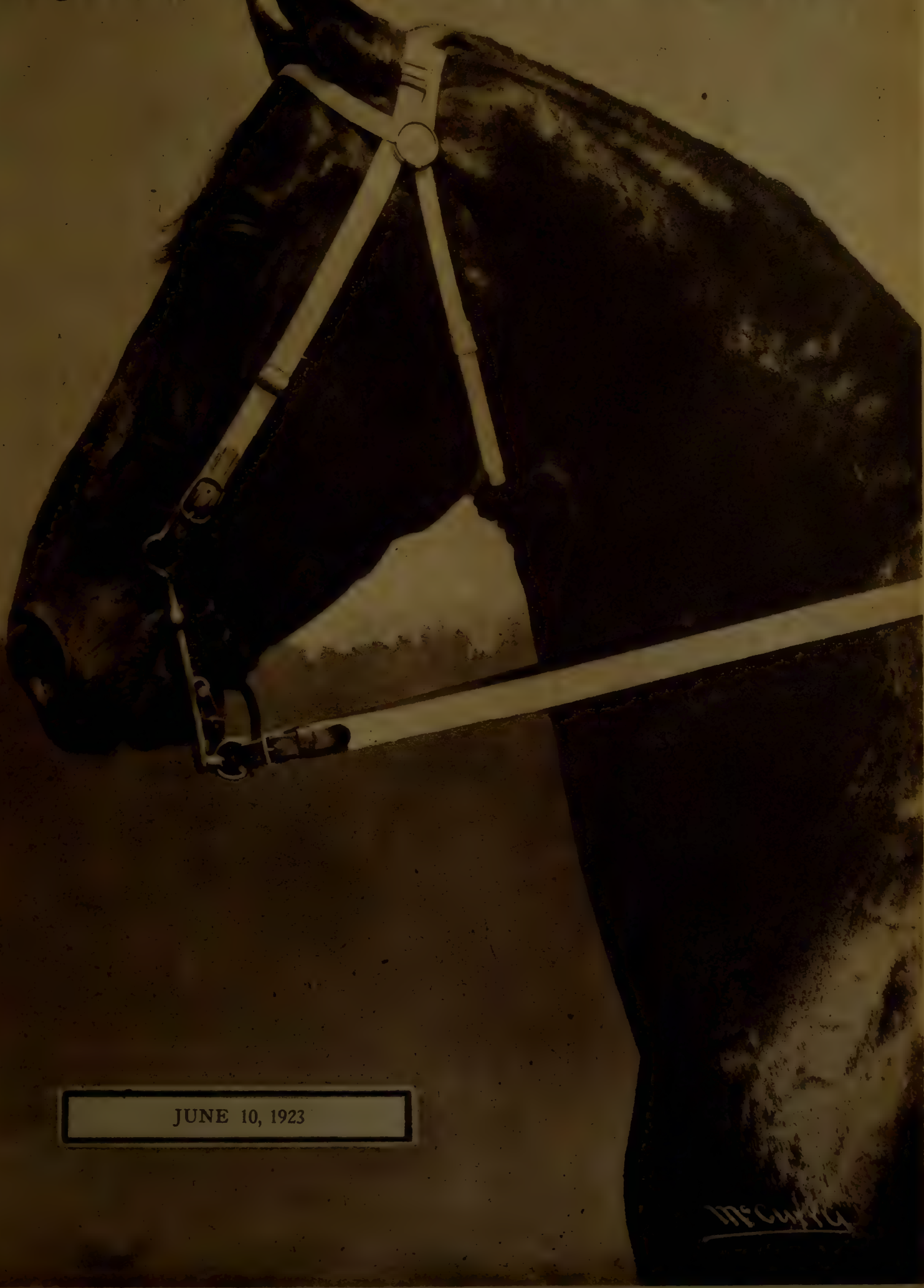
ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER



JUNE 10, 1923

Ascolano Olives Thrive in San Diego County

By JOHN F. COWAN

WHILE Mission olives were selling for $110 a ton, R. C. Allen received $200 for his Ascolanos, which yielded equally well and required less labor to harvest. Professor Bioletti describes the "white olive of Ascoli" as being "as large as a French prune and much like one in shape." Another authority says this variety is "excellent for pickles, but has to be carefully handled."

More than 100 years ago the Las Paderes ranch was named by Mexicans who first developed the property. It lies tucked away among the smiling hills at Dehasa, five miles back of El Cajon (San Diego County). In 1883 it was purchased by Mr. Allen, who afterwards pioneered in the olive industry and attained conspicuous success in the production of this popular fruit. A picturesque view of his orchard is shown in Farmers' Bulletin No. 1249 of the U. S. Department of Agriculture.

Mr. Allen's first planting of Missions was set in triangles, the trees being twenty-five feet apart. Later when the trees began to crowd each other part of them were removed. This left the trees at different distances from each other, so they were still crowded on two sides, with room to spare in other directions. For this reason the original plan of planting is not recommended where subsequent thinning may become necessary.

SPACE TREES LIBERALLY

Later plantings were made twenty-four feet apart, with the expectation of cutting out alternate diagonal rows, which will leave the trees thirty-four feet apart.

"Ascolanos make a better shaped tree than the Mission," Mr. Allen points out. "The latter grows so tall that the cost of picking thereby is materially increased. Not only are Ascolano olives larger than Missions, but the bulk of the Ascolano crop ripens at one time, while the Missions keep maturing all season, making several pickings necessary."

Mr. Allen irrigates his olive trees four or five times a year, considering an adequate moisture supply necessary for successful olive culture. The water is obtained by pumping from the sands which underlie the bed of the Sweetwater River. Eight and six-inch concrete pipes carry the water to the upper side of the orchard and to lower levels.

After each irrigation the top soil is thoroughly disked. Much plowing is considered injurious, because the olive is a shallow-rooted tree. The soil is red clay and sandy loam, the latter giving the heaviest yields. Two tons per acre is considered a good crop. Pumping power costs $500 a year and is considered a good investment.

"It is a mistake to stop irrigating when the fall rains begin," declares Mr. Allen. "I proved the value of winter watering by irrigating one-fourth of my orchard and comparing results with the remainder of the tract."

Intercropping is not practiced or advised. Cover crops are grown, although considerable trouble is experienced in getting them out of the way. Purple vetch and melilotus indica are preferred. These are sown in September and plowed under in February.

"Stable manure is the best fertilizer, but little is obtainable in this locality," says Mr. Allen. "Commercial fertilizers which contain 6 per cent of nitrogen, 10 per cent of phosphoric acid and 4 per cent of potash is used at the rate of ten pounds per tree. Nitrate of lime—two pounds to the tree—is being tested."

PRUNE LITTLE EACH YEAR

The trees are pruned a little each year, the long system being followed. The Ascolano trees make a more drooping growth than the Missions and therefore the former require less pruning. Because the fruit is larger and is borne nearer the ground, Ascolano olives cost only $25 a ton to pick, compared with $35 a ton for Missions.

"We use pails for picking because they are less apt than bags to bruise the fruit," Mr. Allen explains. "The olives are hauled in lug boxes to the warehouse, where they are placed in barrels containing brine—ten pounds of salt to the barrel—for shipment to the packer. This prevents bruising in handling and avoids the danger of softening while awaiting packing. Olives may be kept in brine for weeks without deterioration."

Length of ladder indicates height of the Mission olive trees. Low-growing Ascolanos are more easily picked.

The bulk of the California olive crop is sorted by women. Uniform grading helps selling.

Olives planted 24 feet apart should have alternate rows removed when trees crowd.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JUNE 10, 1923

The Sun Shines Once More in "Sun-Maid" Land

Crisis in Raisin Industry Passed Safely—Leaders Confident of Successful Season—An Interview With Ralph Merritt

By JAMES C. KNOLLIN *Editor of ORCHARD and FARM*

WHAT manner of man is this youthful appearing human dynamo, who is all wrapped up in the raisin belt?

What has he done and what will he do to bring order out of chaos?

How is he carrying the tremendous responsibility that circumstances suddenly heaped upon his shoulders?

It was with such questions in mind that I talked recently with Ralph P. Merritt, now managing director of the world's largest co-operative marketing association, the Sun-Maid Raisin Growers.

The entire San Joaquin Valley—all of California, in fact—is looking to this one man to save its great marketing association from going into receivership. Furthermore, he is expected to bring order out of chaos; to restore confidence and maintain prosperity; to sell increasingly large crops at profitable prices; to maintain land values; to iron out controversies; to create new ideas; to reduce expenses; to increase efficiency; to sustain the principles of co-operative selling.

These and a few other things are expected of Ralph Merritt—and do not seem to worry him in the least. He began by creating a plan for refinancing, the successful application of which is recent history. Not only the stock-selling drive, but also the membership campaign, culminated in victory.

No more stirring times ever were experienced in the history of grape growing in California than these whirlwind campaigns, which were carried to successful conclusion only through sheer force of sincerity and determination on the part of the director and his aids. Fresno celebrated the close of the campaigns with a carnival of joy resembling that of Armistice Day.

NO REST FOR WEARY

When success was assured, many were inclined to relax. Some, in fact, were so worn by the "drive" that they went away to rest. Merritt rolled up his sleeves and said: "Now the real work begins! This is like commencement in the life of the college boy. The end is really the beginning. We have an enormous crop to move and innumerable other duties to perform."

"And have you the least doubt of the ability of the association to move the new crop at satisfactory profits?" Merritt was asked.

"No," he replied without a moment's hesitation. "Although we have reduced our advertising appropriation by some $900,000 as compared with last year, we expect to make our sales campaign so efficient that we will get greater results than were secured by expenditure of the larger sum."

He quoted figures to show the possibilities of increasing raisin consumption. Merritt seems to have an amazing capacity for statistics, reflecting in this respect, perhaps, his training with Herbert Hoover's Food Administration, of which he was "right-hand man." He talks rapidly and forcefully, quoting from memory facts and figures that would require the use of both cuffs and a notebook on the part of the average man.

"Within ten years," he pointed out, "we have succeeded in increasing the per capita consumption of raisins in America from 1.5 pounds to 3.8 pounds. That we have only scratched the surface of potential consumption, however, is shown by the fact England uses six pounds per capita. An increase in America of but two pounds, although making our consumption still less than that of England, would increase the total annual demand for raisins in this country by some 100,000 tons. I believe we can bring about this increased consumption by continuous, intelligently directed advertising publicity and merchandising. The latter, perhaps, is as important as the former. Without the co-operation of the trade, money spent on creating consumer-demand may be largely wasted.

"One important factor in gaining respect and confidence of dealers will be the refinancing of our own organization. This should be reflected in more stable market prices. Another thing: we have only begun to enter export trade. There are big possibilities along this line."

FORMER ENEMIES BOOST

An interesting angle of the present situation is the fact that "interests" heretofore considered unfriendly to the association have given open assistance to the reorganization drive. This is accepted as evidence that few persons—not excepting brokers and speculators—want to return to the old method of haphazard, hit-and-miss, speculative marketing. Some of the independent operators are said to have stated openly they preferred to have such an organization as the Sun-Maid Growers in the field to establish confidence, stabilize the market and create new outlets.

Nevertheless, it was not without some strenuous campaigning that the required number of contracts were signed. Many growers apparently had lost faith in the old management. In fact, it is admitted that if Merritt, by means of his convincing oratory (together with that of his aids), had not been able to regain the confidence of the producers the entire raisin structure might have toppled.

Now however, the dark clouds which have hung so long over the vast vineyards of the smiling valley have rolled away. The *Continued on Page 10)*

Raisin' Raisins the Reward of Merritt

RALPH P. MERRITT
(Courtesy Associated Grower)

THIS is the man upon whom the raisin industry has pinned its hopes and thrust responsibility for its future

As an official of the U. S. Food Administration he achieved international prominence during the war. More recently he has gained distinction by his work for the rice producers of California.

Then Merritt was rewarded with perhaps the most important agricultural job in California—that of reorganizing the Sun Maid Raisin Growers and preventing a catastrophe, which might have been reflected in every line of business, not to mention its effect upon our reputation as leaders in co-operative marketing.

What he has done, what he plans to do, what manner of man he is, these are topics covered briefly in the accompanying article.

Careless Handling of Deciduous Fruit Causes Heavy Loss

Ways in Which Value of Fruit Is Lowered—Citrus Growers Set Profitable Example

By GEORGE P. WELDON *Pomologist, Chaffey Junior College*

ONE of the first great services to the citrus industry of the late G. Harold Powell was the development of methods of handling oranges and lemons which would prevent unnecessary bruises and the various forms of decay which follow injury to the fruit. The citrus growers, as a result of the work done by Mr. Powell, greatly have profited.

GEORGE P. WELDON

Care in the handling of citrus fruits, from the time of picking until they are landed in good condition in the markets of the country, is being practiced by California growers. As a result, the heavy losses from decay, that at one time were seriously reducing the profits of the growers, have been reduced to practically nothing.

Deciduous fruit growers can well profit by the experience of citrus growers, for any one who is familiar with the handling of our deciduous fruits—whether apples, pears, peaches, cherries or apricots—well knows that a large amount of fruit suffers injury from bruising, due to careless handling from the time of picking until it is finally consumed, dried or put into cans.

CANNERS WANT PERFECT FRUIT

It is not only the fruit which is marketed in a fresh state that I am thinking about, but also the fruit which goes into cans for future consumption, or that which is evaporated; after which it may be kept in fairly good condition for a long period.

Since fruit growers' profits come mostly from the higher grades of fruit, anything which will tend to lower the grade is inviting financial loss. Then, why not pay a little more attention to careful handling, with the idea of producing better grades and securing more money?

Most of us have had the experience of going into an orchard during the picking season and locating the pickers by the sound of the fruit dropping into the buckets. While there is some excuse for part of the noise that occurs, most of it is due to thoughtlessness or carelessness on the part of the pickers. The pickers are not the only ones to blame, for often the orchard owner never gives a thought to the damage that is taking place as the fruit is dropped into the bucket.

INJURY IS PERMANENT

What is the result of this careless handling? In answer to this question we have only to examine the individual fruits after picking, when it can be determined very easily that there are bruises that are on the fruit to stay. Since the injury from bruising is permanent, no one should be so short sighted as to fail to recognize its importance.

Picking injury results from three separate operations. First, there may be damage to the fruit, due to finger nails puncturing the skin, or bruising from rough handling in the removal of the fruit from the twig. In the second place, severe bruising frequently is caused by dropping the fruit, instead of laying it in the container after it is picked.

The third operation that may result in injury is that of emptying the picking bucket or bag into the box. While it is just as easy to be careful and handle the fruit as though it were eggs, the fact that it can be sold, even if handled with little thought of injury, breeds carelessness.

Probably no fruit shows bruises more plainly than the apple. Especially are the light colored varieties often so badly bruised that they present an appearance that is unattractive, to say the least. Further and more severe injury to apples, pears and other fruits that are packed in boxes may take place in the packing house. Some of this damage may be due to poorly constructed mechanical graders, but more often it is the result of rough handling on the part of the employees of the packing house, including the packers themselves. It is not an uncommon thing to find, upon examining a box of Bellflower, Winter Banana or other light colored, delicate skinned varieties of apple, that practically every fruit in the box is discolored in spots from bruising.

BRUISED APPLES OFTEN DECAY

These apples are not only unattractive, but decay is very apt to start where bruising has taken place. Another thing besides the actual operations of packing that is responsible for bruised fruit is too much fruit in the package. When an overpacked box of apples or pears has the cover forced on by the help of a packing press, every fruit in the box may receive a mark, as a result of contact with a neighbor.

While a snug pack is necessary to prevent rolling about of the fruit in a package, there is a tendency to go to extremes in some cases, and that serious damage is often done by putting too much fruit in a box is a fact well known to the trade.

For several seasons the writer has been in peach orchards much of the time during the picking season and has witnessed there the rough handling of fruit. Also in the canneries certain observations have been made which would lead one to believe that this matter is worthy of very careful thought. One fruit grower stated that he couldn't see much use in the grower being careful when the fruit after landing in the cannery was handled in anything but a careful manner.

CARELESS CANNERS INJURE FRUIT

This attitude of the grower, while it would not excuse him in being careless, emphasizes the importance of bringing pressure to bear on the canner also, in order that he may do his part toward placing on the market the greatest possible amount of high grade fruit.

The profits in fruit growing are not so great that the grower can afford to stand a heavy loss due to carelessness. While there is no way of estimating the losses that occur annually, it is safe to say that—owing to the difference between prices paid for first and second grade fruit of all kinds—there is considerable money wasted that could just as well go into the pockets of the grower.

Can we not profit by the experiences of the citrus growers and save some of this heavy loss, through concerted effort on the part of fruit growers, canners and fruit handlers in general?

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of the
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SAN FRANCISCO SUNDAY EXAMINER
Editorial and business offices: Examiner Bldg., Broadway at Eleventh, Los Angeles.

TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

MEXICANS PICK POOR POTATOES. The Mexican laborer, who harvests most of the potato crop in Southern California, is one of the greatest hindrances to seed potato improvement, according to R. W. Hodgson, Los Angeles County farm adviser. "It has been found impracticable, if not impossible, to get the Mexican 'boss man' to have his men pick up only good potatoes.

"A large percentage of the tubers which go into the picker's sack should be left on the ground, as they do not bring enough to pay for handling and are totally unfit for planting. Without intelligent, conscientious pickers it is difficult to improve the quality of the potato crop."

WHAT ARE THE BIG EGG STATES? Californians who are inclined to regard their State as the greatest poultry producer of them all, will find food for thought in the Government census figures. These give Iowa, Illinois and Ohio from 4,000,000 to 10,000,000 more chickens each than the Golden State. In fact, the statistics reveal that California, Oregon and Washington together have less than 5 per cent of the chickens maintained in America.

Since most of the Middlewestern and Eastern eggs come from general farms, it will be seen that our highly specialized egg ranches are comparatively a small factor. But because of the quality of our graded product, we command a premium which excites the envy and admiration of the world.

EXPERTING WALNUT TREES NEXT Having shown citrus growers the advantage of keeping individual tree records, horticultural experts have now turned their attention to nut groves and are advising the "trapnesting" of walnut trees. With orchards of the latter selling up to $8000 an acre, it will be seen that many single trees have a market value of considerably more than $100 each, after making a liberal allowance for the price of unplanted land. It will certainly pay to give such trees the very best individual attention.

With apple orchards holding records of thousand-dollar crops per acre, it needs no prophet to foresee where the fruit expert will get in his fine work next.

NEW CALIFORNIA DRAINAGE LAW. The new drainage law, recently passed at Sacramento, heralds the beginning of a new era in the reclamation of California's swamp lands, according to those who have kept in touch with the situation. Former laws have proved inadequate to meet the situation, because they were suited only to small districts and forced each landowner to pay the same tax, regardless of the benefit which his land received.

The new law equalizes the assessments according to the benefit which each parcel of land receives, and provides for all legal phases of the work, which have been found so difficult to handle. This law was drawn up by the drainage department of the University of California and is pronounced by the Western Society of Drainage Engineers to be the best law of its kind in the United States.

MORE FARM ACCIDENTS RECORDED. With the advent of the tractor and the increasing use of heavy, complicated machinery, farm accidents have been on the increase. Most of these sad occurrences are due to carelessness. Only recently a Southern California rancher was killed by the overturning of his tractor on a sidehill where he should not have tried to turn around. Another rural family was bereaved last month when a San Joaquin Valley farmer was mangled beneath the discs of his harrow.

With the increasing chances for accidents, farm owners should caution their workers frequently, and the latter should go about their work thoughtfully.

Although a man may value his own life lightly, let him consider those who would suffer by his injury or death. We cannot be too careful. Safety First!

THE EGG—MEAT—FEED PROBLEM. Is the poultry industry trembling on the brink of revolution? Rumor has it that the White Leghorn, pride of California's egg districts, is "slipping" in the estimation of many leading breeders. Increasing triumphs by meat breeds at egg laying contests, and a growing conviction that production is merely a matter of selective breeding, rather than a natural attribute of any one type, may lead to interesting developments.

The Leghorn has maintained her position of leadership largely because she produced the maximum number of eggs with the minimum expense for feed. The question then is: Will the larger breeds furnish meat, the market value of which will more than offset the cost of the additional feed consumed?

One possible answer to this question may be found in the increasing demand for and uniformly high market value of dressed poultry. It is said poultry meat has maintained a higher average market price during the past few years than any other time.

Should feeds become plentiful and cheap and meat remain high for any length of time, the breeder with a heavy-laying strain of meat birds is likely to "cash in" to mighty good advantage.

Meanwhile, however, the White Leghorns still have things "pretty much their own way."

"What's New?"—Keeping Abreast of Agricultural Progress

Big Almond Crop in Prospect

THE almond crop in the southern part of Colusa County is estimated at 10,000 tons—more than the total product of the State ten years ago—according to D. S. Nelson, pioneer almond grower of Colusa.—WILSON.

Milkweed Rubber May Be Next

FIRST-CLASS rubber may be made from milkweeds, according to chemists employed by Henry Ford, who is building a machine to make milk-weed rubber and is planning to grow this plant to supply raw material.

California Wool Sixty Cents

SEVERAL sacks of wool recently were sold by H. Johnson of Butte County for 60 cents a pound, top price. Four hundred twenty-five tons of wool are being stored at Vina for shipment to the Wool Growers' Association.—RICE.

Rhodes Grass Survives Winter

BOTH runners and upright stems of Rhodes grass grown in Farm Bureau test plots in Madera County were winter-killed the past winter. However, new shoots came up from crowns and nodes. As a result of the test, three farmers are planting fields of three to six acres to this new forage crop.

Increasing the Pork Supply

DURING the 10 years ending 1920 the number of hogs in California increased 174 per cent. The five leading counties in swine production in 1921 were Tulare, Los Angeles, Fresno, Imperial and San Joaquin, according to H. M. Butterfield of the University of California.

Hass Buys Baldwin Holsteins

E. S. HASS of Downey (Los Angeles County) recently purchased the Anita M. Baldwin herd of registered Holsteins, numbering 95 animals, except the famous $41,000 bull, King Korndyke Pontiac Acme. The cows are to remain at their present home, Santa Anita (Los Angeles County), until December 1, in order to complete butterfat tests.

Certified Seed Potatoes Increase

THE production of certified seed potatoes in the United States increased from 3750 acres in 1919 to 17,258 in 1922, when 2,274,000 bushels of this class of tubers were grown. Pennsylvania potato fields planted to certified seed yielded 366 bushels—182 sacks—per acre, while ordinary fields yielded only 50 sacks per acre.

Standardizing Tare Weights

THE California State Department of Agriculture is standardizing the tare weights to be deducted on lug boxes in handling fresh fruits, of which $50,000,000 worth each year are moved from orchard to packer in this manner. Standard boxes for all fruits and vegetables have been adopted by the department, in co-operation with the U. S. Bureau of Standardization.

Oleander Poisoning Cattle

MANY cattle in the vicinity of Phoenix, Ariz., recently have died as a result of eating poisonous oleander. A child near Mesa also died after chewing a leaf of the bush, which is green in color and bears poppy-like flowers. Dr. E. S. Douglas, State veterinarian, has issued a warning to protect persons and animals from the plant.

Wool Sells for 52c a Pound

TEN tons of wool was recently sold for 52c a pound—$1040 a ton—by Joseph T. Grace, Sonoma wool grower. During the war the price of wool rose to 65c, but later dropped to 10c. Some of the first Sonoma cherries brought a penny a piece, on the tree, this price being paid at the Picetti ranch. Thirty-four cherries weighed one pound.—K. R.

Grow Tobacco in Jamul Valley

FIVE hundred acres of tobacco this year was planted in the Jamul Valley, 20 miles east of San Diego. The plants were grown in hotbeds, which covered six acres. The project is financed by a San Francisco firm, which has grown tobacco in the San Joaquin Valley. The work at Jamul is being performed by Greeks, who are said to be well pleased with their new home.

Driving Out Quack Nostrums

STAITES Lice Killer Food and a brickdust-sulphur mixture for inoculating fruit trees are two of the latest quack nostrums to be condemned by the State Department of Agriculture. The poultry food was found to be more than half sand and about one-fourth sulphur, yet sold at $4 a pound. This would make the sand cost poultrymen $4000 a ton, pretty costly grit!

Just how a diet of sand and sulphur could protect a chicken from lice and mites, or how brickdust and sulphur injected into a tree could be of benefit, were not explained to the satisfaction of the State chemist, George P. Gray.

Claims Largest Hereford Herd

PATAGONIA County, Arizona, claims to have the largest herd of registered Hereford cattle in the world. It belongs to the Greene Cattle Company and numbers 825 purebreds. The Hereford breed is the most popular one on western mountain ranges.

Chick Coccidiosis Treatment

POULTRY specialists of the Extension Service advise the following treatments for chick coccidiosis: Feed less grain and mash; give plenty of buttermilk and sour skim milk; isolate sick fowls, removing them from the brooder house daily. This treatment last year was used with good success on 25,000 chicks. Records were kept on the brooder house treatment of 50,000 chicks, for the purpose of learning which methods were most successful.

Sulphur Fertilizes Alfalfa

SULPHUR is one of the best fertilizers for alfalfa in the Durham (Butte County) district, believes Farm Adviser H. E. Drobish. Alfalfa treated with this material at the rate of 100 pounds per acre showed marked increase in height, while the plants were thicker, had larger leaves and better color. Two hundred fifty acres in the State Land Colony at Durham was seeded to alfalfa this year. Several ranchers are experimenting with sulphur fertilization.

"Wild" Children Drinking Milk

"OUR children are going wild about scoring themselves," reports a Kern County farmer, whose sons and daughters had become interested in Farm Bureau nutrition work. "We always used to have trouble in getting them to drink milk, but now each one drinks four cups a day, in order to score high." Another parent reports that two of her children have quit drinking coffee, while another says her little ones are eating less meat and more vegetables.

Pear Blight Cutters Wanted

SACRAMENTO COUNTY, through A. E. Morrison, horticultural commissioner, has sent out an S. O. S. call for blight cutters, because of the rapidity with which the disease is spreading through the pear orchards of that section and the difficulty of obtaining competent cutters.

Experienced workmen are offered $7 a day. Ability to detect the disease, thoroughness in cutting out infected tissue and in sterilizing tools and wounds, are the qualities desired. June and July are the months when help most is needed.

Avocadoes Promise Full Crop

THE largest avocado crop in the history of California is now on the trees, according to Knowles Ryerson, assistant farm adviser of Los Angeles County, who recently made a careful survey of the avocado industry.

The reason why the pollination problem is not serious in Mexico, the native home of the avocado, is because there the trees usually are grown so close together that the branches intermingle, states Mr. Ryerson; also because the thinned-skinned varieties, which are easily pollenized, are mostly grown in the southern republic.

Importing Italian Silkworms

FIVE MILLION silk worm eggs recently were brought to California by J. A. Nour, expert silk producer, who gathered the eggs in Italy and France. The eggs were hatched by the Seriterre Silk Company, which is operating a silk farm near Oroville. It is expected that the first crop of silk will be harvested early in July. Mr. Nour thinks California should be able, annually, to produce $450,000,000 worth of silk, the amount required to supply the United States, on 250,000 acres of land.—RICE.

Pooling Northwest Prune Crop

IN order advantageously to dispose of the unsold portion of last year's Northwest prune crop, the Oregon Growers' Association is forming a second pool, advancing two cents a pound on delivery. It is estimated that 16,000,000 pounds, grown in Oregon, Washington and Idaho were unsold as late as May. Of this amount, 9,000,000 pounds were in the hands of independent growers, who sold packed 50s as low as 6 cents a pound.

"These cheap prunes are what has demoralized the market," declares Robert C. Paulus, manager of the Oregon Growers. "The new pool is being formed as a means of stabilizing prices."

Odd Dairy Feed Mixture

DAIRYMEN in the San Francisco territory report excellent results from the finding of a mixture of rice bran, molasses and yeast, which is now being prepared by a Sausalito manufacturer. The molasses comes from Hawaii, the bran from the rice mills, and the yeast from a plant where industrial alcohol is distilled. The later product is not like the commercial yeast sold in cake or dry form, but is said to have the same properties, plus a considerable content of preservative acids. This latter attribute makes it possible, the manufacturer claims, to keep it without deterioration for months at a time. The feed is used to replace a part of both concentrates and roughage in the dairy ration. It has been selling at $30 a ton f. o. b. shipping point.

Farmers' Classified Market Place

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CERTIFIED White Leghorn quality Chicks at Utility Prices. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.50 per 50; $12 per 100. Special prices 500 to 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 7th st., Petaluma, Calif.

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RED HENS MATCH SOIL

Howard Siggins, who has a red soil farm near Honcutt (Butte County) changed from White Leghorn chickens to Rhode Island Reds because the latter matched the soil in color and thus protected them from hawks, which had killed a good many white pullets.

Keeping Hens Cool in Hot Weather

Well Known Poultry Expert Describes Improved Brooding and Laying Houses

By CHARLES WEEKS

MANY persons have asked me why I changed the design of my poultry house. The original 8 by 8 pens were good, especially for the cool coast and bay climate. It was not adapted to extremely hot districts, however.

CHARLES WEEKS

My improved poultry house won the praise and approval of all poultrymen who have seen it in operation on my one-acre farm at Owensmouth. Hundreds have already installed my improved system and are marveling at the results.

In the poultry community which I am establishing in the San Fernando Valley over 80 one-acre farms are already in operation. Among all the 80,000 chickens which have been raised here since last September, not one single case of cold has developed. This is because they have been kept in the best ventilated and most even temperatured poultry house yet constructed.

Most poultry houses get too warm at noon and too cold at night. It has always been the custom to face poultry houses south. In our California climate houses faced south get the full, direct rays of the sun at noon and become as hot as bake ovens. Then they cool off at night and these extremes of temperature—from 110 degrees at noon to 60 and 70 degrees at night—cause cold and roup.

My improved poultry house extends north and south in order that at noon no walls are in the sunshine. This makes the building the coolest possible at the noon hour. The pens in this house are 12 feet square, open both to the west and to the east, making the house 24 feet wide. This allows the early morning sun to come directly into the pens on the east side of the house and the afternoon sun to shine into the pens on the west side of the house. This gives chickens the sunshine in the coolest parts of the day, when they need it most.

This makes the most even-temperatured house possible for the full day, which is why our birds have no cold or roup. An even temperature is further insured by opening the middle door between the east and west pens. This allows a draft through the house at noon time, when coolness is most needed.

By having the sides of the building open from the eaves to the ground, except at the end of the perches, perfect ventilation is secured. It is a positive crime to board poultry houses up in front, thus shutting out the fresh air. Where poultry houses are very wide the rays of the sun cannot penetrate to many parts of the building. This results in very foul air, which changes slowly.

It is cruel to force hens to perch above the dropping board, with only a little space between this filthy platform and the roof. This bunches chickens into close, foul quarters which become overheated and it is little wonder that the hens catch cold and roup.

Another advantage of my system is that it economizes space. Three thousand hens can be housed on the same ground that 2000 could be housed in the original system, thus saving one-third the space. This saving of ground makes it possible to raise more green feed. No yard space is needed. This makes it possible to keep as high as 2500 hens on one acre and raise green feed for them the greater part of the year.

The house is arranged so as to effect a great saving of labor. The dropping boards are on the side of the pens, with a door opening on the outside so that the manure can be scraped out into a wheelbarrow or cart. This is quite an advantage over the old system, where the droppings had to be carried from a platform in the back of the house. The running of 100 hens together in one pen, instead of 25, leaves less feed hoppers and water crocks to look after, as well as lessening labor in other obvious ways.

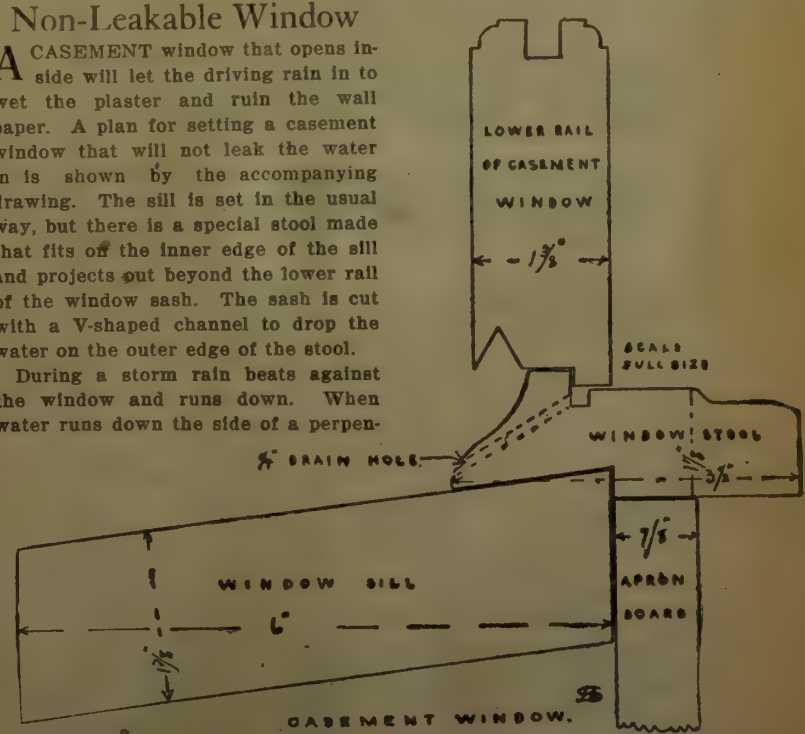
The house, having an open front on both sides, except where the perches are, leaves very little outside walls for painting. With the overhanging eaves, open front pens and green feed troughs on the outside, the building is very convenient and attractive.

It certainly is a wonderful sight to see a whole colony of one-acre farms with poultry houses of uniform and artistic design. It is a veritable poultry village. If there are any questions which any one would like to ask upon any point not made clear in this article, I shall be pleased to answer them. Have had 20 years of large scale egg production and poultry experimentation.

Non-Leakable Window

A CASEMENT window that opens inside will let the driving rain in to wet the plaster and ruin the wall paper. A plan for setting a casement window that will not leak the water in is shown by the accompanying drawing. The sill is set in the usual way, but there is a special stool made that fits off the inner edge of the sill and projects out beyond the lower rail of the window sash. The sash is cut with a V-shaped channel to drop the water on the outer edge of the stool.

During a storm rain beats against the window and runs down. When water runs down the side of a perpendicular board it does not drop off at the lower outside edge as one would expect, but it runs inward and makes trouble. That is why a V-groove is necessary.



The bottom of the sash also has a rabbeted groove to shut against the raised part of the stool. This rabbet joint may be fitted with a thin strip of rubber, if necessary. Also, the stool may be put down onto the sill with fresh paint between, if blowing rains are frequent.

Occasionally a strong wind may blow rain water across the sill and up over the "nose" of the stool. There is a rabbet groove to catch this water and to lead it back onto the sill through three small holes bored with a quarter-inch bit, as indicated by the dotted lines in the drawing.—HERBERT A. SHEARER.

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Cows Pay Profit in Hard Times

Riverside Ranch Loses on All Other Crops But Dairy Products

By WILLIAM REYNOLDS BUTLER

DURING the past two years of business depression alfalfa, potatoes, Indian corn, milo maize and small grain were produced at a loss on the 900-acre Woodhead-Warren ranch in Riverside County, while dairy cows continued to pay a profit.

WILLIAM R. BUTLER

Howard Warren, managing partner, is a business farmer, keeping a complete set of books. Therefore, he knows whereof he speaks regarding ranch profits and losses. The major portion of the ranch, which is owned jointly with his father-in-law, is let out to tenants on a crop share basis and is devoted to the production of the crops mentioned.

Three hundred acres of timber pasture and sixty acres of alfalfa support 150 grade and pure-bred Jersey cows. The woods pasture is cow comfort and insurance, a valuable asset. The ranch lies at the foot of San Jacinto Mountain, a few miles from the town of the same name.

Hand in hand with his bookkeeping, we find Mr. Warren busy with the details of market milk production. The milking shed is only that and nothing more, having no ends or sides. The cement floors and feed troughs are kept as clean as water and broom can make them. The 150 cows being milked are run into their stanchions in two strings twice a day as regular as clockwork to be milked by milking machines. Each cow's stanchion bears her name. The feed cart has a feeding schedule on it and opposite each cow's name is the allotted grain ration.

Why all these details? Because the herd belongs to the Riverside Cow Testing Association and the grain ration is fed to each cow according to rule—one pound of grain mixture to each pound of butter fat per week produced.

It is the attention to such minute details of production costs, according to Mr. Warren, that he is able to stop leaks which are common on the average dairy farm. The cow testing work enables him to feed a proper balance of feed and get the maximum production from each cow. He also looks to the cow test to detect star boarders. No cow, either pure bred or grade, is allowed to stay in the herd if her annual butter fat production runs much below 300 pounds.

Warren uses the best of pure-bred sires, but is in the commercial milk production game and not in the breeding business. He believes in co-operative marketing, selling milk through the Southern California Milk Producers' Association plant at San Jacinto. Through this association he purchases supplemental dairy feeds. He is a member of his county farm bureau and an active member of the Hemet-San Jacinto Chamber of Commerce.

BUYS VARIETY OF FEED

The ranch produces some of the grain fed to the herd, but various materials are purchased. The grain feed mixture is composed of rolled barley, oats, cottonseed cake, beet pulp, alfalfa meal and molasses. The object of adding some of these articles is to lighten up the grain ration while maintaining a proper proportion of nutrients. Green feeds, such as alfalfa, oats and barley, are fed once a day.

Two tanks of silage are used to supplement roughage. Indian corn is the main silage crop. Last season silage made from barley, cut in the heavy dough stage, made a satisfactory feed.

Mr. Warren's motto is, "I won't sell milk I wouldn't drink myself." He tests his herd twice during the year for TB. Cows and milk shed must be as clean as it is humanly possible to make them. Utensils are sterilized and the milk run over iced coils to lower the temperature as soon as taken from the cows.

The daily production from this herd of 150 cows runs around 300 gallons of milk. For the last few months 390 gallons a day have been produced. Through his association this co-operative dairyman is getting paid at the rate of one dollar a pound for butter fat.

Although Mr. Warren does all in his power to keep production costs down to the minimum, he feels that co-operative effort among California dairymen has saved the day for all who milk cows for a living plus.

"Nineteen years ago I came to California from a dairy section of New York State. I have seen California go forward by leaps and bounds in milk production," says Warren. "But last summer I visited my old home community and was surprised that the dairy business there had not changed much during the past nineteen years."

Arizona Cantaloupes Reduced

THE cantaloupe area in the Salt River Valley of Arizona was materially reduced this year, according to estimates recently made for the Government. In consequence there will not be so many distributers in the valley this year as last. The selection of seed was made with greater care than for any preceding season, the acreage being about equally divided between two varieties which have proved successful in this region.

The advance estimates are as follows: The Phoenix and Mesa district, combined, 1700 acres, as against 3600 acres last season. Of this area Phoenix has 1300 acres and Mesa 400 acres.

Last year the Phoenix district planted 2400 acres and harvested 1800 acres, while the Mesa district planted 1200 acres and harvested 900. In consequence only 2700 acres were harvested in the valley from a total planting of 3600 acres. Rains and unfavorable shipping conditions last year are given as the reasons for reducing acreage this year.

In a normal year, and most years have been normal for the cantaloupe industry, Arizona melons are a profitable crop, commanding the best prices in the Eastern markets. A normal year is when the Arizona melon crop follows the Imperial Valley crop and precedes the crops from other melon growing districts.

The Arizona cantaloupes have the reputation of reaching the Eastern markets in solid, ripe condition, well flavored and tempting to the eye. The curtailment in acreage this year should mean that the grower and distributer will do better in the matter of prices than if a larger crop had been planted, according to one local manager for a distributing company.—JAMES WYNKOOP.

New Champion Holsteins

FANNIE Pontiac Butter Girl Pride, a Holstein cow owned by the Palo Alto Stock Farm, Santa Clara County, is the new champion for production of butterfat in one year in the junior four-year-old class. She produced 30,839 pounds of milk, containing 914 pounds of fat, equal to 1132 pounds of butter. Her milk record is third highest in the United States, in her class and division.

Isabella Korndyke Pontiac Walker takes first place in the State as a senior two-year-old for production in ten months, with a record of 21,318 pounds of milk, containing 677 pounds of fat, or 847 pounds of butter. She belongs to the Santa Anita Rancho herd (Los Angeles County).

In the junior three-year-old class of the ten-months' division, Louise Alcartra Prilly takes first place in the State, with a record of 19,866 pounds of milk, containing 644 pounds of fat, or 806 pounds of butter. She is owned by Bridgford Holstein Company, at Patterson (Stanislaus County).

Citrus Scales

For control of Citrus Scales we recommend *Ortho Orange Oil*, a white paste containing an oil which kills the scale without injuring the foliage or fruit.

Growers who have trouble with these pests will be delighted with the results of spraying with ORTHO orange oil.

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Grow Certified Seed Potatoes

State Specialinst Explains How High Grade Seed Is Prodùced for Planting Important Crop

By W. V. SHEAR

Potato Specialist, State Department of Agriculture

UNDER the present rules for the certification of seed potatoes, established by the State Department of Agriculture, every grower of this kind of seed must have a special seed plot, on which he grows hill selected seed to furnish the seed for his own commercial planting. This means that certified seed has for its parentage, the healthiest and most productive plants that can be found.

W. V. SHEAR

Potato fields which are certified must be "rogued," or rid, of all mixed varieties, if any happen to be found in the field. The plants left must be practically free from all of the common potato diseases and be absolutely free from those diseases for which we have no control, such as nematodes. The small percentage of diseased plants which may be found in the fields must be carefully dug out before harvesting.

After the potatoes are harvested they are carefully graded to convenient seed sizes. All certified stock must carry a certification tag furnished by the State Department of Agriculture.

Two field inspections are made while the plants are growing, to determine whether the rules of certification are being carried out and also to determine the number of undesirable plants in the field. A third inspection is made after the potatoes are graded and ready for market.

NO ABSOLUTELY CLEAN SEED

A small percentage of the very common potato diseases is allowed in the seed, as it is impossible to produce potatoes in any quantity that do not have some infestation of our most prevalent diseases, such as rhizoctonia and scab. Inasmuch as these fungi are on the outside of the tubers, they can be controlled by dipping the seed, which is a desirable precaution for all seed potatoes.

It is sometimes argued by the ultra particular advocates of good seed potatoes that no tubers carrying any disease whatever should be planted. These persons do not take into consideration the fact that it is absolutely impossible for any lot of potatoes to be perfectly free from all disease, as the contact of the tubers with the soil is bound to cause some infestation, and it would be folly to discard such tubers when they are known to be of high productiveness.

The use of certified seed has, in the great majority of cases, produced expected results. In driving through some of our potato districts the past season it was possible to tell from the appearance of the fields whether or not certified seed had been used.

CERTIFIED SEED SHOWS RESULTS

Certified seed users had fields which showed very uniform stands and heavy, vigorous vines. When the crops were harvested, these fields yielded from 30 to 100 per cent more than the fields which were planted with ordinary seed. Such results are common and have been duplicated in practically every potato growing section of the State.

Whenever any farmer wishes to secure good seed potatoes he should ask for California certified seed and insist upon having the State tag on every sack. At the present time we have certified seed potatoes being grown under practically all climatic conditions of the State, so that acclimated seed can be had for every district where potatoes are grown in California. Such seed is grown in the interior valleys, both as an early and as a late crop; also in Southern California under somewhat cooler conditions, as a spring and fall crop.

Certified potatoes are grown on the coast from San Diego County on the south to Humboldt County on the north, as a main crop. They also are being grown in the Delta section as a main crop. The mountain districts of California are producing certified seed at altitudes varying from 2000 to 5000 feet. The varieties include all those grown in a commercial way in the State.

POTATO PROBLEMS NUMEROUS

California differs from all the other large potato growing States in that potatoes are being planted and harvested in some portions of the State every month of the year. This means that they are being planted under every conceivable condition of climatic and soil environment. It is, therefore, easy to understand the fact that the potato problems in the State of California are as numerous and as varied as are all the potato problems throughout the remainder of the United States.

Diseases which commonly affect our potatoes are usually due to the planting of diseased seed. Therefore, there is little cause for surprise that some potato yields are almost nothing, while others run as high as twenty tons per acre. A poor "stand" usually is due to inferior seed. It costs practically as much to cultivate a field of scattering plants as one which contains its full quota.

So many persons make the mistake of thinking they can tell whether they are getting good seed potatoes from the appearance of the tubers. It is true, of course, that some of the features of good seed can be noted by an inspection of the tubers, but the most important ones cannot. Productive potatoes only come from productive plants.

PRODUCTIVENESS TRANSMITTED

The potato tuber, which is used for seed, is in reality a cutting from the parent plant and as such carries with it all of the qualities of the parent. Many of these qualities which make or mar its productiveness are hidden away in the delicate tisues of the tuber and no human eye can discern them. It is absolutely necessary, therefore, in order to determine good seed potato stocks to know what kind of plants produced them.

California was the second State in the Union to appreciate the necessity for a field inspection system in order to determine the character of the seed potatoes sold in the State. In 1915 a law was passed by the State Legislature providing for seed potato inspection and certification and establishing standards for certified seed potato stock. In 1919 the Legislature made a small appropriation to assist this work and since then the production of certified seed has steadily increased.

Women Manage Poultry

A FORTY-ACRE poultry ranch near the petrified forest in Sonoma County is managed by Miss Thekla Sielcken and Miss S. V. Harmon. The former has been in the chicken business 27 years. A specialty is made of producing fine stock. A 2100-egg incubator, invented by Walter Kitchen of Sonoma, is operated very successfully. The farm contains only three acres of level land suitable for poultry production. Fourteen acres is in fruit trees, the balance of the ranch being wooded hills—KATHLEEN RODD.

Cant Hook for Stone

A LARGE stone hangs to the ground with great tenacity when it is partly buried, therefore, some tools other than shovel and steel bar are necessary to handle it. A cant hook that is properly hung will grip a stone and give the workman the advantage of a good leverage so he can roll or lift one side at a time, to work earth under it to raise it out of its bed This tool is also needed to roll the stone onto the stone boat.

Stone cant hooks are not made and carried in stock like other tools, so it becomes necessary to make them in the home blacksmith shop. They are necessarily different from log cant hooks, because they grip the object differently. Log hooks are pointed to penetrate the wood at an angle designed to tighten the grip as more pressure is applied. Also, a log moves

in two directions, while stones may roll in any direction.

The drawing shows a stone hook with considerable clearance to reach around projections that may be partly hidden under ground. It is made out of a steel wagon tire turned edgewise for strength and made thin and pointed to push under the stone when stepped on.

A piece of three-inch boiler tube makes the ferrule, which is long enough to strengthen the wooden handle at the point of leverage. The upper end of the hook is made with a double yoke to straddle the ferrule. This yoke is long enough to oscillate the handle.—H. A. SHEARER.

KING TUT HORSES ARRIVE

Two fine saddle horses, Blackball and Midnight Rex, both undefeated world champions, recently were brought from Missouri to California to be used in a moving picture play illustrating the life of King Tut and other ancient Egyptians. C. B. Harris, popular Los Angeles fine stock dealer, made the importation. He also is shipping 11 purebred cattle to Honolulu.

ONE CENT SWEET SPUDS

Turlock sweet potato growers in December were receiving only a cent a pound for their product, a fact which consumers might consider when paying retail prices of 6, 7 and 8 cents.

New Way to Rid Poultry of Lice

Rev. G. R. Mente Tells of Amazing Discovery Which Keeps Hens and Chicks Free From All Vermin

"I have used your remarkable Lice and Mite Remedy with fine results," writes Rev. G. R. Mente, Methodist Parsonage, New Washington, Ohio. "It has put a stop to the poultry losses in this community. You are a great benefactor to poultry raisers."

Lice and Mites Go Like Magic

This amazing new discovery is Imperial Lice and Mite Remedy. Comes in condensed liquid form, to be used in fowls' drinking water, a few drops at time. No more Dusting, Spraying or Greasing.

Makes Lice, Mites, Ticks, Fleas, Blue Bugs and other vermin positively leave fowls like magic. Renders entire flock, old and young, immune to these expensive pests. Equally good for Chickens, Ducks, Turkeys, Geese and Pigeons. Guaranteed not to affect eggs or flesh of fowls in any way. Makes Hens, Pullets and Chicks healthier, sturdier and grow faster. A splendid summer egg tonic and blood purifier. More than 100,000 Poultry Raisers now keeping their flocks free from vermin this new easy way.

You Can Get Yours Free

(Regular $1 Size Bottle

Imperial Laboratories, the manufacturers are now making a Special Introductory Offer whereby you can obtain, absolutely free, a season's supply, for the average size flock, of this amazing new Lice and Mite Remedy.

SEND NO MONEY. Just your name and address to Imperial Laboratories, Dept. 7288, Kansas City, Mo., and they will send you, by return mail two regular $1 bottles of Imperial Lice and Mite Remedy (double strength). When the package containing the regular $2 quality arrives, pay the postman only $1 and a few cents postage. Use one yourself to rid your own flock of these pests, and sell the other to a neighbor—thus getting yours free. Or, a large size Trial Bottle for only 50c.

Special to Large Users

If you have a large flock, or have neighbors who wish to go in with you, this Special Introductory Offer applies on 4 of the regular $1 size bottles, at an additional saving. A large size Trial Package of Imperial White Diarrhea Tablets included Free. Just state you want the regular $4 quantity for only $1.75. Readers risk no money, as Imperial Laboratories are fully responsible and nationally known distributors of poultry remedies. They will refund the cost on any of the above quantities ordered, promptly on request, any time within 30 days.

BANISH ANTS WITH THIS NEW GELATIN

I will positively rid your premises of every last trace of ants. Count the number of ant trails and send for as many cans as you have trails. Marvel Ant Gelatin is the surest concoction ever created for exterminating ants. Packed in safety tins that are sealed and soldered. Never require opening, as the ants enter the small portholes to devour the poison. No refilling.

1 can 60c
6 or more, per can.....50c

Special Orchard Can, in 100 Lots, 35c.

H. W. McSPADDEN
Entomologist
708 Towne Ave., Los Angeles.

MARVEL ANT GELATIN

GUARANTEED TO EXTERMINATE ANTS

W. R. AMES CO.

SAVE WATER

Use Ames Surface Pipe. Lock-seamed. 30 different sizes and weights. Best workmanship. Immediate delivery.

Send for Folder P-3.

W. R. Ames Co., Inc.
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SAN FRANCISCO

AMES SURFACE PIPE

MOLASSES

PURE HAWAIIAN CAMO FEED MOLASSES

Increases and Stimulates the Milk Flow

Pure Hawaiian Feed Molasses, when fed up to 25 per cent of the ration, is a wonderful milk producer. When mixed with grain, chopped feed and ensilage it is almost pre-digested food. Besides increasing the milk flow it keeps cows healthy by keeping the digestive tract well ordered.

Many of the biggest dairies in the country are increasing profits by using pure Hawaiian Feed Molasses. At the same time they reduce overhead, because we sell you molasses for about half the cost of hay. Animals of all kinds like Molasses. Feed it to your cows and watch the improvement.

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TANK CARS.....$11.00 CARLOADS IN BARRELS.....$20.00 L. C. L. IN BARRELS.....$22.50

Booklet A-4 describes how others are feeding Molasses with great success. Write for it. It's FREE.

613 First National Bank Bldg. **W. H. YOUNG COMPANY** San Francisco

YOUR GARDEN OF FLOWERS

By HELEN TEMPLE

DESTROYING INSECT PESTS

Plant pests begin their ravages in our flower gardens just as soon as we begin to set out young seedlings in early spring, and are in full force in June, when it is necessary to spray at regular intervals to insure the crop of blossoms. Trusting to luck and hoping they will leave will only insure a crop of disappointment.

HELEN TEMPLE

For a little garden it is less expensive to purchase a small sprayer and attend to the spraying oneself. However, when there are many large bushes and shrubs it is much more satisfactory to hire a man with a spraying machine. Quite often a few neighbors in the suburbs will engage a "sprayer" for a day, thus greatly lessening the expense. This co-operation results in better flowers in the neighborhood.

SPRAYING ROSE BUSHES EFFECTIVELY—In many localities roses are subject to mildew and rust to such an extent that spraying is as necessary as cultivation and pruning. The rose aphis is one of our worst pests. A hard spray of water is often sufficent to knock them from the bushes, but a soap kerosene solution is more permanently effective.

Mildew, scale and rust are successfully combated with repeated lime-sulphur sprays. Plant lice are eliminated with contact sprays, but are unharmed by poison solutions. A half bar of yellow naptha soap dissolved in a gallon of water, with a pint of kerosene added, makes an effective aphis spray. Dilute the solution with another gallon of water if it is to be used upon tender annuals or soft, new growth among roses and other perennials.

DON'T DUST WITH A TIN CAN

A neighbor of mine, who is a successful poultry raiser, recently complained of insects in her flower garden. I recommended insect powder. A few days later she returned, saying, "That insect powder didn't do a bit of good. The bugs still are eating all the new growth and young plants." Then I suggested a thorough dusting with lime and sulphur.

But this treatment, also, was of no avail. I began to imagine that her garden grew bugs with unusually strong constitutions, so I asked, "What kind of a powder bellows did you use?"

"Why, just what my mother used in her garden back in Wisconsin. I took a tin can, punched holes in it and sprinkled the powder over the plants with that."

Then I asked her just how she used the insect powder on her poultry and she said, "I rub it well into their feathers."

"Plants need it that way, too, out in California," I told her. Then she borrowed my powder bellows and another supply of insect powder. She has abandoned the Wisconsin tin can.

BULBS FOR JUNE PLANTING

It is not too late to plant gladiolus and tube roses excepting in the extreme interior regions, where the heat is already intense. Tube roses are gaining in California favor, yet it is surprising to find so few grown by flower enthusiasts. The ever-blooming tube rose blossoms year after year without renewing and is as beautiful as other varieties. The silver-leaved tube rose is almost as interesting without blossoms as when it is in bloom. The leaves are very pretty, being striped, while the blossoms are single.

We feel quite certain that gladioli are the most attractive of all our summer flowering bulbs. Like radishes they should be planted at regular intervals of ten days, thus prolonging the blossom crop. June is the last month of the season when gladioli successfully can be planted, so the planting schedule should be continued throughout the month. "Spikes" may be cut when the first bud begins to open. Place the spike in water and watch the flowers develop. They open one by one until the spike is covered with nineteen or twenty flowers.

PLANT ASTERS THIS MONTH

A border of asters around the vegetable garden, or perhaps a row or two of the brightest colors marching right down the middle, makes the tomatoes and melons taste much better. But while we can bring the deepest and brightest of reds and purples into the vegetable garden without causing a commotion among the colors, we just can't set out a bed of purple asters in the front yard and not cause "gnashing of teeth." Choose delicate colored asters for planting among the other flowers and your garden will be a joy for days and days.

Among the most wonderful new asters we have rivals of the finest chrysanthemums. As for colors we may choose from the rainbow. The big, red American beauties, quilled King and beautiful ostrich feather asters, the singles and dwarfs and giants—all of them are beautiful and effective. Set out a bed this month. They do well in any good soil, but need an abundance of water during their blooming season. Plant the seedlings from twelve to eighteen inches apart.

CALENDULA MAKES BEAUTIFUL BORDERS—Calendula may be sown in June and even as late as August. It is also, in many instances, ready to be transplanted during these months. I have found the seed sold by our ORCHARD and FARM advertisers so fertile that every one germinates. Every Calendula seed seemed to make two plants, for it has been necessary to thin again and again. Calendula will grow year after year without renewing, but the plants become ugly and scraggly and the blooms inferior, therefore we find it much more satisfactory to pull up the old calendula border and replant each year.

Plant the newer varieties. They are so much more satisfactory than the old varieties of small flowers. The Orange and Lemon King calendula will make a handsome border, where brightening effects are needed. With ordinary care and an application of fertilizer when the buds begin to form, calendula will produce immense blossoms. Their easy culture makes them unusually desirable for sidewalk and driveway borders.

SET OUT FALL FLOWERS NOW

Local florists usually carry a few of the best seedlings for setting out at this time of the year, so it is still possible to enjoy late summer and fall flowers, even though you did not sow early seed boxes. Plants of zinnias, daisies, cosmos, petunias and stocks should be set out this month. All of these varieties have been greatly improved since our grandmother's time.

"Such wonderful zinnias I've never seen before!" explaimed an enthusiastic visitor from Pennsylvania last fall when she saw our giant colossal zinnias. "How did you make them grow so big?" she earnestly inquired. "That's what California climate does for flowers," I carefully explained.

The new giant flowered zinnias are very large and double, the plants growing about three feet high or more with plenty of branches. The colors are those which run through the yellows, pinks, reds and lavender in all shades. Like the dahlias and chrysanthemums, the zinnias also are grown in the dwarf varieties, which are pretty little plants full of very double, small blossoms throughout the summer and fall. These seldom grow more than a foot in height.

The cutting back of chrysanthemums is not practiced when they are not started before this month. June chrysanthemums will bloom very late. In fact they will furnish decorations for the winter holidays.

Grapeleaf Hopper

can be controlled by dusting with *Ortho Nicotine-Sulphur Dust No. 6.* Highest quality. Every particle of dust carries its load of nicotine.

Packed in air-tight steel drums to insure full strength when opened. Ask your Ortho dealer.

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—for small cars as well

A Dominant Idea results in a dominating Tire

Samson's one idea has been to build the very best tire possible—regardless of cost

This *quality-policy* year by year, has built up a host of friends.

And now, with Samson prices comparing favorably with other reputable tires, you can obtain a tire which its service-records prove to be economical and long-lived. Samson quality can be no higher. Samson is perfect value.

At these prices you can't afford to be without Samsons

30x3½ Fabric	$13.25
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33x4½ " " "	51.00
33x5 " " "	61.10

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Ross & Fryer, Chino, California
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Round Valley Com. Co., Inc., Covelo, California
Philly & Gill, El Centro, California
Lundblade & Jewett, Eureka, California
L. A. Bobo Tire Co., Fresno, California
W. H. Hooper Co., Glendale, California
Garden Court Garage, Hollywood, California
Lyon & Trey, Lodi, California
Guasti, House & Guilli, Los Angeles, California
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SAMSON SUPER SIZE—CORDS

Bee Notes

By J. D. BIXBY SR.

UNCERTAIN NECTAR CROP

The flow of orange blossom nectar this year was very uncertain. In many of the best districts none was gathered, while in others an irregular flow lasted from March 1 to May 15, and a fair crop was harvested.

J. D. BIXBY SR.

In the sage brush regions there was a moderate yield in a few favored spots, but in most places the bee men were glad to get enough honey for winter feed. Wild buckwheat honey is likely to be an equally short crop. The irrigated lima bean sections are likely to be swamped with bees seeking nectar for winter stores.

WHY BEES SWARM EARLY.

The reason why farm bees are prone to swarm early and often, previously hanging outside the hive for several days, is because of insufficient room for brood-rearing and honey storage. In a commercial apiary very little of this is seen; in fact, I sometimes wish mine would "hang out," in order to show which colonies were the most advanced without the necessity for looking inside.

LOOKING AFTER YOUNG SWARMS

Young swarms should be looked after and given a frame or two of brood from a strong colony, for encouragement. Often a swarm which looks large will contain so many drones that when the latter have died off the swarm is pretty weak and unable to feed much brood. In many cases, also, the young bees will drift back to the old colony and the new swarm be left so weak as to be unable to store enough honey for winter. Such swarms must be aided or they will starve.

DON'T EQUALIZE THE BROODS.

Don't make the mistake, if your honey harvest comes early, of equalizing the broods. All the profit comes from big, strong colonies; therefore, keep them in good condition. If you think you must equalize, take brood from the weak colonies and add it to the moderately strong ones until the latter attain the desired strength.

Weak colonies yield no profit under any treatment, and therefore should be used to build up good colonies for next winter.

SKUNKS EAT BEES

No other animals do so much damage to the apiary as the greedy skunks. Their most destructive season is in July and August, when the kittens are growing rapidly. A skunk will roll or scratch in front of a hive after dark. This brings out the bees, who promptly fill Mr. Skunk's long fur. He then backs off, combs out the insects and devours them at his leisure. It is bees, not honey, that skunks like.

It is a peculiarity of the skunk to return to the same hive, night after night, until the colony is so reduced that not enough bees come out to satisfy his appetite, when he transfers his operations to some other colony.

Fortunately, a skunk likes beef better than bees. Take some ground beef, roll into balls the size of a walnut, put strychnine half the size of a pea inside, and drop this bait near the entrances in the evening. Next morning—phew!

AMERICA'S BEE KING PASSES

The recent death of Amos I. Root at his Medina (Ohio) home, at well past 80 years of age, marks the passing of a prominent and picturesque figure from American apiculture.

Becoming interested while yet a mere boy in the inventions of the so-called "Father of Apiculture," L. L. Langstroth, Mr. Root speedily became the leading United States authority on bee keeping and the largest producer of honey in this country. Beginning without capital, he established a little hive factory and founded, fifty years ago, an apicultural journal, "Gleanings in Bee Culture." He lived to see these business ventures develop into a corporation with millions of capital and branches in many States and foreign countries.

It is many years since Mr. Root ceased to take an active interest in manufacturing and sales of honey, but he kept in close touch with the beekeeping fraternity through the household departments of his magazine, the management of which he never relinquished, and in which his influence was always for good.

Revive Soil Bacteria Interest

THAT the inoculation of seed of legumes with specially bred nitrogen soil bacteria is sound and profitable practice, is the assertion of Dudley Moulton, horticultural commissioner of San Francisco.

So confident is he of the results, in fact, that Mr. Moulton has prepared and issued a number of special cultures on a crop-share basis; that is, he has agreed to accept as a fee for the distribution of bacteria one-half of the increase in the crop resulting from their use, as indicated by check plots, uninoculated. A number of demonstrations throughout the State now are under way on this interesting basis.

"It is no wonder," admits Mr. Moulton, "that the farmers of California have become suspicious of bacterial cultures. Some of the sales methods used in distributing the commercial product were anything but fair and above-board. However, the principle is right, and I am sure that with restored confidence will come increasing use of these beneficial 'bugs.'"

One of the most important uses for soil bacteria now advocated is in forcing the production of a heavier tonnage of leguminous cover crops raised for green manuring by fruit growers.

When nitrogen-fixing bacteria were discovered and their presence in the root nodules of legumes established, it was thought by some investigators one type of organism would be equally valuable for all legumes. Now it is believed that the bacteria which live in the nodules of different plants are specialized organisms, and that any legume is at its best only when its own special bacteria are available.

While it is possible to inoculate the seed-bed simply by scattering soil from other fields where the crop has been grown, this is an expensive and not always satisfactory method. Hence the development of the present plan of inoculating the seed with pure culture just before planting.

Fly Killer Formula

AN effective fly repellent according to Thomas Dinsmore, manager of the Ortega-Underhill Rancho, Santa Barbara, Cal., is made up of the following ingredients, mixed in the proportions shown:

Five pounds of cresol, U. S. P.; 3 pounds sassafras syn., 4 pounds oil myrbane, 2 pounds oil cedar wood, 40 gallons kerosene, 5 gallons parrafin oil, 28 S. G.

This mixture makes one barrel of the liquid, which may be sprayed upon animals and about the buildings.

Raynor Farms and Boosts

BURDETTE RAYNOR, secretary of the Hemet Valley Chamber of Commerce, is a 10-acre fruit and poultry rancher. He is keeping books on his highly diversified little farm, in order to prove the possibilities of intensive farming in the Hemet Valley.

A fine flock of hens has shown a substantial profit. An apricot orchard has also proved a money maker. A number of walnut trees have not yet reached the age of profitable bearing. A small apiary adds to the farm income, while a Saanen goat supplies milk and cheese more cheaply than did the cow which Nanny displaced.

"Hemet Valley is but a continuation of the small home orchard of our twin towns, Hemet and San Jacinto, which are merely convenient community centers," explains Mr. Raynor. "We cherish no big city aspirations, but have great faith in the agricultural, horticultural and livestock future of our district."

Communities with such a vision are bound to prosper.—W. R. BUTLER.

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Stiff-Stay Fencing
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All standard qualities included

And I'm Giving Away FREE (only a few left)

One Red Top Post Driver with each order for 100 or more posts. Only one to a customer.

One 100-lb. Keg Farmer's Nails, assorted sizes, 2-penny to 60-penny with each order for 200 rds. or more woven wire fencing. Only one keg to a customer.

Lowered prices in effect this month only. Only 12 days more! Hurry!

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Handle Your Hay Crop With the Good Hay Tools Sold by the McCormick-Deering Dealer

McCormick-Deering Self-Dump Rake

The McCormick-Deering self-dump rake is of steel construction throughout. It is so strongly built that it will stand up successfully under the roughest usage to which it may be subjected in the field. The best angle steel is used in the construction of the frame. The McCormick-Deering is the kind of rake that leaves a clean field.

OUR DEALER who has his store near you will furnish you with just what you want. The hay tools sold by him will put your hay where you want it, the way you want it, in the quickest, most economical manner. McCormick and Deering and Milwaukee mowers can be depended upon to cut hay every minute. The self-dump rakes are known the world over for their quick, clean work, and light draft.

McCormick-Deering sweep rakes provide a quick method of getting your hay to the baling press, and McCormick-Deering hay presses put it into neat, tight bales that keep better, are easier to handle, store, and feed, and that bring the top price on the market. McCormick-Deering hay presses are made for use with either horse or engine power.

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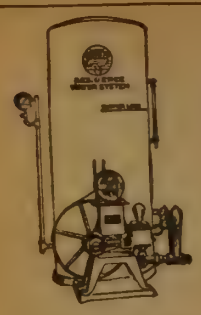

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For red spider on all trees, berries, vines, vegetables, etc., use *Ortho Dusting Sulphur*. Flows like liquid through the duster, spreads evenly, and goes farthest.

Unsurpassed for effectiveness, ease of handling, and economy. Contains no acid, so cannot burn the leaves.

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We make three great silos—"Cyclone," the finest silo built—"Ironclad," the best silo in its price class—"Atlas," the cheapest factory silo made—and a mighty good one. All silos made on special tank machinery. Perfect workmanship. Finest of materials. Exclusive patented features. Send for "Making Silage." It contains money-making ideas and interesting facts about silos and silage.

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Illustrating "Cyclone" patented bracing system. 233

Cook With Coal Oil Gas

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Making a Small Concrete Manure Box

By H. L. BELTON

Associate in Agricultural Engineering, U. of C.

OF THE many methods used in handling manure, the concrete storage box should be of interest to the farmer who owns a few farm animals, or the poultryman with a flock of a thousand to fifteen hundrend fowls. Complete plans and a list of materials necessary for the construction of one of these valuable reservoirs may be obtained by addressing a letter to the University of California, Berkeley, asking for Plan B-7-2.

The inside dimensions of this box are 4½ feet wide, 6 feet long, 3 feet high in front and 3½ feet high in the back. The walls and bottom are of concrete 4 inches thick. A strong reinforced, tightfitting wooden cover is conveniently hinged to a 2x12 inch plank, which is firmly bolted to the concrete sides of the box.

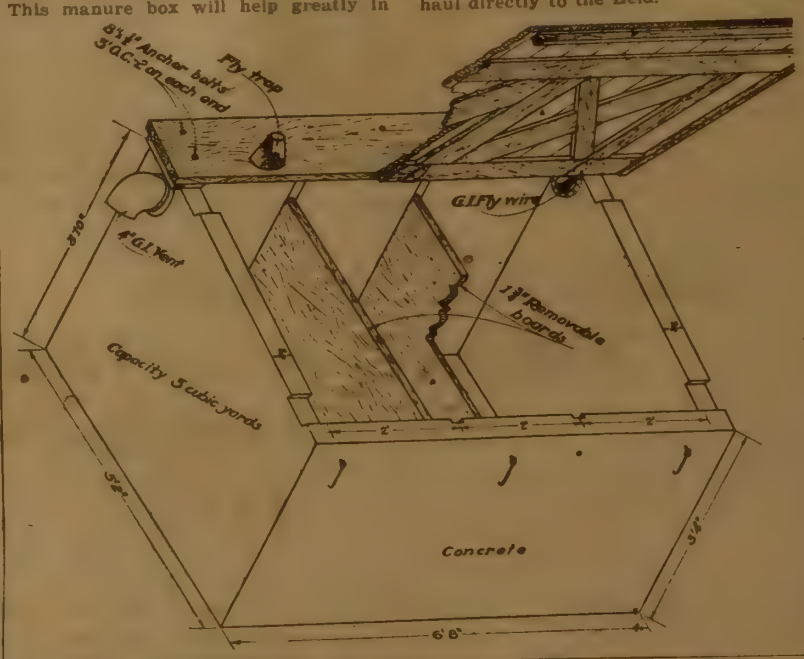
PROVIDE FLY-PROOF AIR VENT

A fly-proof air vent is located at the ends of the box near the top, to permit of the circulation of air through the contents of the box. Arrangement is made for the placing of a small fly-trip at one end of the hinge plank. Often fly infested manure is placed in the box. When hatched the flies will be attracted to the light and enter the fly tray, where they die or may be easily destroyed. This manure box will help greatly in combatting the house fly pest, which is very much of a nuisance, especially on small farms in thickly populated poultry centers.

For the small farm with two horses, one or two dairy cows and a few dozen chickens, the bedding, manure, litter, etc., from the stable and hen house would amount to about two and one-half cubic feet per day. Thirty-five to forty days would thus be the limit for storage in this box.

The weight of droppings from the average hen amounts to about thirty pounds per year. The average weight of loosely packed droppings from one to three days old is twenty-eight pounds per cubic foot. Therefore, for a one thousand-hen flock about three cubic feet of droppings would be cleaned from the dropping boards daily. At this rate, manure could be stored in the box described for a period of from twenty-five to thirty days.

Manure is subject to three principal sources of loss: fermentation, leaching and scattering. Hauling direct to the field and scattering is by far the better method, where a large amount of manure is produced daily. Manure sheds, manure pits and manure cisterns are the best methods of storage, when the amount obtained daily does not accumulate in sufficient quantities to pay to haul directly to the field.



Sells Sonoma Apples

WHEN the Eastern apple market is unfavorable, as it was last year, a portion of the California crop often can be disposed of at fair cash prices through local dealers. One of the latter is A. J. Moore, who spent several months marketing Sonoma County apples. In addition to Gravensteins, Wagners, Newtowns, Baldwins, Jonathans, Rome Beauties and Greenings were handled.

Mr. Moore bought windfalls and packing house culls for 50 cents a box, loose, reserving the right to remove wormy fruit. Large quantities were hauled in a one and one-half ton truck to Oakland, 70 miles distant, the transportation cost being estimated at 10 cents a mile, or $14 for the round trip. This amounts to about 23 cents a box. The fruit was disposed of by a commission dealer, who obtained 80 cents to $1.35 a box, averaging $1.10. Sometimes the market was overstocked with fruit, which could not be moved at any fair price. One lot was donated to the Salvation Army.

Moore stated he had offered the Sebastopol Fruit Association 75 cents a box for good, unpacked apples, but could not buy them. The fruit was afterwards packed at considerable expense and sold at a very low price, encountering a glutted Eastern market.

A carload of winter apples was shipped to Fresno by Mr. Moore, who also shipped down a truckload. The apples retailed for 75 cents a box, in bulk.—O. H. B.

Good Oranges in Alfalfa

ALFALFA in orange orchards has caused much trouble and distress, but apparently the nature of the soil has a good deal to do with it. On heavy soils, or on land with tight subsoil, the effect frequently has been ruinous, but George Travoli has an orange orchard in Tulare where alfalfa has been growing for three or four years, and the trees have excellent color and vigor. The soil however is a deep well-drained sediment and the alfalfa appears to have opened it up, for water sinks in more rapidly than it did before alfalfa was planted.

There are 20 acres in the ranch, and oranges, peaches and grapes are grown. Alfalfa is planted in all except the vineyard. A team and three cows were fed last year from the alfalfa grown in the orchard, and a couple of loads of hay were sold off the place. Part of the time four cows were fed.

The milk is sold in town and the income goes far toward supporting the ranch. It is one case where fruit and livestock have been combined successfully. In some cases, however, particularly with citrus trees, it may be rather "risky" to raise alfalfa in an orchard.—TULARE FARMER.

California Guernsey Fiesta

ON THE 16th of June the Guernsey Breeders of Southern California will entertain the purebred livestock breeders of that part of the State and many others interested in the dairy industry at the Adohr Stock Farms and the Brant Rancho near Los Angeles. This will offer an excellent opportunity for those interested in the dairy industry to inspect and study the methods of two of the most successful dairies in the world.

The Adohr Stock Farm now has about 1200 Guernseys, which is the largest herd in the world.

The Brant Rancho has one of the largest herd of purebred Guernseys in the West. Mr. Brant recently has been getting some results from his breeding operations which are attracting nation-wide attention.

The crowd will meet at 10:30 at the Adohr Stock Farm at Van Nuys. They will be shown about the place until noon, at which time they will be given a barbecue. Following that will be a short program. The afternoon will be spent at the Brant Rancho, where visitors will have an opportunity to inspect the place and see a regular stock show. That evening a dinner and entertainment will be given to Guernsey breeders and their friends.

Raisin Situation

(Continued from Page 3)

relief is general, for town and country almost equally had felt the tension.

And speaking of tension, one is reminded of certain characteristics of the new managing director. Merritt is a high-tension worker, with some sort of six-cylinder brain. He seems to know everybody and does not forget names and faces. Interrupted by long-distance calls from San Francisco, Los Angeles, Sacramento—yes, and Eastern cities—he grasps instantly each new subject, delivers instructions or opinions without a moment's hesitation, and with equal facility picks up the thread of his original discourse as though he had never dropped it.

He has kept the office force working overtime, grinding out statements, facts, figures, statistics—and seems to absorb them faster than they can be placed on his desk. Whatever else he may be, Merritt is an indefatigible worker. At luncheon or during other brief periods of relaxation he seems to drop business worry suddenly and completely, but on other occasions he works far into the night, and even leaves his bed again and again to answer telephone calls or receive telegrams. He seems to have an almost uncanny grasp of world affairs.

MORE DEMOCRATIC MANAGEMENT

Growers are pleased by the new director's attitude toward them as individuals. There has been a feeling that the association was not truly representative. Now it is arranged that the sole voting power will be vested in those who have contracts with the association, and that each member shall have one vote. This will do away with legal difficulties which have arisen through conflict with the Federal Co-operative Marketing Act.

The raisin belt is divided into 30 units, each represented by a trustee, and it is purposed that each unit shall elect a representative, who shall become a member of the advisory board. These 30 representatives will be called to Fresno at least once a month for the purpose of sitting with the directors and the management in the discussion of current problems. The weekly meeting of the board of directors in Fresno will be open to any association member who wishes to attend. Expressions of opinion from the various districts will be freely given and considered. It is believed by this plan the possibility of another "explosion" in the future, similar to the one which recently rocked the very foundations of the industry, can be avoided.

SCOUTS DISHONESTY TALK

"But please," Merritt pleaded, "let us forget this talk of mismanagement and crookedness. Our organization did not suffer by reason of misappropriation of funds or unlawful practices of this nature. I found here a frozen corporation, unable to operate upon its inadequate capital and swamped by tremendous increase in production. There had been some bad judgment, perhaps, but not dishonesty.

"The handling of every ton of raisins costs some $50, but because of the rapid turnover this amount is reduced to about $15 of necessary working capital. Not even at $15 an enormous amount of money is required for annual operations.

"The growers heretofore have expected the organization to put up all the money for handling the increasing crops, whereas it is only right and proper that the members should furnish at least a portion of the greater capital now required.

"Then by the formation of a Delaware corporation we were enabled to sell non-voting stock as a legitimate investment, a lien on the resources of the industry, and thus to go outside and secure additional capital. Bonds can be sold readily when conditions are right.

"By our refinancing plan we have changed a $3,000,000 corporation in a few weeks to a $9,000,000 corporation, able to withstand the shocks of market fluctuations, able to make necessary cash advances, able to command the respect and confidence of the financial world, and able to accomplish the many things expected of us by hopeful producers in a district covering some 400 miles of California's richest territory."

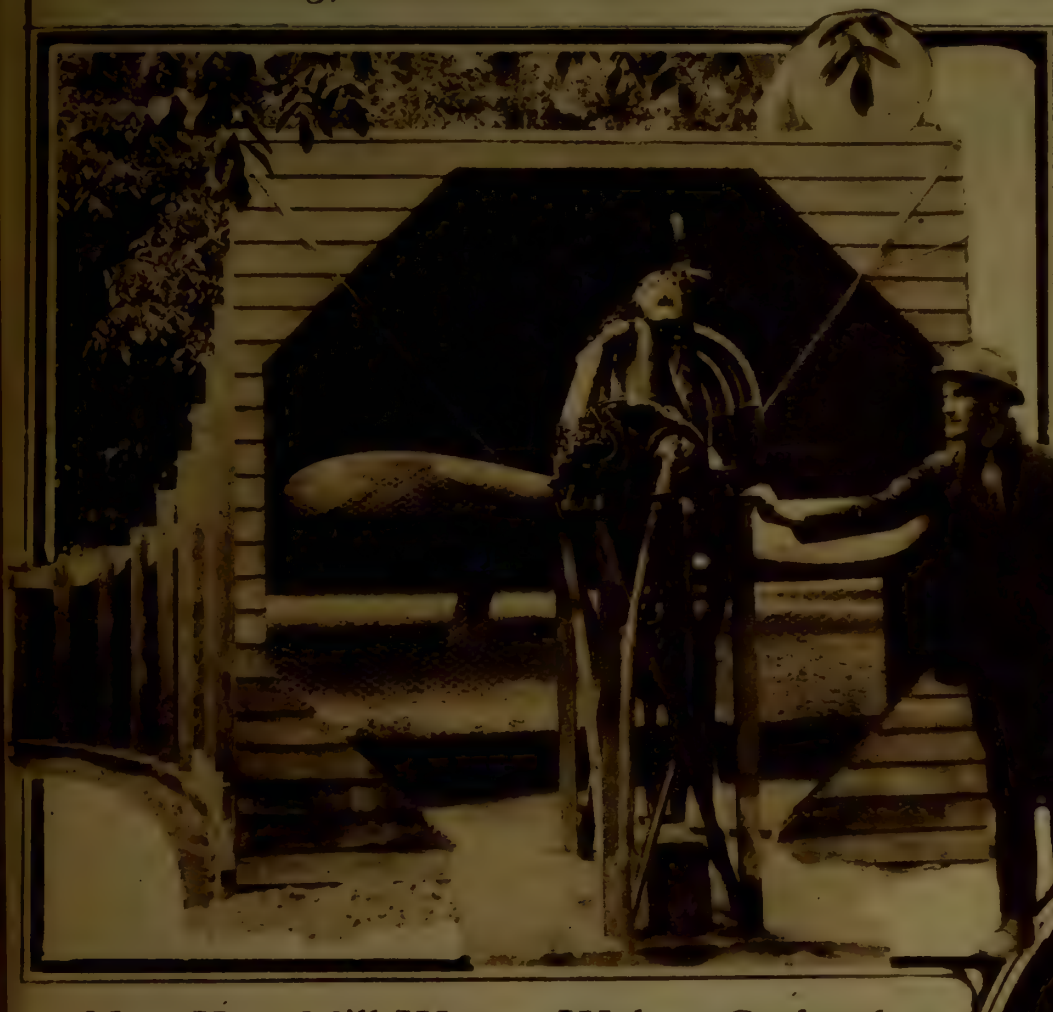
Because he is so apparently a man of ideas and action, Merritt has done much already to restore the confidence that was all but lost. He came forward with ready explanations of existing difficulties and definite plans for correcting them. Moreover, he has put some of these plans into effect with astounding speed.

Reorganization within the association is still under way and so far as the employees are concerned anxiety is not yet past. But on the part of the public and the growers this remarkable young man seems to be hailed as a sort of deliverer.

Yes indeed folks are breathing easier in Fresno and the Raisin Belt!

FARM MECHANICS

Interesting Inventions Promise Aid in Solving Nut, Egg and Potato Problems



Improved Potato Basket

W. V. SHEAR, potato specialist of the State Department of Agriculture, is shown inspecting some extra fine tubers, Shamrock brand, grown by E. D. McSweeney, president of the Certified Seed Potato Growers' Association of California. Mr. Shear is also admiring the improved wire potato basket, which is the kind used on the McSweeney farms.

This basket is made entirely of steel wire, electrically welded. It is light and of convenient size, holding 30 pounds. The openwork construction permits the escape of any dirt which may be picked up with the tubers.

One great advantage of this kind of a vessel, according to Mr. McSweeney, is that it can, by being turned upside down, be used for a convenient stool upon which a workman may sit down and rest. It is possible, he says, to pick up more potatoes in a day by alternately working fast for a little while and then resting, than to keep up a slow motion all day long.

R. W. Hodgson, Los Angeles County farm adviser, is of the opinion that if this kind of vessel were in general use for picking up potatoes, the quality of tubers offered for cooking and planting would be greatly improved, since this would result in much inferior stock which now goes into picking sacks being left on the ground. He is of the opinion that a large percentage of the potatoes now marketed does not pay for handling.

New Heat Mill Warms Walnut Orchard

THIS new "heat mill" was tested April 23, 1923, in the 10-acre Covina walnut orchard of W. S. Sawyer, who reports as follows:

"The mercury had been steadily dropping and had reached 34 degrees at 4:15 in the morning, when the machine was started. Fifteen minutes afterwards the mercury rose to 36 degrees at the farthest corner of the orchard, opposite the location of the machine, a distance of about 900 feet, also at one of the border rows, 650 feet away, while 70 feet behind the machine the temperature had dropped to 32 degrees.

At 5:05 the outside thermometer had dropped to 31 degrees, while the nearer one in the orchard stood at 36 degrees and the farther one at 35 degrees. At 5:15 the test was discontinued, owing to the general rise of temperature."

"This heat mill works on the air circulating theory," explains W. D. Waterman, the inventor. "It is a well-known fact that on frosty nights the upper strata of air is colder than that next to the ground. If a wind is blowing there is usually no frost.

"My machine accomplishes the same result by drawing the warm air down, mixing it with the cold air and forcing it out under the trees. It consists of a 100-horsepower aircraft motor and airplane propeller, which drives the air through a wooden shaft 10 feet high, 18 feet wide and 20 feet long. It costs 5c per acre per hour to operate.

This unit contains four trapnests. The hen shown has just been released. Mr. Merrill, who has applied for patents on his invention, is shown taking eggs from the drawer.

Automatic Trapnest

THIS unique trapnest is the invention of Albert H. Merrill of Eagle Rock City (Los Angeles County). By means of the device the owner of a small flock of hens can determine which fowls are profitable producers, without the necessity of releasing the layers from the nests several times a day.

The hens, after laying, enter a closed compartment above, where feed and water are maintained and may be released in the evening, none the worse for their confinement. Should a hen enter the nest and not lay an egg, she is not able to enter the upper compartment, but is returned to the yard through the lower entrance door.

When a hen enters the lower door, the entrance is automatically closed so that no other hen can enter the nest. The same movement closes the bottom of the nest.

When she has laid an egg the hen can escape from the nest only by means of a tilting platform. As she advances upon this platform a device automatically opens the bottom of the nest, allowing the egg to roll gently into a drawer fitted with wire screen to prevent breakage. The weight of the egg then opens the way to the upper compartment and at the same time opens the entrance door so that another hen can enter the nest, and closes the door behind the hen which has laid, trapping her in the upper compartment.

It is manifestly impossible to tell which hen laid a certain egg, but by closing the passages which lead from each nest, this device can be used for trapnesting in the usual manner, keeping each hen's eggs separate.

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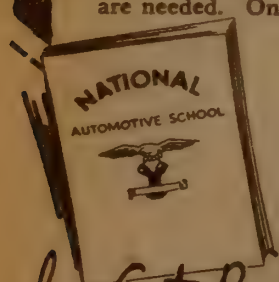

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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

JUNE 17, 1923

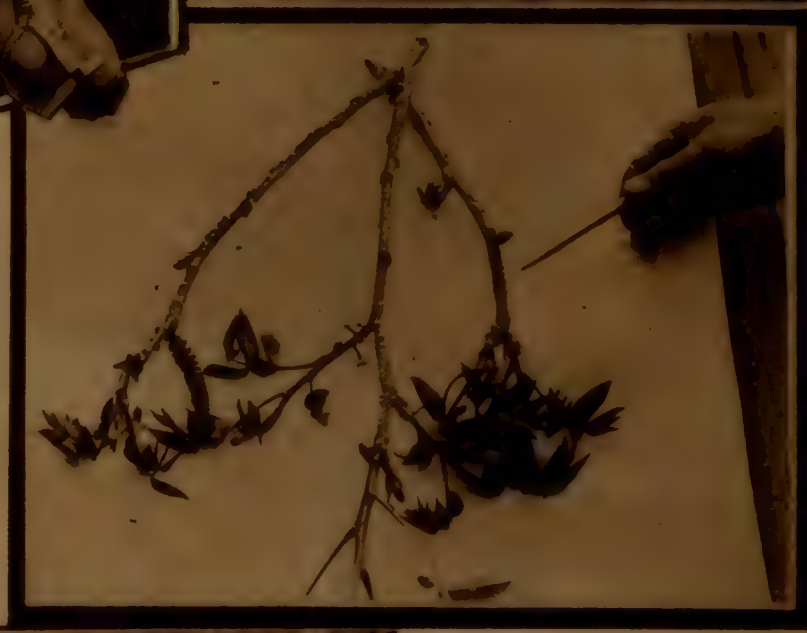
WITH THE CAMERAMAN

Old Barn Makes Good Poultry House

WHEN Arthur Overpack came to Glenn County four years ago, with the expectation of developing a poultry farm, he selected a farm east of Willows which had been deserted by its owners and leased out to tenants who had allowed the place to go to rack and ruin. The location was favorable, however, which caused the prospective purchaser to buy the farm. It was but a short distance to school and there were two little Overpacks to be considered. Willows was but six miles away which simplified the marketing problem.

There was a set of old dilapidated buildings on the place, including a barn fifty years old. The latter's sides were practically gone. Some of the posts were torn out and the roof was ready to collapse. There were plenty of cracks and knotholes and the rafters on the shed sides were warped and bowed down. Even some of the main uprights needed reinforcing, having dry-rotted away There was about two or three feet of manure on the floor.

The new owner began improvement work by hauling out the manure and spreading it over the land. His neighbors advised him to tear down the barn and salvage the lumber *(Continued on Page 10*



This fine imported Percheron stallion, Jusque, recently was presented to the University Farm at Davis by Anita M. Baldwin of Santa Anita (Los Angeles County). The California College of Agriculture has been enriched by many other gifts of livestock.

Hire Students Now

NOW is the time to employ college students for summer work in fruit orchards, packing houses and dry yards, according to W. P. Duruz of the Division of Pomology, University Farm, Davis, who states that the supply of student labor is limited, and those who wish to avail themselves of this opportunity to obtain reliable help should not wait until the last minute before putting in their applications.

A great many students of horticulture supplement theory with practice by working on fruit farms during the summer vacation. In this manner they also earn a portion of the money required to keep them in college, a very large percentage being self-supporting, wholly or in part.

The illustration shows a group of students at work on the University Farm at Davis, where the art, as well as theory, of horticulture is taught.

Orchardists who employed students to prune trees last winter were well pleased with the work performed and have requested a larger supply of student labor for both summer and winter work.

"The student who pruned trees for me last winter was very conscientious and industrious," writes W. E. Goodspeed, superintendent of the California Orchard Company, King City (Salinas County). "We were very favorably impressed with both his pruning and his attitude in general toward the work on the place."

Frosted Nut Scale

THIS scale, *Lecanium pruinosum*, shown in the illustration above, has been known for many years, but has never been considered at all serious. It is listed by Essig in his "Injurious and Beneficial Insects" as a minor pest. During the past three or four years, however, it has spread until it is now pretty well established in a number of walnut districts.

There is a feeling on the part of growers that the beneficial insect predators which formerly held this pest in check have been destroyed by the dusting and spraying of walnut trees, which is now done for control of aphis and codlin moth. This may account for its great increase during recent years.

It is quite possible that control measures will be necessary in the next year or two. This scale is readily controlled, however, by dormant spraying with either lime-sulphur, 1 to 10, or miscible oil. There is nothing that can be done for it during the growing season as far as is known now.

The history of the frosted walnut scale is a good illustration of the fact that fruit crops which ten years ago were subject to few or no fungus diseases or insect pests are in most cases at the present time seriously injured by six or eight such enemies. This appears to be the history of new agricultural industries everywhere. The larger they grow and the longer they have been established, the more pests there are to be fought by the growers.—R. W. H.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER

JUNE 17, 1923

Darso—New Variety of Sweet Grain Sorghum

Authoritative Report Regarding Nature and Value of Grain and Forage Crop Recently Introduced Into California

By B. A. MADSON

Department of Agriculture, University of California

DARSO, which has recently claimed the attention of California farmers, is one of the newer varieties of grain sorghums. According to the Oklahoma Experiment Station, it originated in that State, probably from a natural cross between a sweet sorghum and a grain sorghum, though the exact parentage is not known.

PROF. MADSON

The present interest in the crop is due mainly to favorable reports concerning its performance in some ections of Oklahoma and Texas and to e rather extravagant claims made for by some of the Darso enthusiasts of at region. The fact that it has done specially well in the southern plains, owever, is no proof that it will do as ell in California. While this new sorhum possesses many admirable qualiies, it appears doubtful if it will be ble to compete with such well estabished varieties as milo, Egyptian corn, olo maize, or feterita, as a grain crop, with the sweet sorghums for forage. his view is taken because the grain Darso is known to possess certain haracteristics which make it objeconable, both as a feed and a market roduct, while the forage yield even nder favorable conditions is low.

ORIGINATED IN OKLAHOMA

G. E. Lemon of Nash, Oklahoma, laims the distinction of being the orignator of Darso. In 1901 he began makng selections from a field of mixed sorhums, which contained orange, amber nd sumac, as well as other varieties. Iis aim was to secure a short, early naturing type, which would stand up vell and produce a good yield of grain. Iis efforts were, in the main, successful.

Darso was in 1912 first brought to he attention of investigators at the Oklahoma Experiment Station, who at nce began experimenting with it. In ecent years they have made improvenents in this new crop.

Darso is a dwarf sorghum, the plants veraging only about four feet in height. The foliage is heavy and coarse, the talks erect and usually tinted with red. The heads are erect, large, rather loose nd open, with black glumes, or chaff, nd reddish-brown seed. In color the eed somewhat resembles brown Egypian corn, but is smaller and less flatened. The erect habit of growth and he uniformity in height of the Darso plants are decided advantages, because hey facilitate harvesting.

SEED CONTAINS SOME TANNIN

Analyses of the grain have shown hat in composition it does not differ materially from other varieties of grain orghums. In common with other darkbrown seed forms, however, Darso ontains a small quantity of tannin. This is objectionable from a feeding tandpoint, since it tends to derange he digestive system of the animals, unless fed in conjunction with liberal uantities of more laxative feeds.

Brown Egyption corn contains the ame chemical, and this is one of the mportant reasons for its lack of popularity. Experienced poultrymen and ther feeders have long since learned hat their fowls and animals will not o as well on brown Egyptian as they will on white gyp or milo, and therefore are always willing to pay a premium to secure the latter types. In his case tannin is known to be the objectionable property and since Darso also contains the same substance, there is every reason to believe that it will affect animals in the same unfavorable way.

In a preliminary feed test with hogs at the Oklahoma Experiment Station, better results were obtained with kaffir than with Darso.

Brown seed sorghums have always been discriminated against on California markets and there is no reason to believe that Darso will be an exception.

STEMS RICH IN SUGAR

Analyses of the plants have shown that the juice of the stems of Darso contains about twice as much sugar as kaffir and feterita. This high sugar content doubtless reflects its sweet sorghum ancestry and accounts for the reported high degree of palatability reported for Darso hay and forage. Whether or not the greater palatability alone will warrant its use in preference to other varieties will depend on conditions.

Unfortunately, but little data are as yet available regarding the yields which may be obtained from Darso, as compared with other varieties. In a preliminary trial at the Kearney Park Experiment Station at Fresno, in 1922, Darso produced a good yield of grain, but no better than many other varieties. The conditions under which the experiment was conducted were not entirely favorable, so the results are by no means conclusive. It was noted that birds damaged Darso very little, while more than half the grain of some other varieties—notably the milos—was destroyed before the crop reached maturity.

The fact that birds avoided Darso may have been due in part to its higher tannin content, and hence lack of palatability, or to the fact that the grain was held more firmly in the glumes and therefore less easily removed by the birds. If the first hypothesis be true, and the birds avoided Darso because of its astringent taste, is there any reason to believe that domestic animals will like it any better? On the other hand, this may be a good argument for the culture of this crop in regions where bird damage is apt to be severe.

No records were taken of the yield of forage, but, judging by the size of the plants and the character of growth, it would be about the same as milo or feterita, which yield from 8 to 12 tons of green forage per acre, depending upon the condition of growth. Under similar conditions, yields of 20 to 30 tons, or more, of equally palatable forage may be obtained from such varieties of sweet sorghums as honey, orange or sumac.

The farmer who wants a sorghum crop for both grain and forage must decide for himself whether the better quality of the forage from Darso—as compared with milo and feterita, for example—is sufficient under his conditions to offset the poor quality of the grain.

It is, of course, entirely possible that in some localities of the State Darso may prove to be superior to other varieties and it is highly desirable that farmers carefully try out this new variety to determine for themselves its desirability. It is, however, never desirable to discard an old, established variety for something new until the superiority of the latter has been thoroughly demonstrated.

In Defense of the Hog

By O. H. BARNHILL

THE hog is the most greviously maligned animal in the world. From the time when ancient Israelitish writers claimed that evil spirits entered into swine, causing their flesh to be forever accursed in the eyes of the Jewish people, down to the present age, when a hog's name is used as a synonym for filth, gluttony and stubbornness and his cloven hoof regarded as the outward indication of an inward devil, this much-abused quadruped patiently has borne a great burden of ignominy, happily unaware of much of the ill feeling of which he is the object.

The writer holds no brief for the porcine kingdom, but in the interests of fair play and a square deal wishes briefly to consider the case against the great American hog, who, in spite of all abuse and difficulties, has increased in numbers and in favor with the consuming public.

What foundation is there for the old saying, "Dirty as a hog"? A hog is so constituted that moist earth is for him a natural skin cleanser, when dried on and rubbed off against a friendly tree or post. Are not some of the most refined and intelligent people in the country taking mud baths at sanitariums? Moist soil is as essentially clean as any other chemical substance.

As a matter of fact, a hog is really one of the most cleanly of all animals. While a cow or horse will lie in its own filth, a hog, if possible, will keep clean at least one corner of the lot, where he will make his bed.

Whoever "eats like a pig" chews his food well and partakes of only a moderate amount, common belief to the contrary. If you want to see an animal really "hog it down" while eating, watch a steer swallow grain whole or a cow fill her paunch to the bursting point with coarse feed. Compare the amount of food eaten by a 200-pound hog with what a man of similar weight consumes; watch the relative rapidity of eating and length of time each bite is chewed and then say which more nearly fulfills the popular conception of "eating like a hog."

Conquer a hog's fear and he is one of the most tractable of animals, amenable to discipline and willing to obey reasonable orders. Hogs have been taught to go through a number of simple evolutions, qualifying as circus performers, indicating that the animal brain responds to intelligent treatment. A pig makes a most amusing pet, showing a persistency of affection which is apt to become embarrassing when the little pig becomes a hog.

A pig has a strong sense of humor and when at play is most amusing. It is even claimed that pigs are patriotic, for there was once a hog that would stand upon his hind legs whenever the national anthem was played!

Those who speak of "little pig eyes" should question an oculist, who will assure them that a hog's eye more nearly resembles the human eye than the optical organ of any other animal.

It is a trite saying that we do not commonly appreciate a man's real value until he has passed from the land of the living. So it is with the hog. However much we may complain of his lack of angelic qualities and slander his good name while he is alive, after his spirit has departed and his body has been converted into fragrant fried ham, crisp broiled bacon, juicy chops, succulent sausage and other popular pork products, we change our hymn of hate for one of praise and write his obituary in extravagant terms of dollars and cents! Long live the porker.

Stamping Out 'T.B.'

By G. W. ROSENBERGER

Chief Bureau of Tuberculosis Control

THE Tuberculosis Free Area Bill, passed during the 1921 session of the California Legislature, surpasses all similar laws in its potential possibilities of upbuilding the cattle industry in California.

Briefly, this law provides the means whereby a county can obtain direct aid from the State Department of Agriculture to eradicate tuberculosis from its livestock and to maintain freedom from this disease through the protection afforded by its provisions. This is accomplished by prohibiting the introduction of cattle affected with tuberculosis, disinfection of infected premises and close supervision of animal health, after all centers of infection within a county have been discovered and diseased cattle disposed of.

It also provides that counties having more than 10 per cent of the cattle affected with tuberculosis, as determined by the Department of Agriculture, are ineligible to come under its provisions. This insures against a misapplication of its requirements, since it only contemplates keeping free from tuberculosis those counties in California demonstrated to be less than 10 per cent affected.

Several years ago certain counties in the State were comparatively free from tuberculosis and would have remained so to the present time, if they had launched an aggressive campaign looking toward eradication of this disease. Cattle in counties where tuberculosis was prevalent and where testing was required sold a considerable number of their reactors to persons in the comparatively free counties, who were unaware of their purchases being diseased, thereby spreading tuberculosis among healthy animals, before the pernicious practice could be stopped.

After a county has been declared within the eradication area the department may proceed to examine all cattle in the area. Reactors must be branded with the letter "T" on the left jaw, a mode of identification now generally followed by all States engaged in tuberculosis eradication work, and must be removed from the area, under the supervision of the State or federal officials, or slaughtered under State or Federal meat inspection regulations.

MODOC AND LASSEN QUALIFY

Already Modoc and Lassen Counties have qualified for this work and within the past year about 100,000 cattle have been tested in these two counties and 423 reactors discovered and slaughtered. These counties have been proclaimed tuberculosis eradication areas by the Director of Agriculture. They were eligible, as was shown by a survey by representatives of the Department, and application was made through their board of supervisors to have the county declared an eradication area.

Breeders are beginning to understand it is unprofitable to continue raising cattle while tuberculosis exists in their herds. This fact is also appreciated by buyers of breeding and dairy cattle, who have such animals tested before permitting them to mingle with their healthy animals.

With the prevailing demand for a more wholesome milk supply, there is developing a strong market for milk from healthy herds. As this demand increases, the dairyman who cannot show a clean bill of health for his cows in the future will find it more and more difficult to market his products.

California is destined to become a great exporting State of fine cattle, if our breeders produce healthy stock. We should not temporize with an insidious malady among our livestock, but should unite in putting into effect progressive measures, which will aid our stock raisers to build up a great, healthy animal industry.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

SCANDINAVIAN FARMERS COMING.

Four hundred Scandinavian farmers, each with an average of $2500 cash capital, are coming to Nebraska. It is safe to assume that California would rather have these 400 thrifty Swedes, Danes and Norwegians than Gotham's famous Four Hundred society leaders. Scandinavian farmers are good co-operators and in almost every way they constitute a most desirable class of agricultural citizens. California congratulates Nebraska.

ARE FRUIT GROWERS INEFFICIENT?

Citrus growers are only 50 per cent efficient, according to R. W. Hodgson, Los Angeles County farm adviser. If this be true, it indicates that fruit producers have it in their power greatly to increase their income, regardless of prices and other outside conditions affecting their business.

It is generally recognized that citrus growers are the most efficient of all fruit farmers, because their groves are the highest priced. If the former are getting only half as much money out of their trees as could be obtained, other orchardists are making an even poorer showing. There is probably a greater field for improvement in fruit cultural and marketing methods than is commonly realized.

LUCKY SWEET POTATO GROWERS

California sweet potato growers may consider themselves lucky, because they are not troubled by the principal diseases of this crop, according to Dr. J. L. Weimer, pathologist of the U. S. Department of Agriculture, who expects soon to return to Los Angeles County to resume his studies of this toothsome tuber.

"A good local market is another great advantage which California growers enjoy," Farm Adviser R. W. Hodgson points out. "To offset this advantage and the comparative freedom from disease, there is the high price of land. The storage problem is a big one and can be solved satisfactorily only through co-operative effort. Large storage plants, similar to those which are in use in the Southern States—which were built according to plans furnished by the Department of Agriculture are needed."

DECEIVING BUTTER CONSUMERS.

A reader objects to the position which Orchard and Farm occupies in regard to the sale of oleomargarine. He claims the latter is the "poor man's butter" and that in free America no one should be hindered in the use of any food, provided it is not injurious.

Margarine makers have a perfect right to the free and unrestricted sale of their product, so long as they do not practice fraud and deception. The coloring of imitation butter can have no other purpose than to deceive buyers as to its real nature. Flour and sugar are sold uncolored—why not margarine?

The selling of margarine and coloring matter separately only partially protects the consumer, since the latter is deceived by those who serve meals and sell prepared foods—the fraud is simply passed on from grocers to bakers, restauranteurs and others engaged in similar work.

WHY SOME ORANGE GROWERS FAIL.

Those who fail in orange growing may be divided into three classes, according to a successful citrus grower of Los Angeles County.

"The grain farmer who cannot realize the necessity of spending large sums for fertilizer, spraying and similar purposes is forecordained to failure in the citrus industry," asserts this orchardist. "The non-resident owner who does not keep in close, intelligent touch with his orcharding operation is likewise riding for a fall, as is the small grower who lives beyond his means and neglects his orchard.

"The latter is apt to have trouble in getting enough money to tide over a bad season, although banks are willing to finance the grower who attends strictly to business and does not waste his substance on needless luxuries. Everybody who owns an orchard should familiarize himself with the proper methods of management, as the judgment of hired helpers never safely can be trusted."

SONOMA COUNTY'S FORWARD STEP.

Under the efficient leadership of Melvin Buster, assistant county agent of Sonoma County, the poultrymen of that enterprising district have taken a long step in the direction of placing the poultry breeding industry upon a higher plane and more dependable basis.

Up-to-date poultrymen have long since abandoned the idea of selling birds solely upon the merit of fine feathers and conformity to judges' arbitrary standards. Chickens are now valued mostly upon their ability to produce eggs and meat in large and satifying quantities, regardless of their appearance—"pretty is that pretty does."

Sonoma breeders are pedigreeing hens which have a certain specified egg-laying proficiency. Males must be descended from heavy-laying hens and in order to be eligible to advanced registry must have proved their ability to pass on to their progeny this heavy-laying characteristic. All birds must be vigorous, healthy and without blemishes.

"What's New?"—Keeping Abreast of Agricultural Progress

Strawberries Go to England

THREE carloads of sugar-packed strawberries have been sold by the Puget Sound Berry Growers' Association to British dealers. The price was 10½ cents a pound at Seattle, the shipment bringing the berry farmers $20,700.

Ridding Alfalfa of Foxtail

BY the use of a blast crude oil burner, practically all the foxtail was destroyed in a Los Angeles County alfalfa field early in February. The alfalfa plants were uninjured, the new shoots making a better growth than those on adjacent unburned meadow.

Reducing Potato Acreage

ONLY about one-half as many potatoes are being planted in California this year as last, according to R. G. Risser of the California Vegetable Union. In the Delta district corn and barley are supplanting potatoes. Unprofitable prices last year is given as the reason for the reduced acreage.

Predict Another Car Shortage

DURING the first four months of the present year 11 per cent more freight cars were loaded than for the corresponding period last year. Cars are being loaded heavier, averaging 28 to 29 tons per car. Railroads operating in California warn fruit shippers of a probable car shortage and advise every precaution to prevent this condition.

Reduce Fertilizer Costs

THE cost of nitrate can be reduced from $440 a ton, the present price of the Chilian product, to $120 a ton, by extracting this chemical from the air, as Henry Ford proposes to do by leasing the Muscle Shoals power plant, according to a statement made to Congress by representatives of the American Farm Bureau Federation.

Good Prices for New Grapes

FIVE hundred tons of Zinfandel grapes growing on the Claude Maze ranch near Modesto have been contracted for at $40 a ton, at the vineyard, according to reports. The buyer advanced $20 a ton. Buyers are offering $40 to $50 a ton for black grapes in the Reedley district. Only $17.50 has been bid for Muscats. Alberta peaches have been sold for $30 a ton.

Making New Milk Medicine

THE Porro Biological Laboratories of Tacoma are supplying physicians with B. acidolphilus milk, which a number of leading scientists claim have found extremely valuable for chronic constipation, muco-colitis and chronic diarrheas. The preparation and sale of this culture offers a new market for milk and one which is believed to hold great possibilities.

Using Pea Vines for Silage

TWO thousand tons of pea vine silage has been put up this season by Marin County dairymen. The vines are a by-product of the Marin Meadows ranch at Ignacio, which grows peas for canning. The crop was good and demonstrated that the Bay shore country is well adapted to growing this vegetable. Vetch, corn and sunflowers are also used for silage in Marin County.—K. R.

Dairymen Boycott Industries

THE Oregon Dairymen's Association has declared a boycott on all goods made by the Associated Industries of that State. This action was taken for the purpose of inducing the latter organization to discontinue its opposition to the law passed by the last Legislature forbidding the adulteration of dairy products. An effort is being made to referend the measure.

What Superphosphate Does

THREE hundred pounds of superphosphate, costing $31 per ton on the ranch, was applied to an acre of rye, buckwheat and melilotus indica by J. A. Reams on his farm in the Paradise District, Butte County, last fall. This acre yielded eight times as much vegetation as an adjoining unfertilized acre, planted to the same crops.

Whippoorwill cow peas treated with 250 pounds of superphosphate per acre yielded three times as much as those not fertilized. The soil is red shot clay, lies at an elevation of 2000 feet, and is irrigated.

End Free Water Filings

THE privilege which California farmers now have of appropriating for irrigation the water of any stream running through or adjacent to their land—provided it previously has not been filed on—will end December 30 of this present year, according to J. W. Logan, Humboldt County farm adviser, who suggests that before the date mentioned landowners make sure they have appropriated all the available water they ever can use profitably. On and after Jan. 1, 1924, unappropriated water will be considered abandoned and can be filed on by outsiders.

Thousand-Dollar Cherry Crops

A THREE-ACRE Royal Ann cherry orchard belonging to H. C. Tandy, Lodi orchardist, has netted over $1000 per acre the past four years, last year's crop bringing $1500 per acre. The trees are 18 years old. Alfalfa is grown between the rows and yields each season several crops of hay.

Harvest Largest Citrus Crop

THIS season's citrus crop will be more than 100,000 carloads, according to the best estimates, making it the largest one ever harvested in the United States. Orange and grapefruit shipments from California and Florida to April 28 were 65,000 cars, which is 5000 cars more than 1921.

Free Hand for Prune Men

THE business men who will be placed at the head of the California Prune and Apricot Growers' Association will be given a free hand to reorganize the affairs of the association along modern lines and to establish business policies which have been worked out successfully in other large enterprises, according to the committee appointed to choose a general manager and a sales manager.

Farmers Win at Sacramento

"PRACTICALLY all the purely agricultural bills before the California State Legislature at the recent session were passed," reports R. N. Wilson, executive secretary of the Agricultural Legislative Committee. "Not a single one of the many adverse agricultural bills became a law. Good progress was made with the measures of large general policy tackled by the farming interests, such as the vehicle and highway bills.

"This was accomplished only because the farmers of California were well informed and deeply concerned and because the 35 commodity organizations worked diligently and harmoniously."

Trapnesters Form Organization

NINETY per cent of the poultry "trapnesters" in the vicinity of Santa Cruz belong to the recently organized Santa Cruz Trapnesters' Association, according to officers of the organization. The rules require the trapnesting of at least 100 hens for 365 consecutive days. An inspector of standing will visit the members' plants at regular intervals and check up methods of breeding, housing, etc.

Prof. J. E. Dougherty of the University of California helped organize the association, which is said to be the only one of its kind. The purpose is to work co-operatively for the production better poultry.

Prevent Spread of Nematode

THE spread of nematode, considered by many to be the most dangerous pest in California for owners of medium and sandy soils, is due partly to ignorance of its real nature and partly to carelessness, according to R. W. Hodgson of the Extension Service.

The nematode is a microscopic worm which lives from one season to another in the soil, being practically inactive through the winter months. It attacks the root systems of nearly all vegetables and many fruit trees, the result being that the roots become knotty and soon decay.

The only remedy, says Mr. Hodgson, is to grow non-susceptible crops, as the pest multiplies rapidly in infested soil.

Yeast-Fed Plants the Latest

IN the manufacture of numerous by-products from Hawaiian cane molasses, a yeast is formed which, when dried, appears to be an excellent fertilizer or plant stimulant. Its odor resembles that of humus and it seems to have somewhat the same effect as humus upon growing things. In fact, plants fertilized with this material appear to be benefited in much the same way that animals are improved when yeast is added to the ration. One of the large Hawaiian sugar cane plantations reports unusual results from the application of this material to the soil.

According to John Mason of San Francisco, an authority on molasses and its products, the dried yeast has been tried with equally good results by fruit growers and truck farmers in Southern and Central California.

Saving Cull Cantaloupes

A NUMBER of new uses for cull cantaloupes have been discovered by chemists of the U. S. Department of Agriculture, working in a laboratory at Los Angeles. This vegetable has been found to be rich in three kinds of sugar—fruit, cane and glucose—also protein, starch, aromatic oils, citric and tartaric acid.

Cantaloupes may be dried, or the juice extracted and used for a breakfast beverage. The seed yields valuable oils, which may be used in the manufacture of soaps and toilet creams. The residue may be mixed with other materials and made into fertilizer.

Immense quantities of cantaloupes are sometimes an entire loss, due to market gluts and failure to reach consumers. It is believed that much of this waste could be salvaged by the methods mentioned.

Sheep Scab Is Serious Disease

By J. P. IVERSON

CALIFORNIA ranks second among the States in the number of sheep and the task of eradicating scab is a hard one, but sheepmen will be financially rewarded for the effort necessary to exterminate the infection. Their active co-operation will appreciably assist in the eradication of this serious disease.

Sheep scab is caused by a parasite, which multiplies on sheep with incredible rapidity. Burrowing in the superficial layers of the skin, it produces an intense itching and inflammation, which results in the loss of wool and flesh. As the disease advances, bare patches appear on the body of the sheep and the resulting unthriftiness causes a marked deterioration in the quality of the wool remaining.

The public should be eager for speedy eradication, because any agency which reduces the amount and quality of wool is reflected in the price paid. That is: Less wool means a higher price and inferior cloth.

The California Wool Growers' Association offers support to the California Department of Agriculture and Federal Government in their efforts to exterminate this troublesome parasite. This can be accomplished by promptly dipping scabby and exposed sheep in a solution of lime and sulphur.

Splendid progress has been made in the control of sheep scab and large areas of California are now entirely free from the disease. This is a distinct and gratifying contrast with the conditions of fifteen years ago, when nearly every band of sheep in California was scabby. The remaining infection is a constant menace to our healthy sheep. In driving scabby bands to or from the dipping vats, owners are required to observe the following rules:

(1) Never permit an estray to become lost from a scabby or exposed band.

(2) Never sell or give away sheep or lambs from a scabby band.

(3) Never ship or trail scabby sheep on public roads without first receiving permission from the Department of Agriculture, Sacramento, Calif.

(4) If signs of the disease appear, immediately inform the department, requesting an inspection.

(5) Co-operate with inspectors by promptly dipping all scabby and exposed sheep.

You Pay for a De Laval Whether You Buy One or Not

If you are using a worn out, inferior cream separator, or skimming cream by hand, you are surely wasting enough cream to pay for a De Laval in a short time.

The selection of a cream separator is more important than that of any other machine on the farm, for none other can either save or waste so much, twice a day, 365 days a year.

De Laval Separator will:

—Skim Cleaner for many more years than any other;

—Skim milk clean at lower temperature than any other separator;

—Deliver a higher testing cream, which is more acceptable to the creamery, and easier and less costly to ship,

—And deliver a cream which will make better butter.

Mechanically a De Laval Separator is the best that fine materials and skilled workmanship can make.

—It lasts longer than any other separator, many giving good service for 15 to 20 years.

—It is easier to turn.

—It is easier to clean.

—It is so simple that one tool will set it up or take it down.

—It has the most perfect lubricating system.

You can get a De Laval for $55, and up, depending on the size, on such easy terms that it will soon pay for itself. Why not see your De Laval agent at once or write us for full information?

DE LAVAL PACIFIC COMPANY
61 Beale Street San Francisco, Cal.

Sooner or later you will use a
De Laval
Cream Separator and Milker

"Cull" Feeds Save Money

THE use of so-called "waste" products in feeding animals may make the difference between success or failure in feeding for market or, for that matter, in the operation of any livestock project.

Certain hog ranches have made excellent use this year of cull raisins. This feed has been tried with good results on the Underhill ranch near Santa Barbara, according to Manager T. F. Dinsmore.

"We have been able to ship these cheap raisins from the San Joaquin Valley to advantage," he stated recently, "when the freight actually amounted to more than the cost of the raisins. We have wondered why more Central and Northern California stockmen have not awakened to the value of this cheap feed, on which in many cases they would have no transportation expense other than hauling in their own trucks."

Cull lima beans, picked up at low cost in Ventura County, also have found favor and given good results when mixed with the regular ration on this ranch.

The hogs, however, are maintained in the very best condition, no necessary expense being spared in keeping them up to standard. One pound per head per day of "Suremilk," plus two pounds of rolled barley and one pound of cracked beans, has proved a satisfactory all-around ration. In addition, tankage is fed daily to the growing pigs and three times weekly to brood sows.

EASY NOW TO RID YOUR PLACE OF FLIES

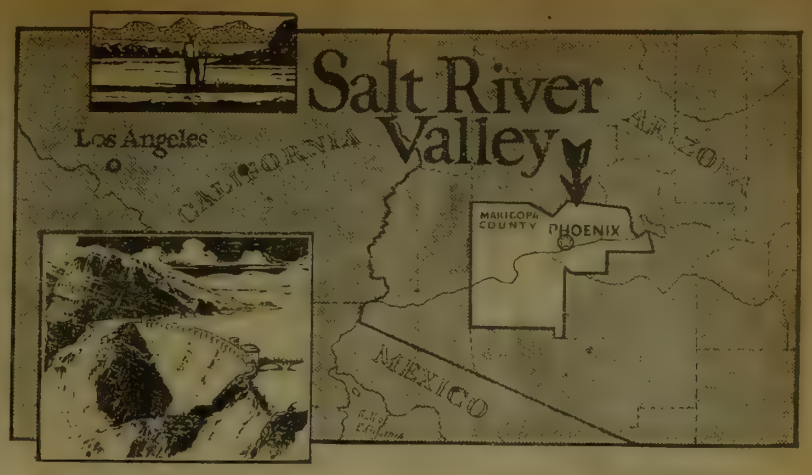
Widely Known Scientist Discovers Wonderful Chemical That Is Fatal to Flies. Not a Poison—Harmless to Stock.

Flies are one of the most dangerous and annoying things with which the farmer has to contend. Now, through the discovery of E. R. Alexander, widely known scientist, you can rid your house and barns and livestock of these pests almost instantly, and with no trouble at all. This discovery is in the form of an organic chemical that is fatal to flies, and similar pests, such as chiggers, mosquitoes and moths.

This new discovery, which is called Alexander's Rid-O-Fly, is not a poison. Though it kills flies like magic, farm animals and human beings are not affected by it at all. In addition to killing these insects, Rid-O-Fly is a strong repellent. Flies will not come near stock or buildings where Rid-O-Fly has been used. Rid-O-Fly is particularly valuable for cows and horses, as it is a known fact that flies do untold harm to these animals.

So confident is Dr. Alexander that his discovery will rid your house, barns and live stock of these pests that he offers to send a $3.00 supply for only $1.25 on the guarantee that if Rid-O-Fly does not solve your fly problems it will cost you nothing. Two big Kansas City Banks guarantee the reliability of this offer.

SEND NO MONEY—Just your name and address to the Alexander Laboratories, 549 Gateway Station, Kansas City, Mo., and this introductory offer will be mailed at once.



Better Farm Lands

that earn more dollars per acre

Rare climate, soil and amazing fertility and ample water when they need it are the factors that enable Salt River Valley farmers to earn more dollars per acre.

Three hundred sunny days a year is the average. The soil is ideal for alfalfa, grain, cotton, melons, citrus fruits, garden truck, potatoes, grapes, pastureage and many other crops.

And the great Roosevelt Dam stores up the water until you need it. Droughts are unknown in this land of plenty.

Not one, but two, three and even four crops are often raised on a single plot of ground each year. So small farms—twenty, thirty, forty acres—provide attractive incomes.

Figures for last year show that alfalfa averaged $72 per acre for the 35,000 acres planted. Citrus fruit averaged $400 per acre for 2000 acres. Berries averaged $450 per acre, while asparagus often runs as high as $1000 per acre.

A small farm, requiring but a moderate down payment, is ample for the average family. And land is still very reasonable in this fertile valley, for the nation as a whole has not discovered it.

This opportunity is the result of Roosevelt's vision. He saw here a potential garden spot. So he influenced the government to build the great dam that bears his name.

Now water is plentiful. And it is very cheap. In fact, the power development from this dam is rapidly paying off the entire cost of it, and in a few years the water will be delivered absolutely free.

A LOVELY HOME LAND

The Salt River Valley is a section of homes. The finest type of American citizen has settled here and made it a home land.

The schools are of the very best. Churches are nearby every section. Four hundred miles of smooth, paved roads make the entire valley accessible.

Phoenix, the capitol of the State, lies in the heart of the valley, but a night's ride from California. It is a thriving city of 35,000 people. Other up-to-date towns and cities are located throughout this rich farming section.

The climate is warm, but dry. The days are bright and sunny. It is a place where the children grow big and strong. And adults, too, enjoy new health and vigor.

On every hand, but a few miles distant, are rugged mountains that lend beauty to the section and offer innumerable retreats for change and recreation.

In all ways this garden spot is ideal for those who yearn for bigger opportunities. It offers a larger income from a small farm obtained by a minimum investment. Modern conveniences are everywhere.

Learn more of the Salt River Valley. Send the coupon for detailed information. Or ask specific questions in a letter. We'll gladly tell you all about it without the slightest obligation on your part.

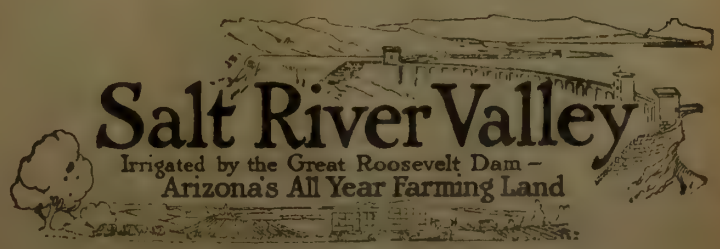
A Monument to Roosevelt's Greatness

Big, broad, sound and productive, the Salt River Valley stands as a fitting monument to the great man who made it possible.

It was one of the many interests of Roosevelt. He studied its soil and climate carefully. He sought the advice of experts.

Then when he knew that hundreds of thousands of productive acres could be reclaimed by water alone, he threw the weight of his influence into the scales for the great dam which bears his name.

His fondest dreams for this section are being more than realized. In addition to the amazing farm land which the dam made possible, the power development is rapidly paying for the entire cost of the great engineering feat, so that soon the water for irrigation will cost the farmers nothing.



SALT RIVER VALLEY-ARIZONA CLUB,
Department A-617,
Chamber of Commerce Bldg.,
Phoenix, Arizona.

Please send me detailed information about the fertile farming lands in the Salt River Valley and the opportunities which are open to newcomers. It is understood this incurs no obligation on my part whatever.

Name .....

Street or R. F. D. .....

City ..... State .....

KEECHLER RAISES HAY

The Jones ranch, located near Petaluma, includes 6000 acres of meadows. Fifteen thousand tons of hay was raised and sold last year. Joseph Keechler is the superintendent.—KATHLEEN RODD.

WORLD ACREAGE OF VINEYARDS

It is estimated that there are 25,000,000 acres of grapevines in the world. Nearly half of them are in Italy. Spain is the second viticultural country. California has 612,000 acres in vineyards, a little over two per cent of the world acreage.

See these horses

Whenever you find them on a pair of overalls you know they represent overall satisfaction.

Two-Horse Brand

Copper-Riveted Waist Overalls

are made with the wearing qualities built into them. Made of special woven 9-ounce Denim, Indigo dyed, cut big and roomy, where the room is needed for comfort, and shaped at the waist, like tailor-made pants. Require neither belt nor suspenders to keep them up. Belt loops added for convenience.

Copper-riveted at all strain points. Plenty of big, roomy pockets. Sewed with special thread, buttons riveted on and finished so well we are proud of every pair. Sold with our guarantee of

A New Pair FREE if They Rip.

Wearers tell us they are the best fitting, strongest and longest wearing overalls made.

Insist on your dealer selling you the Two-Horse Brand.

Made by Levi Strauss & Co., San Francisco
Reliable Merchandise since 1853
Makers of Koveralls, Keep Kids Klean

Science's Discovery Routs Chicken Lice

Mineralized Water Gets Rid of Dusting or Spraying—Birds Delouse Themselves—Fine for Baby Chicks and All Poultry

A recent discovery promises to revolutionize all the commonly accepted methods for keeping poultry free from lice and mites. This wonderful product keeps the poultry always lice-free without the poultry raiser doing any work. It is the simplest, easiest, surest and best method ever discovered.

Hick's Lice-Go, which is the name of this remarkable lice remedy, is dropped in the chicken's drinking water. Taken into the system of the bird, it comes out through the oil glands of the skin and every louse or mite leaves the body. It is guaranteed to help the hatchability of the eggs and cannot injure the flavor of the eggs or meat; is harmless to chicks and does not affect the plumage. A few days' treatment at the start and then a little added to the drinking water each month is all that is necessary.

Send No Money—just your name and address to Chas. M. Hick & Company, Dept. 443, 1018 So. Wabash Ave., Chicago, Ill. A card will do. Mr. Hick is so confident that Hick's Lice-Go will get rid of every louse or mite that he will send you two large double strength $1.00 packages for the price of one. When they arrive, pay postman only $1.00 and postage. Sell one to your neighbor and get yours free. If you are not absolutely satisfied after 30 days' trial, your money will be refunded. This offer is guaranteed by two big Chicago banks, who say that Mr. Hick will do exactly as he agrees without question or argument. Write today before this remarkable trial offer is withdrawn.

What Readers Want to Know

PROTECTING TREES FROM BORERS—Can you tell me how to protect fruit trees from the white borer?—J. E. HANNA, Monterey County.

Borers seldom attack vigorous, healthy trees, but prefer to work themselves into the bark where the tree has been injured or sunburned. The common remedy is to remove the soil for several inches and dig out the worms by pushing a wire into the deeper burrows. Then brush the surface clean and apply a coating of asphaltum paint, grade D, for several inches above and below the ground level. This will in most cases protect the trees, unless they have been too badly sunburned, in which case they should be replaced with new trees.—J. ELIOT COIT.

HOUSING AND FEEDING RABBITS. Please tell me how to build self-cleaning rabbit hutches. What does it cost to feed rabbits?—B. A. KROKE, Ventura County.

The best self-cleaning hutches are made with floor slats wide enough apart so the droppings can fall through, but close enough together to prevent the rabbits from stepping between. The slats should be two or three inches wide and strong enough so they will not bend when a heavy rabbit runs across them. It is well to put a cross-piece underneath.

Where hutches are built on top of each other the roofs should slope four or five inches and be covered with good tar paper, to keep moisture from the hutch above from leaking through. The hutches should be three feet square and two feet high in front. Lumber is so high-priced that it may be cheaper to buy ready-made hutches knocked down.

It is hard to estimate the cost of feeding a rabbit the first month or two. I never take them away from the doe until they are eight weeks old. It is a great mistake to take little rabbits away from their mother when the former are but four weeks old and then breed the doe right away. She will not last long when treated in this manner and the young rabbits will not make a satisfactory growth.

Here at Los Angeles there is a market for more rabbits than are raised. A similar condition probably prevails in other cities.—GEORGE GREEN.

SPRAYING ROSES FOR FUNGUS The leaves of my rose bushes are dropping. What is the cause and cure?—MRS. Y. W. ANGEL, Los Angeles County.

Rose leaves turning yellow and dropping off is a sign of rose rust. A white bloom on the leaves and buds indicates mildew. Spray the bushes with Bordeaux, one tablespoon to two quarts of water. Repeat the spraying every ten days for three times. You cannot cure the foliage that is diseased, but you can prevent infection of the new growth.

If there are reddish spots on the back of the leaves, that is rose rust, for which Bordeaux is the only sure cure. For mildew alone, dust with powdered sulphur when there is dew on the leaves.

The best times to spray roses are in December, when the bushes are nearly dormant, and again in February.—MRS. J. D. BIXBY SR.

POINTS ON AVOCADO CULTURE What soil, climate and irrigation are needed to grow alligator pears?—J. J. PETTINGER, Riverside County.

The alligator pear, or avocado, is a semi-tropical fruit a little less hardy than the orange, but will grow under most conditions where the latter thrives. Avocadoes are quite subject to winter killing, and if the temperature drops considerably below the freezing point during the winter time they are apt to suffer. If conditions are favorable for orange growing and the temperature does not drop more than two or three degrees below freezing during the winter season, avocadoes will probably do will.

One of the general complaints regarding this fruit tree is that it has not borne fruit in most places where it has been planted. Recent studies indicate that this shy-bearing characteristic is due to lack of pollination. In all probability, when the industry has progressed a little further it will be known what varieties can be planted together for cross-pollination.

I would suggest that before you plant avocadoes you write to Dr. A. B. Stout, Pomona College, Claremont, who has been making a special study of this fruit during the past year. I am sure he has some valuable suggestions to offer regarding varieties to plant.—G. P. WELDON.

APPLES DROP BEFORE MATURE Can you inform me of any way to prevent apples from dropping from the tree when they are the size of an egg? Will spraying do any good? If so, what times must I spray and with what material? Is it necessary to paint the trees with whitewash?—ROY TUBBS, Arizona.

The dropping of apples from the trees before the fruit has become mature is frequently due to the attack of the codling moth, a pest which is responsible for wormy apples and pears. If your apples are wormy it will be necessary for you to spray the trees with arsenate of lead when the blossoms are practically all off and before the little cup on the end of the apple is closed.

A second application, in about three weeks' time from the first, will be necessary in cases where the pest is at all abundant. In some of the commercial apple-growing sections growers are forced to spray from three to five times during the season to insure control of this pest. The first, or calyx, spray is by far the most important and much good will result from its application whether other sprays are applied or not.

Arsenate of lead is prepared in two forms—a powder and a paste. The powder should be mixed with water at the strength of 1½ pounds to 50 gallons of water; the paste at the strength of 3 pounds to 50 gallons of water. Spraying should be done thoroughly, with as high pressure as possible. A power sprayer which will give a pressure of 200 pounds or more is desirable, but not absolutely necessary, as good work may be accomplished with almost any pump that will throw a fairly fine mist spray.

Whitewash is splendid for young trees in particular, to protect them against winter sunscald and the attack of borers, which usually follows sunscald. A good whitewash can be prepared by adding about 3 pounds of sulphur to 10 pounds of stone lime while it is slacking. The adhesiveness of the material will be increased by the addition of 1 pound of salt. The wash should be sufficiently thin to apply with a brush.—G. P. WELDON.

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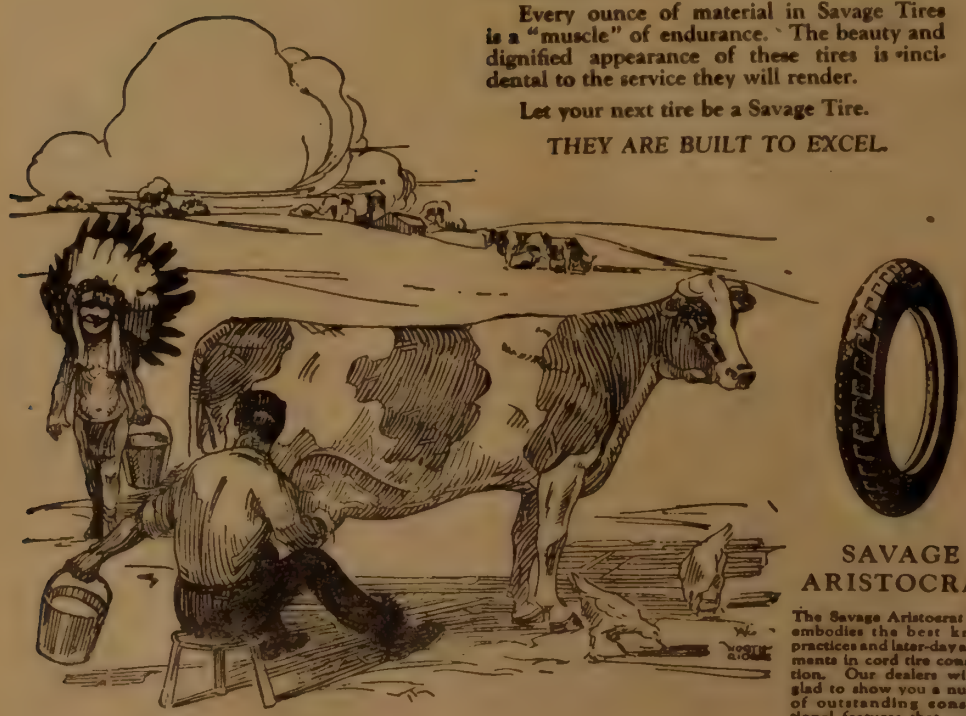

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Drying Apricots and Peaches

By L. C. BARNARD

Division of Pomology, California College of Agriculture

APRICOTS should be picked from the trees, although shaking them off and allowing them to drop on a sheet below the tree is sometimes allowable. They should be ripe enough for eating purposes. The fruit is cut neatly around the suture into halves, the pit removed and each half placed on the tray, cut side up, and as close together as possible. One picker usually keeps two cutters busy.

When the tray is completely filled it is removed from the cutting table and placed on a tray car. Some cutters, if the shed roustabout is not handy, place an empty tray over the filled one and fill it also before placing them on the tray car.

When a sufficient number of trays have been filled the car is shoved into the sulphur house, where the fruit is sulphured. The amount of sulphur required for apricots ranges from 7 to 11 pounds of sulphur per green ton of fruit and the length of time in the sulphur house from three hours to overnight.

WHEN SULPHURING IS COMPLETE

The cups should be about two-thirds full of juice when the apricots have been sufficiently sulphured. The fruit should show at least 75 to 80 per cent penetration of sulphurous acid. Break piece of fruit open and note penetration. The fruit should retain a golden yellow color in the dry yard and not turn brown.

When the fruit has been sulphured sufficiently the trays are spread in the dry yard, one tray deep. Care should be taken in spreading the trays not to spill the juice from the cups. The length of time the fruit remains exposed to the sun varies according to local weather conditions, size of the fruit, the degree of ripeness: usually from one to five days.

The trays are then stacked, overlapping each tray six inches or more as it is placed on the stack to insure proper circulation of air. The length of time the fruit remains in the stack also varies from two to five days.

Some orchardists dry their fruit entirely in the stack. This method requires more trays, but gives a slightly heavier product and a more uniform moisture content as well as a cleaner product. The length of the drying period is increased by this method to about one-third or one-half longer.

TESTING FRUIT FOR DRYNESS

When apricots have dried enough they are leathery to the touch, not hard and brittle, but soft and pliable and not sticky. Some growers grab a handful of fruit, squeeze it and if it falls apart readily it is considered ready for the sweating process.

When the fruit is removed from the dry yard it is usually dumped into dried fruit bins in the packing house or into sweat boxes for a week or two weeks, depending on dryness of product and the rapidity with which it is marketed. The fruit, which is of varying degrees of dryness and moistness, tends to become equalized during the sweating period until a uniform moisture content has been reached.

Fruit, which has been undersulphured and turns dark in the dry yard, if dipped in water and resulphured, will be greatly improved.

Apricots were successfully cured whole, on a small scale in the Santa Clara Valley and other sections of the State in 1917. Both large and small fruits cured well at San Jose without cutting. The product is quite attractive and when opened the pit can be very easily taken out, being almost free. This method of drying apricots, however, is not commonly practiced.

APRICOT PITS ARE VALUABLE

Apricot pits are dried on trays and used for fuel, or sold to by-product companies for making oils, prussic acid, etc.

Following are the main varieties used for drying: Royal, Blenheim, Tilton, Hemskirke, Peach, Montgamet and Moorpark.

Drying ratios run from four to seven pounds of fresh fruit to one of dried, depending depending on variety, size, degree of ripeness and care in drying.

The average yield is one ton of dried fruit per acre.

In 1921 the average cost of harvesting, cutting shed costs and all dry yard expense, including sacking, amounted to $16.50 per ton of fresh fruit.

It is possible to dry almost all varieties of peaches, although some kinds are better suited for drying purposes than others. The Muir and Lovell are considered the best and the Elberta ranks third. However, the following varieties are also dried on a commercial scale in California: Foster, Salway, Early Crawford, Late Crawford, Susquehanna and Wheatland.

The qualifications of a good drying peach are that it shall have yellow flesh, firm and dry, be a freestone, of large size and have good quality.

When a peach is slightly soft to the touch over its whole surface it is ready for drying. The method of harvesting is the same as for apricots, also the cutting process. For peaches, an average of eight pounds of sulphur per green ton is used and they are left in the sulphur house from three to five hours to overnight. When left in overnight it is usually because the peaches had been put in the sulphur house at about quitting time.

SULPHUR LOOSENS THE SKIN

After sulphuring, the fruit does not turn dark in drying and the skin slips freely. If peeled fruit is desired, the skin can easily be removed by dipping the peaches in a boiling lye solution, one pound lye to ten gallons of water, after drying and then dipping in cold water. The skin will then drop off or is easily rubbed off.

Muirs yield about 2400 pounds of dried fruit per acre; Elbertas, one ton; Lovells, 1750 pounds. The drying ratio of Muirs and Lovells is four to five pounds of fresh fruit to one of dried. Elbertas lose more moisture. The cost of drying varies from $10 to $15 per green ton.

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Feed Cows Minerals

ALTHOUGH hog feeders and breeders long have recognized the necessity for including minerals in the ration, it is only recently that dairymen have attached great importance to this phase of herd management

Recent experiments indicate that minerals are almost as essential to cows as to swine. Marked reduction in abortion losses has followed heavier feeding of minerals, according to veterinarians. Such ingredients in the feed, however, should not be regarded as a cure-all, warns Dr. J. A. Woodside, D. V. M., dairy management specialist.

Dr. Woodside, who recommends the addition of three pounds of mineral mixture to each 100 pounds of concentrate, states the effect is noticeable both in milk yield and in the health and size of calves. A mixture containing, among other ingredients, phosphates, sodium sulphate and sodium chloride (common salt) has produced excellent results, he asserts.

The limiting factor on the Pacific Coast is the cost of certain of the necessary constituents. It is said more than 90 per cent of the raw rock phosphate comes from Florida, and the chemicals which are manufactured from this material in New York cost $2.75 per hundredweight in carload lots.

One mixture which Dr. Woodside has found satisfactory contains 13 or 14 ingredients and cannot be sold for less than $13 per hundredweight, he says. Experiments are under way to determine what proportions and mixtures give best results, and it is believed a formula will be evolved which will make possible economical feeding of minerals in California dairies.

It has been determined that small quantities must be given regularly and over an extended period of time. Quick results cannot be expected, Dr. Woodside states.

Orchard Chicken House

THE habit of running chickens in the orchard is a good one. The practice is good for the trees and the chickens are benefited.

Some kind of shelter is necessary, hence the suggestion shown. It is a little affair, for it is better to keep the different size birds together and chickens are not hatched in large numbers on a fruit farm. Therefore, it is better to make sheds small and to provide as many as needed.

This little roosting shelter is five feet square on the ground and five feet high in front, with a roof sloping to three feet from the ground at the back.

There are roosting poles one foot up from the ground and others that are higher, all made to lift off for cleaning. There is no door and no opening except the slatted ones shown. Tip the house over when necessary to get inside. There is no floor, therefore, it should be banked around with earth, if there is any danger of skunks. The slatted openings should be covered with a board at night, for the same reason. —H. A. SHEARER.

Vitamines for Poultry

THE discovery of the nature and value of vitamines emphasizes California's advantage over East in poultry production, in the opinion of James Dryden, famous authority formerly of the Oregon Agricultural College, who now has a breeding farm in Contra Costa County, Cal. "We have green foods the year around," Mr. Dryden points out, "and these greens are rich in vitamines. I do not think California poultrymen on the whole really appreciate how fortunate they are in this respect. Nor does the average poultryman attach enough importance to the use of greens. Fowls of all ages should have all the green stuff they will eat, in as great variety as possible. Succulence is important. Dry alfalfa cannot take the place of green alfalfa, nor can any feed, in my opinion, take the place of greens of all kinds."

Pay Fines for Cruelty

IN Massachusetts, where the Society for the Prevention of Cruelty to Animals is especially active, the following fines were paid for the offenses mentioned:

Overcrowding and cruel transportation of poultry, $25 to $50; treating a hen cruelly, $150; locking a hen's wings, $25; leaving cat in house without food for a week, $50; mutilating dog's ears, $25; burning several ducks to death, $100; failing to shelter hogs, $25; cruelly shooting dogs, $50; using wire whip on horse, $50; starving cattle, $65; working horse with gall sores, $50; underfeeding horse, $25 and three days in jail.

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Try this Crushed Strawberry Jam

For this jam it is necessary that *each berry* be broken up. Therefore, crush about 2 quarts ripe berries in separate portions, so that *each berry* is mashed. This allows fruit to quickly absorb the sugar during the short boil. Measure 4 level cups (2 lbs.) crushed berries into large kettle, add 7 level cups (3 lbs.) sugar and mix well. Use hottest fire and stir constantly before and while boiling. *Boil hard* for one full minute, remove from fire and stir in ½ bottle (about ½ cup) CERTO. From time jam is taken off fire allow to stand not over 5 minutes, *by the clock*, before pouring. In the meantime skim, and stir occasionally to cool *slightly*. Then pour quickly. If in open glasses paraffin at once. If in jars seal at once and invert for 10 minutes to sterilize the tops. Use same recipe for Raspberry, Blackberry or Loganberry jam.

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You Haven't Read the Paper Until You've Read the Ads

Walnut Codlin Moth Control

By ROBERT W. HODGSON

ALTHOUGH the codlin moth was reported as attacking the English walnut in the Contra Costa section in 1909 by S. W. Foster, it was not until 1918 that this pest appeared in Southern California districts to a degree exciting the attention of walnut growers. Since that time, however, it has spread to the point where it now appears that it must be regarded as definitely established in a number of the principal walnut districts of Southern California and must be taken into consideration as requiring annual control measures.

ROBERT W. HODGSON

Shortly after its appearance, the College of Agriculture undertook investigations relative to control methods, the work being done by Prof. Ralph E. Smith, who secured a leave of absence in order to develop the new dusting method which he had invented, and by Prof. H. J. Quayle, entomologist of the Citrus Experiment Station. During the past three or four years considerable study has been devoted to this pest. Assistance has been rendered by the State Department of Agriculture in preventing its further spread.

The control method which has come into most general use is dust spraying by means of power blowers, using a dust composed of hydrated lime and lead arsenate. For the additional purpose of controlling the aphis, Blackleaf 40 is also an important constituent of the dust used. While fairly satisfactory results have been secured, the percentage of infested nuts in certain sections has remained higher than is desirable, necessitating an increase in the strength of lead arsenate in the dust used during the 1923 season.

DUSTING ALMOST UNUSUAL

Investigations have shown that slightly better control may be had from liquid spraying. However, on account of the use of the dusting method, which has become widespread in the control of walnut aphis, this manner of codlin moth control has become almost universal.

For the purpose of aiding in the control of this pest this year, some months ago a campaign, in which the walnut growers' departments of various Farm Bureaus, the Agricultural Extension Service, College of Agriculture and California Walnut Growers' Association are to co-operate, was outlined. The organization last named made a survey of spraying and dusting equipment in the districts where infection occurs and is making an effort to provide adequate equipment for a thorough dusting during the present season.

Arrangements have been made whereby the Walnut Growers' Spray Manufacturing Company, which was organized to manufacture spray dusts for various purposes, primarily for the control of walnut pests, will be in a position to contract to do dusting work for growers. The Agricultural Extension Service and Farm Bureaus are to co-operate in conducting dusting and spraying demonstrations, where these are felt to be necessary, and especially in maintaining an inspection service for the purpose of advising growers as to when to dust or spray.

FIND FIRST MOTH EGGS

Members of the Agricultural Extension Service have been keeping in close touch with the situation during recent weeks, with the result that the first eggs of the season have recently been found. Dusting will therefore begin in the very near future.

The two principal centers of infection at the present time are located in Orange and Ventura Counties. Different conditions in these two districts occasion the appearance of the eggs and larvae at different periods. In the Orange County districts the first moths appear during the middle of April and the period of greatest emergence is approximately June 1. Egg laying begins in late April and the peak of the egg-laying period occurs during the first or second weeks of June. Based on the experience of the two past seasons, for best results, control work should have been started approximately June. 1.

In Ventura County the season for best results is somewhat later. The appearance of larve reaches its peak toward the latter part of June, and hence dusting should be started approximately June 15. Where liquid spraying it used, the formula recommended by Professor Quayle is six pounds of basic lead arsenate powder to 200 gallons of water. Arrangements are being made this season to use a dust containing 15 per cent of lead arsenate. The amount of dust required per tree is about six pounds for trees of average size. Such trees will require from 20 to 25 gallons of liquid spray.

The second brood, which appears later in the season, is sometimes injurious. Investigations to date, however, have not shown any marked advantage from a second application or dust.

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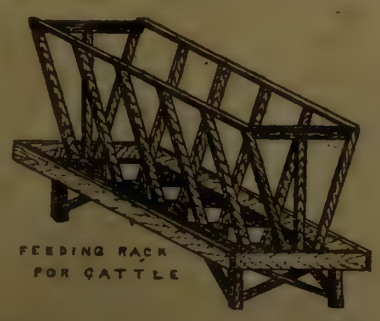
Feed Rack for Cattle

I FOUND this feed rack in use in the northern part of California, where the rainfall ranges from 40 to 80 inches and the grain often grows higher than a man's head. It is not necessary to place the uprights closer than two feet when feeding such straw or grain hay.

Sometimes the spindles are spaced so close that some of the cattle get their heads fast. To save feed from



FEEDING RACK FOR CATTLE

being scattered on the ground, various methods have been tried out. Spacing the uprights too close is one of them. When cattle throw the feed with their heads, it is better to lay a ladder on top of the hay, or to nail light strips of wood lengthwise across the spindles above their heads.

The floor of this rack is made tight to hold the grain that shatters off. One man nailed strips in the middle, lengthwise of the floor, and used the floor of the rack to feed grain. These strips prevented the grain from pushing away out of reach.

There is no set size for making these racks, but they should be small enough to move easily when the ground becomes foul. Four feet six by eight feet is a good size and the proportion is about right. The hay uprights should be about six or seven feet long placed 18 or 20 inches apart. The floor of the feeder should be eighteen inches up from the ground. H. A. SHEARER.

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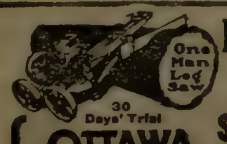

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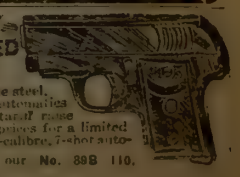

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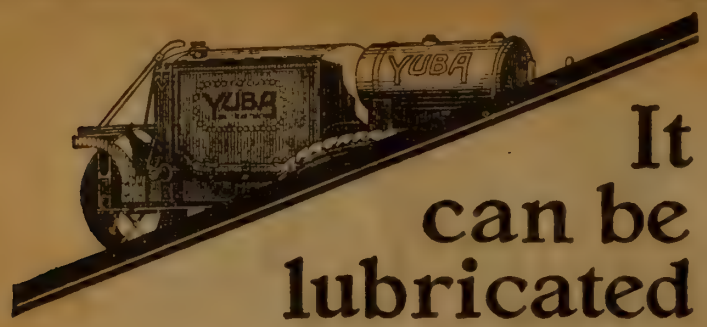

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Overpack's Poultry

(Continued from Page 2)

for a decent building, but Overpack replied that if he should do that there would not be enough sound boards to build a dog kennel.

Through the center of the barn, eight feet from the ground, the newcomer built a platform the full length of the building. From this platform to the roof, on both sides, he stretched poultry netting, making a sort of cage 24 by 50 feet, 12 feet high in the center and 4½ feet at the sides. This poultry cage was then equipped with roosts and a dropping-board along one side, and with nests and feed hoppers along the other. Water was piped up to it and several drinking fountains installed. The height of the roof was sufficient to keep this elevated floor cool during the summer, ample ventilation having been provided.

Leading to the upper floor from the outside, Overpack then built an inclined runway, which he fenced on either side with poultry netting. In reply to credulous neighbors, the poultryman explained that chickens are creatures of habit, and would soon learn the way to their novel habitation. This they did and now every evening the gangway is packed with a flock of snowy Leghorns, ascending the runway to their elevated roosting place. In the morning, as soon as the doors are opened, out come the biddies and down the runway they hurry, pushing, cackling and flying, eager to reach the fine scratching lot.

This upper room is the home of the pullets. The ground floor, which Mr. Overpack has divided into several apartments, partitioned with poultry netting, is for the older birds. One room contains hens selected for breeding purposes; another is set aside for two and three-year-old birds, which have made exceptionally good laying records. Another pen is for broody hens and still another serves for a hospital.

PLENTY OF GREEN FEED

The scratching yards for the first-floor birds are on the south side of the barn, where there always is plenty of green feed and shade. Besides the accommodations for chickens on the first floor, there is a granary and feed grinding room, with concrete floor, 18 by 24, and another room, 15 by 16, which is used as a workshop and granary. Every foot of the old barn has been utilized to good advantage.

"As soon as I had the barn cleaned up," relates Mr. Overpack, "my two-months-old pullets were moved into it—570 of them. In October and November, less than nine months after I moved onto the ranch, they earned a net profit of $450.

A good rain came in October and the roof of the barn leaked, as my neighbors told me it would. I had some egg money then, however, so I put a roof on one of the sheds. That lasted me through the winter. The next summer I put a new roof on the entire barn, all from the profits of the hens. The barn is practically new now and the total cost of converting it into a good poultry house did not exceed $250. Of course, I did all the work myself."

UTILIZES OLD DWELLING

The dwelling house, which was thirty years old, was a well-built structure of redwood, in fair condition. Two rooms were converted into a brooder room, which is now used for hatching chicks, fourteen incubators being used for this purpose. In the barn workshop there are two more incubators, operated by electricity. A new brooder house which will accommodate 2400 baby chicks has been recently built.

Overpack's chicks are in demand and are shipped to many points on the Pacific Coast. He has built up a flock of high-record layers, which average 178 eggs a year. He has developed his flock from ordinary White Leghorns, using high-record trapnested stock. A number of his breeding hens were procured from Hanson and have records of from 250 to 275 eggs per year. His cockerels have been selected from 312-egg hens. He culls his flock carefully, taking all hens which do not measure up to his high standard.

The old barn has richly repaid repairing. Once deserted and falling to ruin, now it is alive with feathered activity and trim with fresh whitewash, bringing prosperity to the young man whose industry and good judgment wrought the transformation. — BLANCHE B. CORBETT.

Pushing Peanuts Profitable

VIRGINIA peanut growers are getting on their feet again, after a period of disastrous low prices, according to E. M. Pencier, who played an important part in forming a co-operative marketing organization among 5000 peanut producers. This concern is making a specialty of a one-pound package of raw kernels, sold under the Pickaninny brand.

Mr. Pencier recently visited Los Angeles in the interests of the peanut growers. He states that this city annually buys $9,000,000 worth of peanuts, mostly from the Orient. These nutritious nuts successfully are grown in California, but are considered less profitable than many other crops.

New Way to Rid Poultry of Lice

Rev. G. R. Mente Tells of Amazing Discovery Which Keeps Hens and Chicks Free From All Vermin

"I have used your remarkable Lice and Mite Remedy with fine results," writes Rev. G. R. Mente, Methodist Parsonage, New Washington, Ohio. "It has put a stop to the poultry losses in this community. You are a great benefactor to poultry raisers."

Lice and Mites Go Like Magic

This amazing new discovery is Imperial Lice and Mite Remedy. Comes in condensed liquid form, to be used in fowls' drinking water, a few drops at a time. No more Dusting, Spraying or Greasing.

Makes Lice, Mites, Ticks, Fleas, Blue Bugs and other vermin positively leave fowls like magic. Renders entire flock, old and young, immune to these expensive pests. Equally good for Chickens, Ducks, Turkeys, Geese and Pigeons. Guaranteed not to affect eggs or flesh of fowls in any way. Makes Hens, Pullets and Chicks healthier, stronger and grow faster. A splendid summer egg tonic and blood purifier. More than 100,000 Poultry Raisers now keeping their flocks free from vermin, this new easy way.

You Can Get Yours Free
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Imperial Laboratories, the manufacturers, are now making a Special Introductory Offer whereby you can obtain, absolutely free, a season's supply, for the average size flock, of this amazing new Lice and Mite Remedy.

SEND NO MONEY Just your name and address to Imperial Laboratories, Dept. 7288, Kansas City, Mo., and they will send you by return mail two regular $1 bottles of Imperial Lice and Mite Remedy (double strength). When the package containing the regular $2 quantity arrives, pay the postman only $1 and a few cents postage. Use one yourself to rid your own flock of these pests, and sell the other to a neighbor thus getting yours free. Or, a large size Trial Bottle for only 50c.

Special to Large Users

If you have a large flock, or have neighbors who wish to go in with you, this Special Introductory Offer applies on 4 of the regular $1 size bottles, at an additional saving. A large size Trial Package of Imperial White Diarrhea Tablets included Free. Just state you want the regular $4 quantity for only $3.75. Readers risk no money as Imperial Laboratories are fully responsible and nationally known distributors of poultry remedies. They will refund the cost on any of the above quantities ordered, promptly on request, any time within 30 days.

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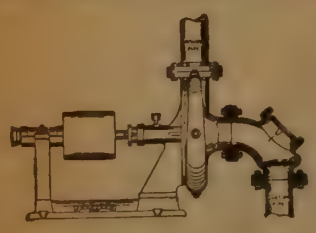

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Angora Goats Increase Crops and Land Values

California has 115,000 Angora goats. This splendid flock belongs to C. L. Paige. Fleece goats are valuable, not only for mohair, but for meat, manure and land clearing.

By A. C. GAGE

PRODUCING mohair, meat and manure, clearing land of brush and weeds and building up grain fields, the Angora goat is one of the most useful and profitable of all domestic animals. They are easy to keep and their products sell readily at good prices.

And yet, no other livestock industry has grown more slowly, perhaps, than the raising of Angora goats. Nevertheless, this comparatively new branch of animal husbandry continuously has been extended each year. Sheep increase or decrease with the market for wool and mutton, but goats do not show any great variation.

Sixty thousand Angora goats added each year to American herds is the average annual increase from 1910 to 1920. Three and one-half million is the goat population of the United States. Of this number, California has 115,000.

Why not keep more Angora goats on farms and open pasture lands? They are productive, easily managed and good hustlers. They clear land, but that is not their only utility value. Readers of Orchard and Farm will find interest in that statement of William Riddell and Sons, Willamette Valley, Oregon, farmers, that running Angora goats on grain fields gives increased yields.

BUILDS UP GRAIN LAND

Edward G. Riddell says: "It has been shown that the Angora goat is the peer of any animal in building up cultivated land. We have proved it.

"For weed eradication he has no equal. Cornflower and plantation do not mature seed as long as there are goats in the field—they clip the plants off to the last sprout. Goats work on the taller weeds, letting the smaller growth get well rooted before it is grazed, thereby assisting its growth. They help to pack the ground and do not weigh enough to injure the springing seed in its germination. Also, they cover seed not properly covered by machinery.

We run goats on our fall-sown wheat from October to April. Our land shows a marked change in the last ten years as result of the work of goats. With rotation of crops we find the manure supplied by the Angoras while soiling the seeded ground with their hoofs, day after day, shows results in the yield. The land is losing that slaty, slick look and is becoming mealy and mellow—a pleasure to work with and a satisfaction in production.

FINANCIAL FUTURE ASSURED

"There is no animal on the farm that has a better future in a financial way just now than the Angora goat, if properly utilized, and there is no better worker on the farms of the country, if given a square deal."

Proofs of Mr. Riddell's statements are: Crops increased, land made richer, bigger and better goats, with larger clip of mohair. Last summer the writer saw land where goats had been used, alongside of land not so pastured. The stand of grain where goats were run gave 25 to 30 bushels per acre. On the adjoining land the yield did not exceed 12 bushels to the acre.

It should be noted that to employ goats in the manner suggested there should be a woodlot or pasture ground for the goats while the grain is growing, which, as Mr. Riddell indicates, would be about five months in the year. When recognition is given these facts a definite addition will have been made to annual crop returns.

SMALL FLOCKS PREFERABLE

Do not try to run large herds of Angoras in heavy timber or brush land. Flocks of 6000 to 10,000 are readily carried on open pasture, like the sagebrush plains of Arizona, Texas and New Mexico, where shinnery (a small scrub oak) and other forms of browse are plentiful. But where the goats may get hung up by the fleece in thick, heavy undergrowth, not more than a few hundred should be run together.

Six thousand Angora goats belonging to Thomas L. Morris, Arizona grower, last year sheared 15,000 pounds of mohair, which sold for an average price of 50 cents a pound. An additional revenue is derived from the droppings. Morris gets $6 per ton, f. o. b. cars, for goat manure and realized last season $3193, net, for fertilizer. This product sells for $30 per ton and upward in Southern California.

W. W. Davis, another Arizona goat raiser, has sold 400 tons of manure this year and has 50 tons accumulated under shed. If range is near railroad, goat manure is a sure source of profit. The demand is never fully supplied.

California and other Southwest States have room for millions of Angora goats. Herders on open range, fences on heavy brush areas, is the rule. Goats are subject to few diseases, needing only to be dipped, salted and shorn.

Extra long mohair is used for making wigs, transformations, toupes, doll hair, etc., and sells up to $20 a pound. This fleece was grown in Oregon and is 22 inches long.

This prize-winning doe and buck are the property of C. A. Pepper of San Antonio, Texas. The long hair over the eyes is considered by breeders a desirable characteristic. Texas produces more Angora goats than any other State in the Union.

Sweet Cherries Proving Beaumont's Best Bet

By WM. R. BUTLER

A SINGLE enthusiast over a certain crop is no uncommon find among a given community group, but a district 100 per cent solid on that crop is a pretty fair indication it has been weighed in the balance and its worth established.

Such has been the case with the cherry in the Beaumont Valley. This new diversified Riverside County district, but 15 years from the grain-and-hay stage, and with 3000 acres—over a fifth of its area—already planted to apples, pears, cherries, peaches, apricots, prunes and grapes, has found that cherries grow better there than any other deciduous fruit.

Although the total fruit acreage is made up of young trees, one to 14 years old, the 1922 production reached the following large totals, in tons: Apples, 1175; pears, 600; cherries, 400; peaches, 350; prunes, 180, and grapes, 218.

Blossom time in a Beaumont cherry orchard. These fine trees belong to A. L. Davis, manager of the Beaumont Fruit Growers' Association. Eight acres averaged over two tons per acre last year, mostly Bings and "Tarts."

STUDY COMPARATIVE PROFITS

Ample opportunity has been afforded to study comparative production and profits of these crops during the past four years. That the cherry was and is to continue the leader for Beaumont Valley was evidenced four years ago, when the citizens staged a cherry festival, in the midst of the harvest season. This event proved such a success, both in advertising the eminence of the Beaumont cherry and in developing a co-operative community spirit, that it has grown to be an established institution in the community.

Speaking of this community pride and co-operation, Dr. J. W. Keith, cherry grower and president of the Chamber of Commerce, remarked: "We deem this finding of ourselves at an early stage of our more intensive development of utmost importance to the community. During the past four or five years our cherry crop has made us more money, advertised Beaumont Valley, and has united our people more than any other one thing.

"To show how cherries are getting our town folks and orchardists to 'laying into the collar' together, let me tell you how our 1923 cherry festival is being put over. Heretofore practically all the funds for the event were supplied by townspeople. This year the orchardists are contributing cherries, on the basis of one box to every ton marketed last year.

SOLVE COMMUNITY PROBLEMS

"We have a number of big community problems to solve by united thought and effort. Not many years ago we might have despaired of getting together on these. The spirit aroused and the co-operation established, all from enthusiasm over the success of the cherry crop, insure a happy solution of these problems."

A. L. Davis, temporary manager of the Beaumont Fruit Growers' Association, was found at the co-operative packing plant, and before we left for a visit to his orchard he gave me the following data on the crop tonnages handled by the association last year: Cherries, 190; plums and prunes, 139; peaches, 207; pears, 439; apples, 463, and other crops, 26. Mr. Davis called my attention to the fact that the total tonnage handled in 1922 was 1718 and in 1921 was 1022. The 70 per cent increase was not due to seasonal causes, but to new plantings coming into bearing.

"You cannot judge Beaumont by the acreage production as listed in the crop report," Mr. Davis pointed out, "because this is a new horticultural section and our bearing acreage is small. The oldest cherry orchard in the Beaumont Valley is the five-acre grove of 15-year-old trees owned by Peter Wigg. The total yield from this orchard last season was 16 tons. Mr. Wigg grows the three popular varieties: Bings, Black Tartarians and Napoleons."

Country home of Dr. A. G. Toprahanian, who has a 40-acre orchard of sweet cherries, prunes and pears between Banning and Beaumont.

YOUNG TREES BEAR WELL

Mr. Davis is the fortunate owner of a 4½-acre grove set to Bings, with a few "Tarts," in 1914. This 8-year-old orchard was loaded with fruit at the time of my visit. The owner told me it required 1500 props to help the trees support last year's crop, which totaled 16 tons, 1440 pounds. He said the trees were bearing a much bigger crop this year.

The elevation of the Beaumont Valley ranges from 2500 to 3000 feet above sea level. Although but a short distance from the Colorado Desert, its elevation and the protection from hot winds afforded by the San Bernardino and San Jacinto mountain ranges give this section a climatic advantage over lower valleys in the production of high-quality cherries.

The average annual rainfall for the Beaumont Valley is 20 inches. This is supplemented by a modern irrigation system. The soil is composed largely of decomposed granite, washed down through countless ages from the slopes of the near-by mountains and filled with humus from centures of shrub growth.

SOIL SUITED TO FRUIT

Dr. Keith, whose knowledge of cherry production is not confined to his own locality, says that the soil at Beaumont is suitable for growing the highest quality cherries, being rich in humus, light of texture, splendid underdrainage as well as surface runoff, and an abundance of iron and other mineral elements.

Another extensive grower visited was Dr. A. G. Toprahanian, vice president of the Beaumont Fruit Growers' Association. His orchard of 40 acres is on the highway between Beaumont and Banning. Fourteen acres are in cherries of the following varieties: Bing, Tartarian, Royal Ann and Lambert. Eleven acres are in prunes and 10 in pears. The Doctor's orchard has been planted seven or eight years. Thriftier trees would be hard to find. Dr. Toprahanian's cozy home, surrounded by well-kept orchard and lawn, typifies the finest in California country life.

From this brief cross-section study of Beaumont Valley, one gets the vision of the folks who labor there in the interests of a more stable, more prosperous and more satisfying life on the land. As Dr. Keith puts it, "Cherries are Beaumont's best bet. We have growing pains, but we know where we are going and we're on the way—with cherries!"

Another blossom scene in the Davis orchard. Growers donate one box of cherries for each ton of fruit grown, to give to visitors at Beaumont's annual Cherry Festival.

PRIVATE PLANT PATHOLOGIST

Dr. P. A. Boncquet, former Tulare County horticultural commissioner, is now serving the fruit growers of that section as a private plant pathologist. He has discontinued his periodical, the California Plant Pathologist. Growers are now forced to pay direct for all the advice and information which they obtain from this eminent Belgian authority on plant diseases.

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

JUNE 24, 1923

Milk Cows Pay for Five-Hundred-Dollar Land

General view of feed yards, showing alfalfa fields in background near Los Angeles River.

White Builds High Producing Herd

THE story of how E. L. White in fifteen years rose from milk wagon driver to owner of a three-quarter-million-dollar dairy is a typical tale of agricultural achievement in the Golden West. Hard work and common sense won conspicuous success, by methods here described. —*The Editor.*

By O. H. BARNHILL

WHILE many farmers complain —and with reason—of hard conditions and the almost insurmountable obstacles which bar the path to independence, others progress rapidly along the highway of agricultural achievement to positions of wealth and power. What is the secret of their success? By what methods have they wooed and won the fickle goddess of fortune?

Instead of attributing success to good luck and failure to a peculiarly unfortunate combination of circumstances, would it not be well to inquire into the processes by which some farmers forge so rapidly ahead? All the plans and ideas of these leaders will not be found applicable to other workers along similar lines, but valuable pointers are always picked up when this kind of an investigation is conducted.

E. L. White, who is said by Extension Service specialists to be one of the most successful dairymen in Southern California, came here fifteen years ago from Kansas. His first work was driving a milk wagon for a Los Angeles creamery company.

MANAGES BRANCH CREAMERY

From a driver's seat the young Kansan newcomer was promoted until he finally occupied the manager's chair of a branch creamery. But White did not regard his new position as a swivel-chair job, spending a good spare of his time "out on location," building up the business until there were 3000 milk customers.

In spite of the alleged plethoric profits in milk merchandizing, White left the creamery to engage in the production of dairy products, which work was more to his liking and promised greater financial rewards. A tract two miles west of Burbank was purchased and added to until it comprised a half section of land. The cost ranged from $400 to $500 an acre.

A herd of cows was acquired and increased until it now numbers between 300 and 400, with 125 heifers. Butterfat production kept pace with increased numbers, the average quantity which each cow now has to her credit being 418 pounds. This is said to be a better yield than that credited the best herd of purebred Jerseys in one of the leading dairy districts of California.

White's cows are nearly all grade Holsteins, yet they have won a silver cup for producing more butterfat in a year than any other herd of 60 or more cows in the Los Angeles County Testing Association, which comprises 4000 animals. The Farm Bureau awarded White a silver cup for making this record, and also for having the five highest producing cows in the county.

Mr. White, by the way, is a member of the executive committee of the dairy department of the Farm Bureau and a firm believer in the advantages of organized agriculture.

How does it happen that this Burbank dairyman's cows are giving such large quantities of rich milk? Such things don't *(Continued on Page 10)*

Above—E. L. White (in dark suit) and some of his men, standing before the meat box in the milk house. Fresh meat has been kept for six months.

Substantial but not "fancy" equipment reduces the overhead. The silos are considered by the owner indispensable

Typical cow from the White herd, which consists of some 300 individuals, averaging about 418 pounds of butterfat.

Cement feed manger, with high back to prevent wasting of feed.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JUNE 24, 1923

Sonoma County Pedigrees Productive Poultry

System of Registry Based on Egg Production Adopted by World Famous Producers—Ignore Fine Feather Fanciers

By MELVIN W. BUSTER,

Assistant Sonoma County Agent

SONOMA COUNTY poultrymen, realizing that the same principles apply to poultry breeding as to any other kind of livestock breeding, are making greatly increased use of the trap nest and recently have started a poultry registry association, to register individuals of egg-producing merit. This organization is bound to have far-reaching results. The poultry world is now demanding honest pedigreed poultry stock; the kind on which the trap-nest pedigree can be traced.

A review of the present and prospective egg and poultry situation here on the Pacific Coast strongly points to the fact that economical production is going to be an increasingly important factor in meeting the competition of the world on the export market. This is particularly true because the methods of marketing eggs here are probably better than those employed in other poultry producing sections of the United States. Consequently, while poultrymen should no doubt continue to study and improve marketing methods, yet economical production undoubtedly offers the greatest field for improvement and increased returns to the poultrymen.

PRODUCTIVENESS COUNTS MOST

While the cost of unit production in the poultry business is affected by many conditions, it has been clearly evident for some time that no factor has a more far-reaching influence on cost than the productiveness of the individual bird. It requires a certain number of eggs to pay for feed, labor, insurance, depreciation, restocking, etc. Profitable production can only be obtained by having a safe margin of eggs over the number required to meet cost of production and the more eggs per bird the greater the remuneration.

Increased production, both of the individual and in the flock, is primarily a problem of breeding. The new registry association aims to give point, direction and encouragement to the breeding of poultry along lines of greatly increased individual and flock production. The steady growth of the organization demonstrates the interest and confidence in pedigree breeding by the poultry breeders of Sonoma County.

This project was started by the poultry department of the Farm Bureau in the spring of 1922 for the purpose of maintaining a record of high egg producing fowls of the county and also to inspire greater confidence not only in the value but the necessity of trap nest and pedigree poultry breeding.

There are 572 birds, 228 females and 344 males, registered in the association. The minimum record to permit a bird being registered in the primary section has been set at 200 marketable eggs in 365 days in the pullet year and 180 eggs the second year. For qualification in the advanced registry section, a minimum of 250 marketable eggs in 365 days is required.

The birds are divided into two classes: those holding records in official egg-laying contests and those whose production has been recorded on private poultry ranches.

Purebred males six months of age or older, in good physical condition and vigorous, without blemishes, whose dams have an authentic yearly record of 200 eggs or better, and sired by a male from a dam having an authentic yearly record of 200 eggs or better, are eligible to registry.

The advanced registry includes hens with a yearly record of 250 eggs or better and two classes of males: those that have at least ten registered daughters and purebred males six months of age or older in good physical condition and vigorous, without blemishes, whose dams have an authentic yearly record of 250 eggs or better, and sired by a male from a dam having au authentic yearly record of 250 eggs or better.

While the rules governing home-made records and their inspection is such that the utmost confidence is placed in them, nevertheless it is believed that the official egg-laying contest records are much more valuable.

This advanced registry cock of Ernest Williams, Sebastopol, has to his credit 11 daughters, each with a yearly record of 250 eggs or more.

With 302 eggs to her credit in 364 days, this hen—which belongs to D. B. Walls of Petaluma—was admitted to advanced registry in the Sonoma County Association.

BREEDERS FURNISH AFFIDAVIT

In registering birds the breeders are required to furnish an affidavit certifying to the pedigree of the males and the trap-nest record of the females. The registry association supplies the breeder with a certificate of registration for each bird and places a sealed leg band on each fowl registered. All applications for registration are subject to the acceptance or rejection of the association; therefore, all birds accepted must meet strict requirements of physical condition, color, etc., as well as pedigree and production.

A total number of twenty-six White Leghorn breeders have stock registered in the association. These include:

Sixty females in class A of the primary registry, with official egg-laying contest records of 200 to 250 eggs.

Sixty-one hens in class B of the primary registry, with home records of 200 to 250 eggs.

One hundred and thirty-one males in the primary registry with pedigree of 200 to 250 eggs on both sides of ancestry.

Thirty females (*Continued to Page 9.*)

What Is the Dairy Council Doing for the Producer?

"Inside Information" on the Numerous Activities of a Remarkable Institution

By JAMES C. KNOLLIN

Editor of ORCHARD and FARM

ALMOST every one who keeps in touch with agriculture in California knows about the California Dairy Council, but many farmers have an incorrect impression of its purpose and functions.

This body is not, as some of our readers apparently believe, an organization of distributors and manufacturers of dairy products. Rather it is a clearing house of information for the entire industry—and this, of course, includes that most important factor, the producer.

SAMUEL H. GREENE
Secretary-Manager
California Dairy Council

Every dairy farmer, therefore, should support the council and its work. Thirteen of its directors are owners of producing dairy herds, and dairymen in all parts of the State are members, but it is the ambition of Sam H. Greene, secretary-manager, to increase the producer membership to 100 per cent.

When the organization was launched after the war the public had been educated away from the consumption of butter by the Food Administration; in fact, a pamphlet published by the Department of Labor at that time openly advocated the use of oleomargarine! As a result of the fat-saving campaigns during the war, the demand for milk and all dairy products decreased, and an antagonistic frame of mind towards the industry was engendered.

Within eighteen months the Dairy Council cleared up this situation, and both the consumption and production of dairy products have been on the increase ever since.

GIGANTIC SCHOOL SURVEY

The first important work of the council was to conduct the greatest milk survey ever attempted in America. More than 300,000 school children in eight principal California cities were weighed, tested and questioned, and the co-operation of school authorities and parents secured in studying nutrition. Before this survey was made no milk was used in the schools. Now 60,000 half pint bottles a day are distributed among school children throughout the State.

In advocating wider use of milk, the dairy interests, unlike other dealers in food products, can cite the highest authorities on nutrition, and without making any exaggerated or misleading statements, can show that milk is the fundamental and complete food most valuable to mankind. The work of the Dairy Council, therefore, takes on humanitarian significance, and the position of the dairyman as a producer of extreme social and economic importance is made more apparent.

"But why," is asked, "are so many dairymen losing money or barely making a living? Why are there so many failures in the dairy business in California?"

The answer is found in the next important field of Dairy Council endeavor: that of educating the producer and improving production methods. Here is the way Sam Greene summarizes the situation:

"There is no reason why a dairyman should not make money in California. We are importing more dairy products than we export. We have the finest climatic and marketing conditions to be found in America. The California dairy farmer gets the highest average price for butterfat in the world. IF ANY DAIRYMAN IS NOT MAKING MONEY HERE, IT'S HIS OWN FAULT. We cannot expect to make the public pay for boarder cows and scrub bulls. The Dairy Council is supporting the program of the University Extension Service, whose object is to increase the average production of California dairy cows to 265 pounds of butter fat by 1930. The man who has 160-pound cows and makes no effort to improve his herd cannot blame any one but himself for failure to get ahead.

"In sections where foreign or backward dairymen do not appreciate the importance of better methods, we are trying to reach them through the landowners (in the case of tenant farmers), through the bankers, and through the chambers of commerce."

As an example of the varied activities of the Dairy Council, Mr. Greene recently visited San Luis Obispo County and addressed a gathering of high school teachers on the importance of milk in the diet; spoke to agricultural classes on opportunities for dairying in various parts of the State; pointed out to the chambers of commerce that 85 per cent of the income of the county comes from dairying, and urged greater interest in the dairy farmer and his problems; showed the land-owners how, by drawing up the proper kind of lease, they could aid both themselves and their tenants to increase efficiency and production.

The council has distributed several thousand copies of standard books on diet and nutrition; encouraged the appointment of public nurses and nutrition experts in the schools; brought to this State world-famous authorities to speak before civic bodies, clubs and teachers' organizations; promoted community projects, such as the recent "Better Sires Campaigns"; sponsored favorable and fought unfavorable legislation at Sacramento; co-operated with university and U. S. Department of Agriculture workers; secured the co-operation of many bankers, and through its publicity department distributed a vast amount of information to the public.

DISTRIBUTE FREE LITERATURE

By addressing Robert E. Jones of the Orchard and Farm staff, who has charge of this phase of Dairy Council work, any reader may secure copies of pamphlets entitled, "Talks to Dairymen," which explain how the organization is financed, how it is managed, what it hopes to accomplish, and how new members may help the cause. Mr. Jones' address is 216 Pine street, San Francisco.

The important point concerning the Dairy Council, from the producers' point of view, is this: No dairyman, individually, or even through a small local group, possibly can hope to accomplish the things which are done with comparative ease by a big, representative council, supported by the entire industry. It is Mr. Greene's ambition impartially to serve the cow-owner, the ice cream manufacturer, the creameryman, the retail distributor, the wholesaler, the dealer in machinery and equipment. They have common problems. That which benefits one, helps all. And that which helps the whole industry aids all classes of farmers and the entire Nation. For "the dairy cow is the keystone of the agricultural arch."

ORCHARD and FARM

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE

Pithy Paragraphs

HEAVY LAND FOR INTENSIVE CULTIVATION - That much of the heavy, "adobe" soil of Central and Northern California eventually will be tilled in small units by intensive producers, is the opinion of a soil expert who has given much study to the question. "Soils which are avoided now because they are hard to handle, may prove to be the richest producers," says this investigator. "It is only a matter of working the heavy soil at just the right time. The fertility is there, but it can be mined only when the land is divided into small units. The man with a few acres of such soil, by working it up when it is in the right condition, can produce a seed-bed that will reward him abundantly."

KING GEORGE GETS CALIFORNIA ORANGES. The difference between a monarchical and a democratic country is well illustrated by the difficulty recently experienced by C. B. McClosky, California Valencia orange grower, in giving two boxes of his product to England's ruler. Detectives were obsessed with the idea that McClosky was trying to poison the king.

The American was arrested, taken to Scotland Yard and forced to eat three of his own oranges—to prove that the fruit did not contain poison. After the official protectors of His Royal Highness had spent three days in carefully considering the matter, the enterprising citrus grower was permitted to present his gift to the king.

President Harding frequently receives gifts of food and other articles, which donors have no trouble in having accepted.

DEHYDRATION COMING INTO ITS OWN Interest in dehydration among fruit growers is growing by leaps and bounds. One manufacturer of evaporators who sold his first outfit last season about June first, reports the sale up to June first this year of more than twenty plants. It is said ten dehydraters have been installed in one small prune district during the past twelve months. Any grower who has lost half a crop because of bad weather can see the advisability of eliminating this risk—and we now have dehydrators which do the work without fuss or trouble, turn out a product far superior in quality, flavor and cleanliness to the sun-dried fruit, and meet every requirement of the California producer. We venture the prediction that dehydrated fruit eventually will command such a premium among discriminating consumers that sun-drying in this State will become practically obsolete!

BONDED AGRICULTURAL ENTERPRISES The sale of bonds to finance livestock, fruit growing and other agricultural enterprises, while by no means a new development, is becoming more and more general. A number of farming corporations, having large assets in land, equipment and stock, have floated through investment houses good sized bond issues, and the financial agencies report an eager demand for desirable, recommended securities of this sort.

Only recently an important deal was consummated in the Sacramento Valley by A. H. Quatman and associates, who will develop 6000 acres of the old Moulton ranch near Butte City. The sale of bonds was authorized only after most rigid appraisal and investigation by State and financial authorities. Diversified farming on a big scale, with plenty of money for improvements, will characterize the operations of this company. Its successful launching is deemed of extreme importance and, it is believed, marks the beginning of a new era of development in the Sacramento Valley.

CHEAP POWER FUEL FOR FARMERS. Fuel alcohol, made from molasses and corn, at six and seven cents a gallon. Who said so? U. S. Bureau of Chemistry expert. Cornstalks and cull potatoes, being waste products, might be used to manufacture even cheaper fuel. Can it be done? It is being done in Germany, where there are 70,000 stills, most of them used by farmers in making cheap power fuel, according to the Congresional Record.

Why are not American farmers making cheap power fuel? After scientists had perfected the process of manufacturing alcohol from cornstalks, cull potatoes and other refuse products an effort was made to legalize the distilling of denatured alcohol by farmers. Congress finally enacted such a law, in spite of the opposition of the producers of distillate and gasoline. Then there was rejoicing in the agricultural camp.

Farmers thought they had solved the problem of cheap fuel for their tractors and gas engines. But their joy was short lived. Producers of competitive fuel prevailed upon the Government to issue 152—count 'em!—regulations, governing the operation of farm fuel stills. These rules were so numerous and difficult to follow that farmers gave up the fight in despair and have continued to pay tribute to the distillate and gasoline makers.

Last Autumn tens of millions of bushels of potatoes, which might have been used to make cheap power fuel, went to waste.

"What's New?"—Keeping Abreast of Agricultural Progress

Serve Ripe Olives Free

DURING the past few months the California Olive Association has presented more than 500 leading men's and women's clubs of the United States with generous quantities of ripe olives, for the purpose of convincing consumers of the superiority of ripe fruit over the green product.

Women Harvest Hay Crop

FINDING it impossible to hire help, Mrs. Kate Russ and Mrs. John White of Bellevue (Sonoma County) recently cocked their twenty-acre hay crop. The neighbors, who also are experiencing difficulty in obtaining needed labor, say the women's hay was perfectly shocked.—K. R.

Spraying Trees From Balloons

BECAUSE of the success of aeroplane spraying, tests are to be made with balloon spraying this summer, by the U. S. Department of Agriculture. Poisonous dust will be used to kill gypsy moths in New England forests. Millions of valuable shade, ornamental and forest trees have been killed or greatly injured by the pest mentioned.

Farm Bureau Movie Shows

THE Farm Bureau is giving a series of free moving picture shows in Los Angeles County, to illustrate the work being carried on in California by this organization. A first class feature photoplay is included in each evening's entertainment. Two hundred and fifty such shows given in the State last year proved unique and interesting.

Ship Many Spring Lambs

IT IS estimated that Idaho will ship 1,500,000 lambs this year; Utah, 600,000; Nevada, 350,000; California, 250,000. The Arizona lamb crop was 100 per cent, while the Nevada crop was 80 per cent, which is 10 per cent higher than normal. Kentucky and Tennessee lambs were three weeks late in reaching the Chicago market, due to unusually cold, wet weather.

Yolo Raising More Sugar Beets

A CONSIDERABLY larger acreage of sugar beets is being grown in Yolo County this year than last. In the Clarksburg district 3800 acres of beets are expected to yield 65,000 tons, according to a representative of the Alvarado refinery. The yield last year was seventeen tons per acre. Bigger yields and better prices are anticipated this year.

Increase Almond Membership

THE membership of the California Almond Growers' Exchange has been increased 600 during the past year, being now 3105. Indications are that the largest crop in the history of the organization will be harvested this year, some estimates placing the expected tonnage at 25 per cent higher than that which was signed up under the five-year pooling agreement.

Short Staple Replaces Pima

IN spite of the fancy price procured for Pima long-staple cotton, Arizona growers are discarding this variety for the short staple kinds, because the latter yields so many more pounds per acre. The acreage of Pima is less than last year by 38 per cent, while the area planted to short staple cotton shows an increase of 343 per cent, the net gain in cotton acreage being 27 per cent.

Prizes for Puncture Vines

PRIZES amounting to $20 have been offered by the Durham Farm Center to school children for assisting in the eradication of the puncture vine, so-called on account of its unfortunate habit of puncturing auto tires. The plants are brought to the Durham Hotel in bundles of 100 and the standing of contestants chalked up on a bulletin board, daily changes indicating how the children are running.

Import Chilean Grapes, Pears

THREE HUNDRED crates of grapes and a quantity of pears recently were shipped from Valparaiso, Chili, to San Francisco and sold in the latter city. The pears went fast, some bringing $5.50 a box. The grapes arrived in poor condition and had to be repacked. A few brought $1 to $1.25 a box, but most of them sold for considerably under one dollar. The shipment was made at the end of the Chilean fruit season and is said to be the first of the kind ever made to San Francisco.

Bringing in Foreign Beans

AS a result of the high value of the American dollar on foreign exchanges, there have been heavy importations of beans into the United States during the past few months.

Madagascar limas were sold 3 cents below the price of California limas, while the difference between the price of foreign pintos and those grown in Colorado and Mexico was even more in favor of the former, despite the tariff tax. The result was a slight slump in the domestic bean market.

Prices on the new bean crop are expected to be considerably higher than those which prevailed last year, due to depleted stocks, smaller acreage and dry weather.

Extend Cooperative Operations

AS a result of the passage of the Harris-Unman and Duval bills by the last session of the California Legislature, it is expected that some of the cooperative marketing associations will extend their operations by handling products for non-members, a service they previously were unable to perform.

Chickens Relish Soy Beans

AN acre of soy beans planted in a walnut orchard by a Marin County poultryman eagerly were eaten by laying hens, which relished both the plants and beans. The latter were protected to grain. The owner considered soy beans equal in nutritive value to meat scrap and much cheaper, as well as more wholesome.

Artificial Versus Sun Drying

THE number of California dehydrating plants increased forty-eight last year, now number 67 [illegible]. The dried tonnage was three times that of 1921. A number of prune growers have built dehydrating plants and planted their dry yards to fruit trees.

It is claimed that fruit artificially dried is of better quality than that dried in the sun, weighs more, is more cheaply produced and is never damaged by rain during the process of dehydration. Buyers discriminate against dehydrated apricots, although the latter are said to be cleaner and better flavored than those dried in the sun.

Irrigation for Lassen County

RECENTLY there was completed near Litchfield (Lassen County) an irrigation project which is taking 250 second feet of water from Eagle Lake through an eight-foot tunnel 7000 feet long and spreading it over 25,000 acres in the Baxter Creek and Tule districts.

The cost amounts to $50 an acre which is to be paid by 1943. The work was financed by Leon Bly, who sold the bonds at 5 per cent discount and gave a bond of $1,000,000 that he would complete the project as specified.

The lake, which now covers 29,000 acres, loses four feet of water each year by evaporation. It is planned to lower the lake 45 feet, which will reduce the area one-third and save a great deal of the moisture which now evaporates from the surface.

Women Sell Eggs Cooperatively

"INSTEAD of trading $2 worth of eggs at the cross-roads grocery for 50 cents worth of canned goods, the farm women of America should adopt the cooperative sales plan of Pacific Coast egg producers, which enables them to obtain a premium of 2 to 4 cents a dozen on the New York market," declared Aaron Sapiro, at a recent marketing conference of the American Farm Bureau Federation, held at Chicago.

Mr. Sapiro stated that the egg market of the Middle West was controlled by five Chicago packers and that farmers must stop dumping eggs into these men's hands, who force down the price. Since most of the eggs of the country are gathered and sold by farm women, the latter have taken steps to form a national egg marketing association for the purpose of improving conditions.

Ship Apples to South America

INSTEAD of sending Pacific Coast apples by rail to New York and reshipping them by boat to Rio Janeiro, Montevideo and Buenos Aires, fruit is to be sent by an all-water route through the Panama Canal direct to South American markets, if present plans of the U. S. Shipping Board are carried out. Passenger ships are to be used, with cold storage space reserved for fruits. This is expected to reduce transportation costs 15 per cent and increase the demand much more than that amount, because the fruit will reach consumers in better condition, as well as at lower cost.

Apples of only fair quality retail in South America at 6 to 9 cents each. This high price restricts consumption. The total apple imports from the United States amounts to about 125,000 barrels annually. The main shipping season is November and December. Chilean apples are marketed from January to April.

An Automatic Tray Stacker

A LABOR saver now being installed by a number of prune growers in Central California is an automatic tray stacker, operated in conjunction with the dipper and grader. The grower who has one of these outfits, equipped with a spreader, and who dehydrates his fruit, possesses the last word in mechanical equipment. Although rather expensive perhaps for the small grower, the outfit is said to pay for itself on a large ranch.

This equipment includes a specially designed, revolving drum type of dipper, which has thoroughly proved its efficiency in prune dipping during the past seasons. It is also equipped with a pricker board and changeable screens for green grading. To insure absolute cleaning of the green fruit before it is dipped in the boiling solution of lye, this machine has an extra long (six feet) clean-out screen over which the fruit travels before it is fed into the rotary dipper.

The trays are fed to the dipper and grader from the trucks of empty trays on roller conveyors, where the prunes are spread evenly over the whole tray by an automatic spreader. The loaded trays then are rolled on to the feeding chains, which carry them from the dipper and grader to the automatic tray stacker, where they are stacked in perfectly even stacks on the trucks ready to carry them into the evaporator.

Quality First on This Ranch

Fine Figs and Honest Oranges Prove Bulwark Against Menace of Price Fluctuations

AN APPARENT "freak of nature" proved a blessing in disguise to C. E. Goodale, prominent fruit grower and packer, of Lemoncove, Cal.

Frequently when nursery stock develops into trees not true to name, the buyer and the nurseryman come to words, if not to blows. But when Mr. Goodale secured some so-called "Black Mission" figs about 12 years ago, even though they seemed different from ordinary Black Missions, he acquired a very valuable asset.

The nurseryman who raised them still maintains stoutly they are Black Missions. Another nurseryman, equally prominent, insists they are Black San Pedros. Rather than argue with either of these men (whose authority appeared to be unquestioned), Goodale compromised by marketing his fig as the "Goodale Black." It is said at least one commercial tree propagator has secured a large number of cuttings, and it is intimated that a new and better fig, resembling both the standard blacks, yet superior to either, may be introduced generally as a result of this "happenstance" on the Goodale ranch.

Just what conditions brought about the unusual development of these trees is a matter of conjecture. Some observers believe the climatic and soil conditions had something to do with it.

LARGE ANNUAL YIELD

At any rate, the five acres of trees are producing annually from 20 to 30 tons of fresh figs and 10 to 15 tons dried, all of which command a premium because of their exceptional quality. Although as much as 50 cents a pound has been realized for the fresh fruit, an average price of 12 cents is considered good. Mr. Goodale has established a special demand for this fruit, which is marketed under his own brand, "Goodale Ranch Fancy Black." Most of the green fruit is sold in San Francisco, although some has been shipped to Los Angeles.

This grower is of the opinion that future Eastern shipments of fresh figs in refrigerator cars can be made quite generally profitable. Local shipments by express in small lots have been very satisfactory up to 300 miles, he says.

Only the finest quality figs are picked for fresh shipment. During the first week in May this year the trees were laden with one of the heaviest early crops they have borne in years. Two crops are harvested regularly; and when there are early fall rains, frequently three.

TREES ARE THINNED

In order to insure size and quality of the fruit, the trees are thinned out (pruned). The owner states this has the same effect as thinning the small fruit on the apricot or peach; that is, less fruits are borne, but the total tonnage is decreased very slightly, if at all. Considerable brush is removed from the interior of the trees in the Goodale orchard.

Fertilization, also, is a factor in improving the quality and size of the fruit. About five pounds per tree of organic potash is applied annually.

An interesting observation in connection with this orchard is that half the trees, which are on sub-irrigated land, are heavier producers and apparently hardier in every way than half which are irrigated. It is presumed the constant and abundant availability of water accounts for this difference in favor of the sub-irrigated part.

Mr. Goodale believes trees of this variety, for quality production and best handling, should be planted 30 feet apart.

CITRUS AND WALNUTS GROWN

The Goodale ranch produces a large tonnage of citrus fruit, as well as some Franquette and Mayette walnuts. The French varieties seem to thrive in those sections of the Interior Valley where soil conditions are right. In Mr. Goodale's opinion, however, very few sections in Central California have the necessary deep, rich, heavy loam soil in which walnuts are thriving in his vicinity.

On the Goodale properties is located the citrus-packing house of the Honora Realty Company, one of the most modern plants in California, with a capacity at present of three cars a day. Provision has been made for the installation of additional units.

If there is anything of which F. L. Atwood, packing house manager, is more proud than the building and equipment, it is the good name this plant enjoys for quality fruit. "Our Levis-Goodale oranges took firsts in all the plate exhibits at the 1921 Valley Citrus Fair, as well as first in 45-box rack display," he stated.

This plant, operating under the Sunkist brand, also handles fruit from a large adjoining acreage. Particular care is taken in the packing, which costs 12 cents a box for the first grade.

Atwood's system of checking and keeping records is both simple and complete. Each grower is designated by a letter, and each of three grades by a color (red, white or blue). The size is stamped upon the box and ticket. The ticket accompanying every box of fruit, therefore, indicates grower, size and grade, and the 396 tickets representing a carload give a complete record of the shipment.

As an advertising and publicity feature, a printed reproduction of a blue ribbon, indicating the success of the plant in exhibiting, is applied to each box of the "Sunkist" brand.

"NOT BED OF ROSES"

The Goodale properties, embracing the Levis Fruit Company lands, are considered among the most profitable and best managed in the Lemoncove district.

"But don't," pleaded Mr. Goodale, "give any one the impression that producing fresh figs for market or selling high-quality oranges is a bonanza, free from worry and loss. The expenses of such an enterprise mount in proportion to the care exercised in production and packing, and in the event of severe depression the losses are heavier. But we believe that in standardizing our quality, and thus establishing our own special demand, we have taken a step toward stabilizing our business and removing some of the gambling chances that the average grower must take."

Hog Shipping Crate

THE simplest way to make a crate for shipping hogs is to construct it out of inch boards, with corner pieces, as shown.

The size will depend upon the size of the animals to be shipped. At the same time, a crate that will hold one 700-pound hog would hold several pigs. Therefore, it would be extremely difficult to decide on any particular size,

HOG SHIPPING CRATE

without taking measurements.

Bolts, instead of nails, should be used to fasten the corners of the crate. Stove bolts may be used, if the crate is sold with the hog, but carriage bolts are better, if the crate is to be returned.

The endgate is held in place with bolts fitted with winged nuts. A 12-inch board will make an endgate for a shipping crate 18 inches wide. The floor should be solid at the sides to prevent the hogs from getting a foot caught when the sideboard springs out.

—H. A. SHEARER.

Bean Straw Mulch

MULCHING young trees with straw is becoming rather a common practice in Southern California, especially in bean growing districts.

Seven acres of Valencia oranges planteted early this Spring by Jake Nidever of Carpinteria (Santa Barbara County) and treated in this manner, display excellent vigor, and have made creditable growth.

Mr. Nidever, who is farming some 200 acres on the practically frostless slopes above the ocean front highway, found that the use of a heavy bean straw mulch around each young tree increased considerably the moisture-holding capacity of the soil. This was demonstrated by raking away part of the mulch and comparing the damp earth beneath with the drier soil between the rows.

"We shall move the straw this fall," said the orchardist, "and scatter it about, plowing it under for fertilizer. In the meantime it will assist the young trees in making a vigorous start."

Yucca protectors were placed around the trunks of the little trees. Later it is planned to raise seven rows of beans between the rows of the orchard.

"COTS" EXPENSIVE TO PRODUCE

That it costs, at present prices for labor, equipment and supplies, $50 a ton to produce apricots in the Santa Clara Valley, is the assertion of Wellner Curtner of Milpitas, who states he will be inclined to dry his fruit and "gamble," rather than accept this amount or less.

GROW LARGER CROPS

Larger crops are grown when thirsty roots find the moisture for which they reach out. Moisture can be stored for them in the lower depths of the soil by breaking the plow-sole, hardpan or other subsoil strata. Plants are thus *invited* to root deeply.

"Subbing the soil" breaks up the impervious strata under the surface without turning it up on top. The fertile seed-bed is left up where proper germination and root growth can develop.

Power—lots of it—is required for "subbing the soil," and both the Best "Sixty" and "Thirty" have proved that they have it. Instances will be furnished gladly. Write also for a copy of the 1923 catalog.

There is a booklet, "Subbing the Soil," which may be had for the asking.

C. L. BEST TRACTOR CO.
San Leandro, Calif.

Sales Branches:

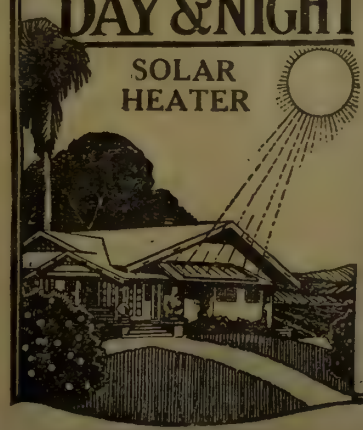
127 Montgomery St. San Francisco, Calif.
Distributing Warehouse 820 North Second St. St. Louis, Mo.
30 Church St. New York City

BEST TRACKLAYER TRACTORS

BEST TRACTORS

Let the SUN give you plenty of HOT WATER

DAY & NIGHT SOLAR HEATER



Will deliver an abundance of piping hot water in your home every hour of the twenty-four.

Indispensable if you have no gas supply.

Saves over 75% of water heating cost if you are now using gas.

Over 5500 Day and Night Solar Water Heaters now in successful operation—many for over 10 years.

Can be installed in new or old houses—no expense after first cost. We install. Home owners, write for particulars.

DEPT. A

Day and Night Water Heater Co.
632 Metropolitan Bldg.,
Los Angeles, Calif.

W. R. AMES CO.

SAVE WATER

Use Ames Surface Pipe Lock-seamed: 30 different sizes and weights Best workmanship. Immediate delivery.

Send for Folder P-3

W. R. Ames Co., Inc.
8th & Irwin Sts.,
SAN FRANCISCO

AMES SURFACE PIPE

Citrus Scales

For control of Citrus Scales we recommend *Ortho Orange Oil*, a white paste containing an oil which kills the scale without injuring the foliage or fruit.

Growers who have trouble with these pests will be delighted with the results of spraying with ORTHO orange oil.

Use ORTHO for RESULTS

ORTHO SPRAYS CALIFORNIA SPRAY CHEMICAL CO. WATSONVILLE, CALIF. HIGHEST AWARD PANAMA PACIFIC EXPOSITION 1915

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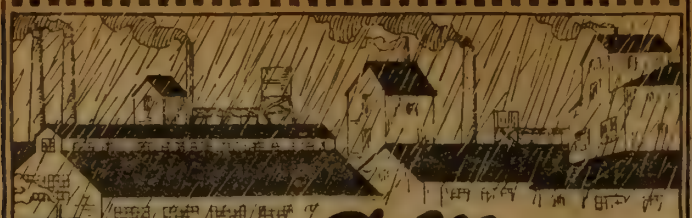

A Man, a Brush and Stormtight

FOR USE ON ANY ROOF IN ANY WEATHER

MAKE YOUR OLD ROOF LEAK-PROOF.

Stormtight is made of indestructible materials and withstands storms, heat and cold.

Easily Applied by Anyone

Just Pour It On and Brush It Flat

It needs no thinning or heating. It lasts longer than the average roof covering and costs much less because of its long, sturdy service.

Sold by Hardware Dealers Everywhere

Write for Booklet "Leak Proof-Roofs"

For Sale by:

L. Sonneborn Sons, Inc.

269 Spear St., San Francisco
318 E. Market St., Los Angeles

What About 1923 State Fair?

Prospects Best Since 1920 and No Retrenchment Anticipated, Says Secretary Paine

RUMORS that the economy program of the present administration would cripple the State Fair are scouted by members of the Board of Control and by "Charlie" Paine, secretary-manager.

CHAS. W. PAINE

"We shall have not only a big fair this year, but probably the greatest California has ever known," asserted Paine. "In 1921 and 1922 we felt the general agricultural depression and the reaction which followed the peak year—1920. Now money is easier again, livestock men feel more encouraged, crops promise heavy yields and good prices; in fact, everything points to a most successful fair season."

Considerable activity already is evident about the grounds and the secretary's office, in preparation for the big event.

CATALOGS READY EARLY

The premium book is now ready, and prospective exhibitors are urged to get early copies. Separate catalogs are issued for the poultry and dairy products departments, and later incorporated into the general catalog. All were completed early this year.

Livestock breeders will be interested in the news that Professor Coffey, famous sheep authority, now acting dean of agriculture at the University of Minnesota, will judge the exhibits of "woolies." Secretary Paine expects the sheep show this year to eclipse all previous events.

Another official of note is Charles Green of Moberly, Mo., who will judge horses.

Shorthorns will be placed this year by Frank Smith of St. Cloud, Minn. L. A. Weaver of Missouri will award swine ribbons.

FINANCIAL PROBLEMS BRIGHT

There is some confusion as to the handling of State Fair funds under the present budget system, especially since the present interpretation of the law indicates the gate receipts cannot be applied upon premiums and expenses, but must go into the general fund.

The appropriation, however, has been reduced but slightly and it is the belief of the management that it will be possible to offer attractive awards and in every way to maintain the high standard of previous exhibitions.

The attendance last year was about 160,000 and in 1920, the "peak" year, was 205,000. This year it is hoped to exceed the previous high record.

County exhibits promise to be representive of all parts of the State. It is hoped that in livestock entries and attendance, also, the southern counties will contribute their share towards the success of the show.

Animals Boost Grain Yields

Livestock and Barley Combination Advocated by Successful Butte County Producers

LIVESTOCK raising and grain growing are combined profitably by B. P. and H. C. Goodman, who operate ranches in Glenn County, near Butte City.

These brothers, who moved to California from the corn belt with their parents some ten years ago, now have charge of and are cultivating more than 1500 acres, of which forty acres is devoted to an almond orchard. Barley is the principal crop, the ranches being widely known for heavy grain yields. Their record production was forty sacks per acre, and the average maintained is far above the general average for the State.

To the livestock is given credit for improving the fertility of the soil in the face of almost constant grain production. About 2000 breeding ewes are maintained on the ranch, as well as a herd of Shorthorn cattle. Medium type Poland China hogs, to the number of 100, complete the fertility trio.

The grain land is pastured at least one year of three, the winter rains producing large crops of volunteer forage in the stubble, which furnishes sustenance until the following fall.

"Without livestock," say these family partners, "it is almost impossible to beat the grain-growing game over a period of years, except on virgin soil. We feel we must raise farm animals in order to stay in business. When the grain market is "off" we have not all our eggs in one basket. Just now, however, barley prospects seem bright, while the sheep and wool situation is the best in years. Therefore, we have hopes of making up for some of the recent disappointments that have beset the grain farmer.

"Agriculture is just a gamble, at best, and it seems to us almost like inviting disaster to depend upon such a product as grain alone, especially without some scheme for maintaining the fertility of the soil.

"Here it seems impossible to rotate with any legume on irrigated land, and we must do the next best thing: A small quantity of hay, with the grain we raise ourselves, suffice with the pasture to carry our livestock."

The Goodman plan provides an income from the land while it is idle, taking the place of summer fallowing so generally practiced in dry-farming districts of the West. Many other grain farmers rent stubble land to stockmen for pasture, but the Goodman brothers believe in garnering all possible profits, rather than letting an outsider take away valuable by-products.

SHEEP DESTROY WEEDS

"The best thing about the pasturing system," the brothers point out, "is that there is no excuse for manure spreading. Furthermore, the sheep clean up the fence corners, keep down weeds, and make the place look neater, incidentally manufacturing wool and mutton from feed that otherwise would be wasted."

These livestock lovers might be expected to show some prejudice in favor of horses for farm work. To the contrary, they depend almost entirely upon tractor power, operating two "seventy-five" track-layers. Unbroken colts, 5 and 6 years old and weighing 1400 to 1600 pounds, roam the pastures.

Butte City is said to be the second largest grain warehousing point in California, having a storage capacity of 600,000 sacks. Much of the grain raised in this vicinity is transported "down river" by barges on the Sacramento.

How to make Perfect Jam and Jelly

Anyone who will follow a simple CERTO recipe can now make perfect jam or jelly with any kind of fruit. CERTO, the jellifying property of fruit, is the reason. It contains no gelatine nor preservative and is highly endorsed by food authorities. With CERTO you preserve all the color, flavor and aroma of fully ripened fruit; boiling period is only one minute; no juice is boiled away, and expense by CERTO Process is less per jar than old method.

CERTO
(Surejell)
"Mother Nature's Year-Round Jell Maker"

Valuable *Recipe Book* with every bottle. CERTO is sold by grocers everywhere, or sent postpaid for 35 cents with *Recipe Book*.

Pectin Sales Co., Inc.
1040 East Ave., Rochester, N.Y.
In Canada send 40c for trial bottle with *Recipe Book* to Douglas Packing Co., Ltd., Cobourg, Ontario, Canada

Try this Crushed Strawberry Jam

For this jam it is necessary that *each berry* be broken up. Therefore, crush about 2 quarts ripe berries in separate portions, so that *each berry* is mashed. This allows fruit to quickly absorb the sugar during the short boil. Measure 4 level cups (2 lbs.) crushed berries into large kettle, add 7 level cups (3 lbs.) sugar and mix well. Use hottest fire and stir constantly before and while boiling. *Boil hard* for one full minute, remove from fire and stir in ½ bottle (scant ½ cup) CERTO. From time jam is taken off fire allow to stand not over 5 minutes, *by the clock*, before pouring. In the meantime skim, and stir occasionally to cool *slightly*. Then pour quickly. If in open glasses paraffin at once. If in jars seal at once and invert for 10 minutes to sterilize the tops. Use same recipe for Raspberry, Blackberry or Loganberry jam.

NEW WAY to KILL ANTS

Years of experience have proven to me that the most effective way to permanently exterminate ants is to provide a poison that will be carried to the nests. Marvel Ant Gelatin is a preparation I have perfected after years of research. It is a simple, safe gelatin that ants devour and carry to the nest, resulting in 100% extermination. A can placed on each ant trail does the work. I guarantee it. The safest preparation comes in sealed can which children cannot tamper with. Only the ants can reach the poison.

Household size, per can....60c
6 or more, per can....50c
Orchard size, lots of 100 or more ...$35.00

H. W. McSPADDEN
Entomologist
708 Towne Ave., Los Angeles.

MARVEL ANT GELATIN

GUARANTEED TO EXTERMINATE ANTS

MOLASSES

Sells for About Half the Price of Hay

Pure Hawaiian Feed Molasses is imported direct from the Islands and sold direct to you—for about half the price of hay.

When Pure Hawaiian Feed Molasses produces such wonderful and beneficial results for cattle, hogs, horses, sheep—even chickens—at such slight expense, who can really afford not to feed it?

Molasses means more milk from cows—more fat on hogs. Feed it and take the increased profits.

TON PRICES—F. O. B. CROCKETT, OR LOS ANGELES HARBOR, CALIFORNIA. Write for Delivered Prices.

TANK CARS.....$11.00 CARLOADS IN BARRELS.....$20.00 L. C. L. IN BARRELS.....$22.50

Booklet A-4 describes how others are feeding Molasses with great success. Write for it. It's FREE.

613 First National Bank Bldg. W. H. YOUNG COMPANY San Francisco

Cottony Rot of Lemon Roots

By J. ELIOT COIT

DURING the last few years there have been many cases of lemon trees dying suddenly with a peculiar decay of the main roots and crown. This has occurred largely on the heavier types of soil which are level and not particularly well-drained.

DR. COIT

An examination of the dead trees and those which are in process of dying shows that the trouble is due to the cottony fungus known as aclerotinia libertiniana, the same fungus which causes cottony rot of fruit in the packing house.

This fungus is a common inhabitant of the soil and often in the spring the little fruit bodies or toadstools which are about one-quarter inch in diameter and are produced upside down, may be seen under the trees.

On account of the fact that the decay of lemon roots caused by this fungus usually begins at the extremities of the roots and works up toward the crown, it is practically impossible to give treatment, because one cannot tell which roots are affected, or just where they lie in the soil, and the job of excavating and examining all roots to their extremities is, of course, impracticable.

In many cases, in fact, in a great majority of cases, the disease simply results in the dying and rotting away of the ends of certain roots, as the vigor of the tree stops the growth of the fungus and successfully resists it before it reaches the crown and kills the tree. A large number of trees, which have been doing poorly in spite of good fertilization, cultivation and irrigation, are now known to have lost one or more roots or parts of roots by cottony rot.

The general effect on the tree is the cessation of suckers or new growth in the tops, a reduction in the amount of fruit and a general sickly appearance. This condition occurs in various degrees, depending upon the number of roots affected.

Fortunately, it is only the occasional tree where the fungus follows up a root clear to the crown, which it quickly encircles and girdles, causing the sudden death of the tree. Such cases are, of course, hopeless. A tree thus injured should be removed and replaced with a new one, after a large hole has been excavated and filled with good, top soil.

The treatment of trees which are only partially affected has been a matter of considerable experimentation on the part of the writer. It has been found that the best policy is to cut the trees back in proportion to their degree of sickness, most trees having approximately one-half their branches removed. The limbs should not be stubbed back, but always cut to another limb. Thin out, reducing the size of the tree about one-half, without changing the general shape or destroying the main framework.

This work should be done in late spring or early summer, after the main crop of fruit has been picked. It should be followed up immediately by spraying the trees with whitewash, to prevent sunburn.

Our experience is that 90% of trees so treated will put out vigorous, dark-green, heavy growth, because the top is reduced down to a point where the root system left by the fungus can take care of it. Such trees almost invariably set a large crop of fine quality lemons on the new growth. Occasionally, however, the fungus is too close to the crown and succeeds in reaching it and killing the tree after the pruning is done. This is no argument against the treatment and the loss of occasional trees from this source cannot be avoided.

It should be pointed out, nevertheless, that much can be done to prevent the inception of this root disease by care in irrigation, in order to make sure that the soil is not kept too wet.

Cottony rot fungus is responsible for a good deal of damage in connection with frosted citrus trees, both lemon and orange. The spores gain access through cracks and wounds in the bark, resulting from freezing, and the bark decays with a peculiar, shredded appearance, which is characteristic of this particular fungus. Sometimes the trees were girdled and lost. In other cases only part of the bark was destroyed and the trees have a chance to recover.

Where the fungus worked around the base of the main limbs, frequently such serious damage was done that it is unwise to attempt to treat the trees. When this fungus works on the bark above the crown, it usually is accomplished by copious gumming. Where it is still active, it should be cut out cleanly and the wounds disinfected with bordeaux. Where the wood itself is exposed, cover with asphaltum pruning paste.

Dehydration Advantages

IT IS estimated that a hundred-ton prune crop will yield two tons more marketable fruit, if dehydrated, than if the product is sun-dried. Tests conducted by the California College of Agriculture resulted in 1012 pounds of dehydrated prunes from a ton of dipped fruit, compared to 869 pounds of sun-dried.

George Glendenning of Cupertino (Santa Clara County) obtained 1162 pounds of dehydrated prunes from each ton of fresh fruit and only 988 pounds for those sun-dried. This grower dehydrated 55,565 pounds of prunes last year, gaining 174 pounds on each ton of fruit.

Prunes are artificially dried in one day, are free from dust and grit, retain a better flavor and are more easily cooked. The rain risk, omnipresent bugaboo of the sun drier, also is avoided. Northwestern prunes are all dehydrated.

LOS ANGELES COUNTY LEADS

The farm crops produced in Los Angeles County last year were valued at $60,000,000, which is ahead of any other county in the United States, and greater than either New Mexico, Utah, Wyoming, Delaware, Connecticut, Rhode Island, Massachusetts, Vermont or New Hampshire. In spite of a $9,000,000 citrus loss, due to frost, there was a $2,000,000 gain over the previous year.

New Farm Bureau Signs

DISPLACING the expensive stamped metal membership signs in several California counties are printed cardboard signs with metal backs or containers, which cost less than 10 cents each. The printing is in large type on weatherproof stock, the card being inserted in the metal container by means of grooves. The color of the card can be changed each year as with automobile license plates, thus reminding the dilatory member that his dues are due. Many farm bureau centers provide for lettering, printing or stamping the owner's name on each sign. The State Federation believes general use of these signs throughout the State would do much to advertise and promote organization.

Wallace on Dairying

"DAIRYING is a branch of agriculture fundamentally important," declared H. C. Wallace, Secretary of Agriculture, during his recent visit to the Pacific Coast. "California dairying has gone a long way, since it is today in the hundred million dollar class. Dairymen out here have many things in their favor—particularly the low cost of buildings due to the mild climate, and the abundant quantity of feed per acre which may be raised under California's sunny skies. Everything out here is in favor of the growth of dairying.

"California's fruit industry needs dairying to maintain the fertility of the soil. Sometimes we Americans feel that soil fertility is inexhaustible, but sooner or later we realize that we must have livestock.

"Dairy products (particularly butter) are highly concentrated foods. They take from the soil only a minimum of fertility, for the manure gets back to maintain fertility.

"There is one important thing that California dairymen must take up courageously, and that is the tuberculosis situation. I am glad to know that California Dairy Council has taken the initiative in calling a conference of dairy interests on this vital matter."

Actual photographs of Dr. Morris's fine yeast-fed birds.

Dr. Morris gives Fleischmann's Pure Dry Yeast the entire credit for the excellent condition of these fowls.

"They surpass anything I have ever raised"

What Fleischmann's Pure Dry Yeast has done for Dr. E. C. Morris

Among the first to see the unusual possibilities of feeding Fleischmann's Pure Dry Yeast to poultry was Dr. E. C. Morris of Petaluma, California, who runs one of the world's largest hatcheries.

He found that it increased egg production, reduced death loss, eliminated diarrhea from chicks, and improved the vigor of his flock.

"I have never seen chicks feather so rapidly and develop such bone," he writes; "this we attribute entirely to the addition of Fleischmann's Pure Dry Yeast, as all other conditions are practically the same as in preceding years."

Feed one pound of Fleischmann's Pure Dry Yeast to every 1000 layers or 2000 chicks, in dry or wet mash, and you can have the same success that Dr. Morris has had.

Fleischmann's Pure Dry Yeast comes in 2½ pound cans delivered. We pay postage or express. Mail coupon today.

Fleischmann's Pure Dry Yeast can be profitably used for feeding all farm animals. Check on the coupon which booklet you want.

Caution: Do not be misled by imitations. Fleischmann's Pure Dry Yeast is ALL yeast—yeast in its most concentrated form. It contains no corn meal or other fillers. To be sure of results, order Fleischmann's Pure Dry Yeast—using coupon below or ordering from any Fleischmann agent in over 1000 cities.

FLEISCHMANN'S PURE DRY YEAST

Order direct from the Fleischmann Company's Branch Office in any of the following Cities:

New York, Chicago, San Francisco, Los Angeles, Seattle, Hartford, Portland, Me., Buffalo, Albany, Philadelphia, Pittsburgh, Baltimore, Boston, Birmingham, Cincinnati, Cleveland, Columbus, Dallas, St. Louis, Detroit, St. Paul, Newark and Toronto.

PRICES

1 to 10 cans $2.00 per can
10 to 20 cans 1.95 per can
20 to 40 cans 1.90 per can
Over 40 cans 1.80 per can

(Add 50c per can if outside U. S.)

Any number of cans delivered direct to you, transportation charges prepaid.

THE FLEISCHMANN COMPANY, Dept. D-272, 941 Mission Street, San Francisco, Calif., or 314 Bell Street, Seattle, Wash.

( ) Enclosed find $ ... Please send me.....2½ pound cans of Fleischmann's Pure Dry Yeast postage prepaid.
( ) Send me your book on raising pigs, cattle and horses on yeast-fermented feeds.
( ) Send me your book on raising poultry on yeast-fermented feeds.

Name .....
Street and Number.....
City ..... State.....

Farmers' Classified Market Place

CLASSIFIED RATES

60 cents a line (average 7 words). For white space, cuts or display type, most is computed according to total space occupied by advertisements.

Advertisements must reach us 13 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

FARM LAND FOR SALE

THE CHARLES WEEKS SYSTEM OF INTENSIVE POULTRY AND BERRY FARMS
ONE ACRE AND INDEPENDENCE
or
The Fine Art of Earning a Comfortable Living on One Acre in California. For those who desire to dwell in Sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles. Write for literature.
CHARLES WEEKS, Owensmouth, Calif.

A WILLAMETTE VALLEY STOCK, DAIRY FARM; 16 inch bottom, all tillable, but 20 acres. Diversified grain, clover, corn, fruit, berries, nuts, etc. Running water, ample rainfall, no irrigation. Great pasturage. Carries 250 sheep. Splendid hunting, fishing. 8 room house, barn, 50x60; 2½ miles grade, high school, stores, church, railway station, 12 miles Eugene University City. Rural mail. Price $12,000. Consider Calif. residence or acreage to $6000. Encumbrance $5000, 6%, 20 yrs. amortized payment plan. B. JOHNSTON, Agt., Saginaw, Oregon.

BEAUTIFUL Willamette Valley dairy, stock, grain, fruit farm, 153 acres, 5 mi. Cottage Grove; good auto rd.; ½ mi. school; 2 creeks, great trout fishing, hunting. Immense burnt-over free outrange joining; open the gate and let 'em go. 65 in crop. Rich soil, too. Lots fine saw timber piling; 7-r house, basemt.; barn 46x52, stock shed, garage; fruit, poultry, hog houses. Some dairy and range cows, team, 15 hogs, chickens; full set tools, machinery, equipment. $7000, terms. No trades. B. Johnston, Saginaw, Ore., agent.

FOR SALE OR TRADE—20 acre ranch, 13 miles south of Fresno on Elm ave.; 10 acres alfalfa, 8 acres Thompsons. Barn, fairly good house, electric lights, good gas pumping plant, 820 ft. surface pipe, all necessary tools, team of horses, one cow. Close to grammar school, 2½ miles to High School and churches, on mail, milk, cream and stage line. School bus by house. May consider coast property. C. Svendsen, Caruthers, Calif., R. I, Box 22.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

FOR SALE OR EXCHANGE—46 acres lemons, oranges, figs and grapes, in bearing; fine buildings, electric pumping plant; Porterville district, $60,000, terms. O. P. Smith, 921 Wright & Callander Bldg., L. A.

80 ACRES—Madera. Good sandy loam; level; plenty water; hog-tight fence; county road two sides; $150 an acre, terms; less for cash. Box 124, LIVINGSTON, Calif.

FARMS WANTED

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

NURSERY TREES AND PLANTS

BERGTHOLDT TREES. We are now booking orders for next season's planting. Some of the best standard varieties will again be in great demand and the supply of good trees short. Submit us now a list of your tree wants for next season's planting for quotations at the special prices we now make to the early buyer. Our catalogue of Horticultural Information and thirty years' experience in commercial Horticulture are at your service. Write us. THE SILVA-BERGTHOLDT CO., P. O. Box B, Newcastle, California.

CAPRI FIGS. These are necessary to make Smyrna figs bear. Will increase quality and production in all varieties. Circular free. CLAUD D. TRIBBLE, Elk Grove, Calif.

HELP WANTED—Instruction

AUTOMOBILE owners, garagemen, mechanics, send today for free copy America's most popular motor magazine. Contains helpful articles on overhauling, repairing, ignition, carburetors, batteries, etc. AUTOMOBILE DIGEST, 606 Butler Bldg., Cincinnati, O.

HEMSTITCHING, picoting attacht. Fits any sewg. mach. Does beautiful wk. Attrac premiums free with orders. Write for illus. descrip. B. Krafft, Box 896-OF, San Francisco, Calif.

HELP WANTED—Male

EARN $110 to $250 monthly, expenses paid, as Railway Traffic Inspector. Position guaranteed after 3 months' spare time study, or money refunded. Excellent opportunities. Write for free booklet G-91, Standard Business Training Inst., Buffalo, N. Y.

TURKEYS, DUCKS AND GEESE

WILD BLOODED TURKEYS—Eggs and stock for sale. Prices right. Small and large orders promptly taken care of. Jenkins, the Veteran, R. 3, Box 148, Burbank.

MAMMOTH WHITE PEKIN DUCK EGGS for hatching $1.00 per dozen; $8.00 per hundred. A. SURTMAN, Petaluma, California.

CIGARS AND TOBACCO

DIRECT FROM FACTORY—5-in., Cuban Twisters, long filler. Sweet as a nut, $4 per 100. Cigar clippings, 60c per lb. FRANK MILLER, 1208 W. 8th st., Los Angeles.

PAINTS AND VARNISHES

PAINT—BARN and ROOF—highest quality, $1.00 per gal. Guaranteed 5 years. Milroy Works, 591 Palisade Ave., Jersey City, N. J.

POULTRY

PROFITABLE POULTRY and COOPERATIVE ELECTRIC HATCHERIES, capacity 250,000 chicks. 180-290 egg Leghorns, Anconas, Reds, Rocks, Minorcas, Wyandottes, Brahmas, Andalusians (ducks, turks). Off every week. Also chicks from large 2-year hens for rapid growth into broilers, fryers, roasters. Booking for July to Oct. delivery. Reduced booked ahead. Early fall chicks profit most. "Never saw such vigor, rapid growth in chicks." Write BOX O, 13 N. FAIR OAKS, PASADENA.

CERTIFIED White Leghorn quality Chicks at Utility Prices. Choice free range, high egg-producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Prices, May and June, $3.50 per 25; $6.50 per 50; $12 per 100. Special prices 500 to 1000 lots. Safe arrival guaranteed. No money in advance; you pay on delivery. Established 1898. Our experience covers a quarter of a century. MUST HATCH INCUBATOR CO., 432 7th st., Petaluma, Calif.

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Growing Artichokes

THE rather high prices for Globe artichokes that have prevailed in recent months is apparently attracting the attention of many prospective or would-be artichoke growers, according to J. T. Rosa, truck crop specialist, University of California. "It is true that California has a virtual monopoly on the production of this vegetable," states Professor Rosa, "but it is equally true that the market for artichokes is strictly limited at the present time. This is partly due to the high prices for which artichokes retail when they finally reach the Eastern markets, and still more to the fact that the vast majority of Americans, outside of California, are not yet acquainted with this delicious, but unusual vegetable.

"It has been reported that one of the artichoke shipping associations will spend $25,000 this year in advertising their product. No doubt the market for artichokes will expand in the next few years, but it will perhaps be well for new or inexperienced growers to go slow on the development of large commercial plantings."

For many years the chief artichoke district has been around Half Moon Bay, just south of San Francisco, where there are about 4500 acres of "chokes." In the last year or two, commercial plantings have been extended down the coast, particularly around Santa Cruz and in the Salinas Valley. The coast sections have many advantages for artichokes, due to their mild, humid climate.

"Those who are considering the production of this vegetable in inland locations should first make sure that their climatic conditions are such that artichokes will grow well, produce buds of marketable size and quality, and that the crop can be brought into production at the right season—winter," points out the authority above quoted. The demand for artichokes is best from November to March.

"Another point that should be remembered is that artichokes do not come true from seed, although most seedsmen's catalogs advertise artichoke seed. The only reliable way to start an artichoke plantation is to obtain suckers or off-sets from old plants in a bearing plantation, selecting from the most desirable type of mother plants. The best time to obtain these plants and for setting them in the new plantation is from November to February."

MORE MILK BEING USED

The per capita consumption of milk sold by dealers in the United States has increased 17 per cent during the past decade, according to the U. S. Department of Agriculture.

What Readers Want to Know

GETTING RID OF BEES.

Can you tell me how to get rid of a swarm of bees, which have made their home under the eaves of our house?—F. M. HESSER, Solano County.

Probably your best plan to remove the bees would be to take off a few shingles above where the bees are, saw through the sheeting and cut the combs out. Wear a veil and heavy leather gloves and smoke the bees with a bee smoker *before* they are disturbed in any other way.

After the combs are removed, let the bees collect in a bunch, then sprinkle them well with gasoline or distillate, which will kill them instantly. Have no fire or pipes near when you do this. Keep the bee smoker over on the next lot.

When the bees are about all dead, paint the interior of the old nest with crude oil or asphalt paint. No other swarms will gather there for at least two years. If this precaution is not taken, bees are pretty sure to come there the next swarming season.—J. D. BIXBY SR.

CAUSES OF "STRONG" BUTTER.

Why do my Jersey cows produce strong butter?—MRS. MARLIN McAVOY, Santa Clara County.

There is no reason why the milk from your Jersey cows should produce strong butter, if they are fed on good hay and good dry feed and all other conditions are as they should be.

Sometimes cows are affected with garget, which you could no doubt detect and which probably does not occur with your cows. Such a condition, however, would affect the quality of the butter produced.

It is possible that the utensils you are using are not thoroughly sterilized. Utensils used for handling milk should be sterilized daily, if not twice daily, with live steam. It is quite difficult to produce butter of good quality from utensils that are not thoroughly sterilized.

Milk, as you probably know, takes up the flavor of other things quite readily, and this might also be responsible for the poor quality of butter produced. —G. E. GORDON.

TYPES OF RABBIT HUTCHES.

What is the best kind of rabbit hutches? How should rabbits be cared for?—JOE GARDELLI, Nevada.

In regard to the best type of rabbit hutch, will say that it all depends upon your requirements and what you can afford to pay for housing your animals. I am using some good, sanitary hutches which are two feet high and have slat floors.

I also have some hutches made out of large packing cases, with small mesh woven wire fronts. The latter have to be cleaned out twice a week and the floors covered with fresh straw. They are the best for raising young, but do not look as well as the others. If you can afford it I would advise buying ready-made hutches, knocked down.

If you have had no experience in raising rabbits, would advise you to start with a small number and increase as rapidly as you can take care of the animals properly. The main points to be observed are: good feed, regular feeding, cleanliness and a little personal attention twice a day. If you read Orchard and Farm you will doubtless find in it all the information you require to get started in the rabbit business.—GEORGE GREEN.

LEG WEAKNESS IN CHICKENS.

What is the cause of and cure for leg weakness in chickens?—MRS. LEE W. POWELL, Kern County.

There are several things that might have caused the leg weakness in your chickens. You have likely kept them in too close confinement. Chickens which are six weeks old should be outside as much as the weather will permit. Get them out on the ground as soon as possible and keep them out as long as the weather will permit.

Overheating is another cause, especially when the heat may come from the floor, instead of overhead. Chilling is also known to have produced leg weakness. Improper feeding may also bring about this condition. If you are feeding Sperry baby chick scratch and mash according to directions you should have no trouble.

In addition to this ration you should feed plenty of fine grit. It might be well to add charcoal and fine shell. Lawn clipping or other greens for a change might help the chickens. Lettuce greens are, of course, very good, but a change will often prove of benefit.

I would suggest that you feed scratch the first thing in the morning, in a deep litter, and again in the evening. It might be well to reduce on the mash and increase the amount of scratch. Give them all they will clean up in one hour at each feeding. If you can feed buttermilk and take away the mash it is likely that the vitality of the chickens will be improved. I would also advise that you add about 10 per cent bone meal to the 3 per cent which your mash contains, if you continue to use the mash.—W. J. DRYDEN.

WHY LAWNS TURN YELLOW

In reply to an inquiry from Orange County regarding lawn grass turning yellow, will say that there are several reasons for this condition, either of which might fit the case in question. One is the using of shavings for a mulch, instead of material containing plant food. The remedy is to apply a quick-acting commercial fertilizer.

Many lawns are lacking in humus, plant food and air. Heavy soils may have lime worked into the top inch and the surface covered with commercial fertilizer and dairy manure.

Shallow, frequent sprinkling leaves the lower roots dry, with the result that they suffer injury on a hot day, causing the leaves to turn yellow.

Sandy soil should be mulched with dairy fertilizer, free of weed seed and screened fine, and given a light application of plant feeding chemicals. If lime is used rake in the top inch when seeding.

Still another reason is too shallow spading of the soil when the lawn is made. This leaves a plow sole, or hardpan, which holds water around the roots, killing them.

Many contractors bury shavings, cement and other rubbish in the top soil of the front yard, rendering the making of a good, healthy lawn extremely difficult, if not impossible.—E. S. CALLAWAY.

KEEPING BEES FROM SWARMING

What is the best way to keep the swarming of bees down to the minimum? Have 60 colonies. The stands are placed on 20-foot 3 by 12 planks, which are one foot above the ground. The location is the south part of a three-acre family orchard. Should be glad to receive suggestions regarding the management of my apiary.—WILLIAM WILLETT, Delevan.

Try putting on a fresh super of extracting combs as soon as there are bees enough to fill the spaces in the super below. Confine the queen to the two lower stories. By keeping plenty of room ahead, the swarming impulse is greatly reduced.

If the bees start queen cells, place the brood comb, with the queen on it, in an empty lower story, filling out the space with sheets of foundation. Place a queen-excluder above, then above this a super of foundation sheets. Now place above this a super filled with such extracting combs as the colony may have, and, on top of all, the remainder of the brood combs.

This will leave your colony four or five stories high and requires lots of equipment, but is a sure-fire swarm controller. The brood is so far removed from the new brood chamber and so much space is given that they will think no more of swarming.

JARRING IRRITATES BEES

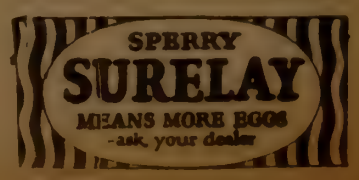
Your method of placing the bees a foot above the ground is a good one. Planks, however, are easily jarred, which irritates every hive of bees which they support and is liable to keep them ill-tempered. Remedy: Brace the planks very thoroughly.

I once bought six fine colonies of bees for a song, because they were "so cross," the owner said. They had been placed on planks laid across a windmill tower, and every time the mill turned or a person climbed the tower it jarred all the bees and kept them continually in a fighting mood.

Every colony on your plank supports should have an alighting board reaching to the ground. When bees come in heavily laden they often miss the entrance, especially when the weather is cool, and fall in the grass. This causes much delay in taking wing again, and affords every opportunity for toads, lizards and birds to snap up the bees. —J. D. BIXBY SR.

EGG AND CHICKEN TROUBLES

Incubator and brooder trouble last season, together with serious outbreaks of chicken-pox, have kept the production of California eggs for the first part of 1923 down to last year's figures, in spite of the large increase in the number of hens, according to J. H. Barber, general manager of the Pacific Egg Producers.—W. J. D.



Clean Culture for Prune Profits

Methods of Soil Management Which Bring Heavy Crops of Fruit Without Irrigation

By C. A. NIDEVER

[Editor's Note—The following well-written article was called forth by a composition on soil culture by W. S. Killingsworth, published in a recent issue of ORCHARD and FARM. The success of Mr. Nidever's method is indicated by the thrifty growth and heavy bearing of his French prune orchard in the Willow Creek district, near Paso Robles. Trees 36 years old have produced five tons per acre. This orchard is still thrifty and bearing heavy annual crops, although it has never been irrigated. The rainfall varies from 18 to 36 inches.]

THE term "clean cultivation" is generally used in reference to all-year practice, especially winter and spring work. A man who clean cultivates does not believe in growing a cover crop. He kills the first weeds that start in the winter and keeps his ground bare of vegetation all year.

Some orchardists still follow this system, although they are becoming fewer every year. The value of a cover crop is becoming too well known for clean cultivation to be followed by the majority of farmers.

Mr. Killingsworth evidently means by clean cultivation the keeping of the orchard clean of weeds through the spring and summer, after a cover crop has been turned under.

Under non-irrigated conditions, or dry farming, it is the usual practice to keep the soil clean after the spring plowing is done. In fact, the killing of weeds and maintaining of the dust mulch in order to conserve moisture are the main objects in view with all spring and summer cultivation.

Where irrigation water is plentiful some orchardists do not cultivate at all, except to plow under vegetation once a year. The soil moisture is kept at the right content by irrigating at proper intervals. However, such practice is exceptional, and there is a question as to whether it is good soil management.

PLOW UNDER COVER CROP

"It is our practice," says Mr. Killingsworth, "in the spring to plow the orchard before the ground becomes too hard, when the cover crop, consisting of volunteer cereals, alfileria, burr clover and other weeds and grasses, is sufficiently matured when plowed under to aid as a mulch and fertilizer. As soon thereafter as convenient the land is harrowed both ways with a steel tooth harrow, well weighted down. Immediately following this we use a large single or medium double disc, crossing as with the harrow."

Thus far the procedure is in accord with the best practice in dry farming, except that the working down should be done immediately after plowing—the same day, if possible. The soil then can be worked down to a fine mulch with the least cost. If it is left a few days the clods become dry and hard, necessitating extra work to pulverize them. If some heavy soils are not cultivated immediately after plowing it is nearly impossible to work them down into a fine mulch.

Where irrigation water is not available, the plowing under of the cover crop should be done not later than the month of March, in California. The first of April should see all of the land plowed and worked down with a good mulch on top. The object in view after that is to conserve moisture. Absolutely clean cultivation is essential if all of the moisture is to be kept for the trees. Every weed is a pump drawing water out of the soil and throwing it off into the air.

STIR SOIL AFTER RAIN

Every time that it rains the soil should be stirred to break the crust, kill weeds and maintain the mulch. This work may be done with a disc, springtooth, cyclone or other similar tools. The cyclone is a very fine tool to use for late spring and summer work. It kills the weeds, pulverizes the clods and in every way aids in making a fine dust mulch. It is a weed cutter and float combined.

In orchards over three years old not a living green thing should be allowed to grow after April, except the trees. Among trees under three years old some inter-crop may be grown, providing plenty of space is given to the trees.

After the last rain has fallen a good dust mulch of not less than three inches should be made. Nothing more need be done to the soil afterwards, except to use some kind of a weed cutter if the weeds start. Any summer cultivating, except to kill weeds, is a waste of time. It doesn't do the land any harm, but is unnecessary.

The theory of practical dry farming of today is that a few inches of finely pulverized soil on top prevents capillary action from taking place, thereby holding the moisture in the soil below. Capillarity takes place by contact of the soil particles, the moisture traveling from particle to particle until it reaches the top of the soil, where it is evaporated by heat of the sun. The dust mulch breaks the contact and keeps the moisture below.

Some one advanced the idea that a dust mulch settled down every ten days, so that contact was formed as before, and capillarity started again, making it necessary to stir the soil every ten days. Science and practice discarded that theory years ago and held it was sufficient to maintain a mulch and keep down the weeks.

LATE SOIL MOISTURE THEORY

The latest word on soil moisture control is by Professors Veihmeyer and Hendrickson of the University of California, who tells us that soil moisture does not move by capillarity, but is only pumped out by growing vegetation. If such is the case the dust mulch will cease to be of importance and will go into the discard, leaving the main object of cultivation to kill summer weeds. However, until this new theory is thoroughly proved it will be well to stick to the dust mulch.

Soil management might be divided under two headings: First, maintaining fertility. A cover crop should be grown through the winter and spring and then turned under not later than March. Without an addition of humus as a soil builder the land deteriorates and becomes hard and dead. The more weeds and grass that grow through the winter the better. Where it is possible, a cover crop should be grown.

Second, conserving moisture. After the cover crop is turned under and the soil worked down, the object is to conserve moisture for the use of the trees. Clean cultivation should be practiced and the soil handled as outlined.

Pedigree Poultry

(Continued From Page 3)

in class A of the advanced registry, with official egg-laying contest records of 250 eggs, or better.

Eighty-seven hens in class B of the advanced registry, with home records of 250 eggs or better.

Two males in class A of the advanced registry, each of which have ten or more registered daughters.

Two hundred and eleven in class B, with pedigrees of 250 eggs or better on both sides of parentage.

It is interesting to note that all of the advanced registry females were all heavy, continuous layers in their pullet year. Their records are characterized by being consistent, rather than particularly brilliant in any one month of the year. Also, it is interesting to note that only three of the one hundred and seven advanced registry females dropped down noticeably in production in the summer months of June, July and August, showing that the best layers do not stop laying and go into a molt during this period.

By far the most important thing in breeding is ability of the individual to transmit power or characteristics of high production to its offspring. In this connection it is interesting to note what has been accomplished by the two males in class A of the advanced registry section.

One of them is owned by D. B. Walls of Petaluma, and was bred at Hollywood Farm, Washington. He has a dam-pen record of 280-289 eggs and a sire's dam-pen record of 298-304 eggs. Ten of his registered daughters have the following yearly egg records: 302, 284, 265, 260, 246, 227, 224, 219, 217, 207.

The other male, owned by Ernest Williams of Sebastopol, was also bred at Hollywood Farm, and has a dam-pen record of 302 and a sire's dam-pen record of 275. Eleven of his registered daughters have the following 365-day egg production records: 313, 288, 278, 277, 276, 272, 265, 261, 260, 256, 253. Both of these males, which are in their fourth and fifth years, are still being used in breeding flocks.

Suggestions for Stockmen

"DON'T sell half-fat cattle for beef," advises R. M. Hagan, secretary of the California Cattlemen's Association. "Sell oftener and in smaller lots. Make them good and fat.

"It is exceedingly important that Government reporters be advised of all country sales. Such reports will be considered confidential and will not be available to either the assessor or income tax collector.

"Be careful to brand calves in exactly the same spot indicated on the record. The location of a brand is actually a part of the brand itself.

"Dehorn calves, since they will make a better growth in this condition and bring a better price when sold as fat steers."

HUNDRED-DAY PULLETS LAY

David Craig, Delhi State Land Colony farmer, has two White Leghorn pullets which began laying at the age of 3½ months and in the next three weeks laid twenty eggs. Who can beat this record?

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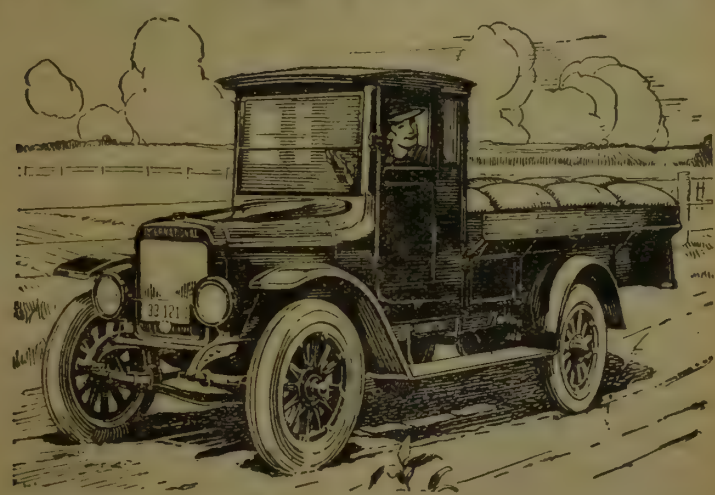

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Late Spark Makes Hot Engine

By B. D. MOSES

Division of Agricultural Engineering, University of California

"WHY does my tractor engine heat up?"

This is a rather frequent question. One cause not always is suspected. Suppose the next time "she boils" you let the engine cool down and then note the effect of changing the spark advance lever from full retard to full advance.

A sluggish pick-up indicates too late a spark. Then try cranking it slowly by hand, with switch on "battery" and spark fully retarded. Repeat this operation, advancing the lever a few notches each time until the place is reached where the engine kicks back. If you are able to advance the lever more than half its range, your timing is late. It should kick back with the lever very slightly advanced.

There is no advantage in having the spark occur any later than just enough to protect the self-starter or make hand-cranking safe. There is, however, a most decided disadvantage in having the spark late. Power loss and engine heating results, because of slow burning of the gas.

A further and more accurate check up consists of locating a piston at the exact time the spark occurs. Remove a spark plug from any cylinder, throw the transmission into high gear, jack up one hind wheel, then slowly and steadily turn the engine over until the piston is at the top of its course. A wire, long enough so that it cannot be dropped into the cylinder, may be used to feel the piston position through the spark plug hole. The spark should occur very shortly after the highest position is reached, with the lever on full retard and considerably before with lever advanced.

Unless one is familiar with the construction of the timer or interrupter, possibly the simplest and surest way of locating the time of spark is to watch the plug which has been removed, first disconnecting all other wires to prevent starting up of engine, then cranking the engine slowly by hand.

There are several reasons for a possible late timing: Worn cam or rollers in timer; some repair man has been overly cautious when reassembling your car and timed it late; the manufacturer, fearing that you might "forget to retard your spark" when starting up—with the possibility of an accident—has purposely made it a little late; the cam or timer may have slipped.

When your engine is timed right it will respond quickly to the advance lever and will very likely "knock" when running slow, with lever fully advanced.

While the job of retiming is work for a mechanic, or is generally considered so, yet with a little study of the particular ignition system on your automobile you should be able either to do the job yourself or very competently direct it.

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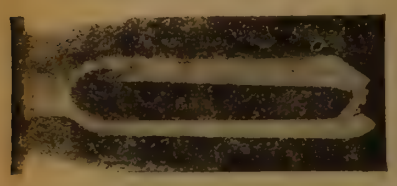

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Northern Roselle Buds

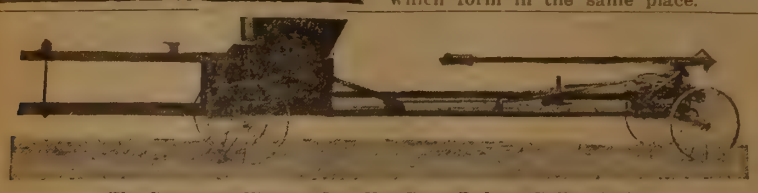
WHILE the roselle is a tropical plant, during the past two years it has been grown in different parts of Sacramento County with considerable success, according to Gladys M. Nevenzel, home demonstration agent, who gives the following information regarding this novel plant:

Roselle buds are used in making jelly, jam and sauce, also a beverage, which can be pasteurized and used for a summer drink, like fruit juices. Stems and leaves, as well as the buds, can be used for juice making, especially at the end of the season.

The plant is ornamental and adds to the attractiveness of a front yard. It should be allowed a space at least six feet square. Six plants will bear enough buds for an average family and a nickel's worth of seed will produce enough plants for several families.

Yields up to five pounds of buds per plant have been obtained in Sacramento County. The roselle is susceptible to frost and therefore should not be planted in this district until the last of March. The seeds are first soaked 24 hours in warm weather.

Irrigation and cultivation are about the same as for tomatoes. The blossoms, which resemble those of the cotton plant, appear in July. In about three weeks the hard, green seed pods, covered with brilliant red calyxes, are ready to pick. They appear at the axil of the leaf and should be separated carefully, in order not to injure future buds, which form in the same place.



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Agricultural Leaders of the Pacific West

VIII—F. W. TAYLOR, Private and Official Agricultural Expert

FREDERICK W. TAYLOR, agricultural expert, who is at present making his headquarters at Los Angeles, has had a wide and varied experience in official farm work. Beginning at the age of 22, when he was elected a director of the Iowa State Horticultural Society, he next became president of the Southwestern Iowa Horticultural Society. Moving to Nebraska, he was appointed professor of horticulture in the State Agricultural college.

That was in 1891. In addition to his pedagogic duties, Mr. Taylor served as director of the Extension service, organizing the majority of the Farmers' Institutes of the State. Eight years were spent aiding in the upbuilding of Nebraska agriculture.

In 1901 Mr. Taylor began two years' work as superintendent of the forestry, dairy and food products exhibits at the Buffalo Pan American Exposition. At the World's Columbian Exposition at Chicago in 1893 he had charge of Nebraska's fruit exhibit. He served as chief of agriculture, horticulture and forestry at the Omaha Trans-Mississippi Exposition and at the St. Louis World's Fair in 1904 was superintendent of the agricultural and horticultural exhibits.

Frederick W. Taylor

After a trip to Europe in 1906, Mr. Taylor returned to the United States and spent several years working on private agricultural projects. In 1907 he managed a large irrigation enterprise near Denver, Colo., and later superintended similar work near Scott's Bluff, Neb. In 1911 he was appointed director of agriculture in the Philippine Islands, a position which he held for three years. Among other accomplishments during this period of public service was the effecting of a 75 per cent reduction of rinderpest, a very destructive cattle disease. Within three years after Mr. Taylor left the Philippines the disease regained its former proportions.

Again returning to his native land, Mr. Taylor for three years worked on a large irrigation project near Tucson, Ariz. He went to Central America in 1920 to examine agricultural properties for a New York syndicate. Since then his time has been taken up with work for various firms and individuals.

The achievement which Mr. Taylor regards with the greatest pleasure, perhaps, is the introduction of Kherson oats, in 1896, while secretary of the Nebraska Experiment Station. In 1920 it was estimated that three-fourths of all the oats grown in Nebraska, as well as large quantities in other States, were of this variety. From seven ounces of seed brought over from Russia by Mr. Taylor 14 years before, 500,000,000 bushels of Kherson oats had been grown, as nearly as could be ascertained, worth approximately $250,000,000.

KEEPING COTTON SEED PURE

The best way to keep cotton seed from mixing, according to the U. S. Department of Agriculture, is for each community to grow but one variety, as is done in the Salt River Valley, Arizona.

Cows Pay for Land

(Continued from Page 2)

happen. They are the result of years of careful, painstaking labor.

"Purebred bulls and the Babcock tester have enabled me to build up my herd to its present production position," explained White. "I began testing my cows for butterfat five years ago, and since then have been weeding out poor milkers and replacing them with high producers. The use of bulls from good milking strains has made it possible to grow each year a better grade of heifers for the replacement of old stock."

It is estimated that every year 10,000 cows are shipped into Los Angeles County and sold to local dairymen. Large experience, guided by close study, has made White very successful in selecting winners in the milk producing race.

GETS FIRST-CHOICE COWS

Most of the cows coming to Los Angeles are sold at public auction. Instead of waiting for these sales, White keeps in touch with importers, and whenever a desirable shipment arrives he looks over the herd and buys the best individuals, thereby getting the edge over those who buy at auction the remaining animals. From $150 to $200 is paid for a good milk cow.

"The fact that a cow is a purebred doesn't necessarily imply extra good milk production," declares White. "The price of dairy cows should be mainly regulated by the ability to fill the milk pail, just as the value of laying hens has come to be measured by egg producing capacity. Fine feathers and pretty pedigrees are all right for breeders of fancy stock, but are of little value to farmers who depend upon egg and milk for revenue."

White has recently imported a splendid young bull from Wisconsin and has four other herd bulls: King Marco Alcatra Fifth, bred by Anita Baldwin; two Fred Hartsook bulls and one obtained from Dr. Pottenger of Sierra Madre. He has one cow which has given 100 pounds of milk per day and others which produce almost as abundantly.

ALFALFA CHIEF CROP

Most of White's farm consists of alfalfa meadows, a small portion being used for growing grain. The reader probably has a mental vision of 500 sleek Holsteins, peacefully cropping green legumes. This picture would be O. K. for the Imperial Valley and other regions where land is still comparatively cheap, but is all out of focus for the Burbank-Lankershim district.

"You can't afford to pasture $500 alfalfa land and stay in the game long," avers White. "We keep all our cows in corrals, 365 days in the year. At milking time they are fed a three-cornered ration of hay, grain and silage. During the growing season—April to October—we feed two-thirds green alfalfa and one-third dry hay. This gives the cows practically all the advantages of pasturing and is much more economical."

HANDLING MUCH MANURE

As may easily be imagined, 500 cattle make a great deal of manure. Two thousand loads were hauled out last year, covering all available ground. The surplus in April was being sold to orchardists.

"Selling manure off the farm looks like poor business," admitted White, "but at present we have no good place to put it. If it were spread on the growing alfalfa it would soon be raked up with the hay and soon find its way back to the corrals. As soon as the oat crop is harvested, manure can be spread over the stubble."

"What do you consider the best grain ration?"

"That is hardly a fair question," replied White. "At present we find it pays best to feed rolled barley, cocoanut and cottonseed meal. At another time, or in another place, other feeds might be used to better advantage.

"Beet pulp is one of the best dairy feeds obtainable, but other farmers have found this out and the supply doesn't begin to meet the demand. Two years ago we bought 200 tons. Last year we doubled our order, but could obtain only 125 tons, the factory reducing all their orders in similar proportion. The price has kept pace with the demand. Formerly a waste product, beet pulp now costs us $30 a ton at the Anaheim sugar factory, and retails as high as $70.

"Cull raisins also make excellent cow feed. We buy them by the ton, paying $16 to $22. Bran and oats are also good."

An average daily dairy ration consists of 12 pounds of grain, 15 pounds of hay and 30 pounds of silage. The latter is made of corn, which yields about 15 tons to the acre. One thousand tons of silage are fed in 12 months, the silos being refilled twice between September and November.

Bringing the Young Vineyard to Productivity

By **FREDERIC T. BIOLETTI**

Written for ORCHARD and FARM

Article III—The Second and Third Stages

THE first stage in the upbringing of a young vine is the development of a strong, abundant root system. This usually requires the whole of the first year. The second year is devoted to developing a single strong cane from which to form the trunk, and the third, fourth and fifth years to developing a full complement of arms on the head of this trunk. The vine then is in full bearing.

At the end of the first growing season, as described in the last article, the young vine will be provided with a large root system extending in all directions through the soil six feet or more. It will have a top growth of one, two or more canes, two, three or more feet long.

Soon after the leaves have fallen the vines should be pruned. Every cane should be removed except one, and this should be shortened to two buds.

The vineyard then should be staked or trellised, according to the system of pruning to be adopted—head pruning, cane pruning or cordon pruning. These systems are defined in circular 245, "Vine-Pruning Systems," and the methods of staking and trellising are explained in circular 252, "Supports for Vines." These publications can be obtained free of charge by application to the director of the agricultural station, Berkeley.

Soon after pruning all surface roots should be removed carefully. Perhaps the best way to do this is as follows:

(1) A furrow is plowed away from each row of vines on each side as close to the vine as is possible without danger of injuring it. This leaves each row of vines growing on a ridge about six or eight inches wide.

(2) With a pronged vineyard hoe six or eight inches of this ridge is cut out on each side of the vine and the soil cleared away so that the underground stem of the vine and all surface roots are clearly visible down to about five inches.

(3) All these roots then are cut off close with a sharp pair of small one-hand pruning shears. At the same time any suckers or shoots from below ground are cut off in the same way.

ROOT REMOVAL IMPORTANT

The removal of surface roots the first and the second years is very important, as if allowed to remain they will develop into main roots and sooner or later be torn out or severely injured by the plow. After the second year there is little or no danger of large surface roots developing. The main roots are formed below and frequent plowing near the vine will keep any small roots from becoming large.

The cultivation and irrigation needed during the second year are the same as during the first. The soil should be well supplied with water to a depth of at least six feet by rain or irrigation before the vines start their buds in the spring. Plowing, discing and harrowing sufficient to allow penetration of water, to bury weeds and to level and "fine" the soil should be done by the same time.

In deep, retentive soil no irrigation is needed during the summer of the second year. Indeed, it is dangerous, as it may prolong growth until it is killed or prevented from maturing by the cold weather of autumn.

Soon after growth starts the first disbudding should be done. This consists in rubbing off every shoot or swollen bud but one. The object is to direct all the energies of the vine into a single shoot. All needless shoots should be removed before they are four inches long. This will require going over the vineyard at least twice.

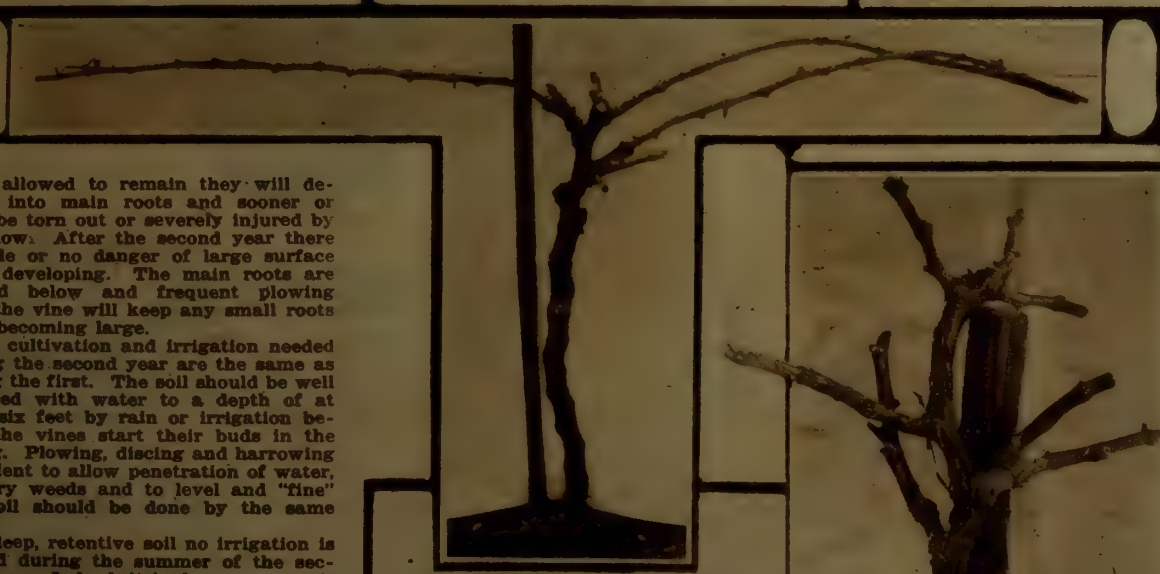
Two or three weeks later, or as soon as a large part of the vines have shoots 10 or 12 inches long, the vineyard should be gone over and these shoots tied loose to the stake with soft sacking twine. At the same time any other shoots which have started should be removed.

REPEAT TYING PROCESS

This removal of needless shoots and tying up of the single reserved shoot should be done as often as necessary until the shoot has grown five or six inches higher than the point at which it is desired to head the vine. This will be from 20 inches for low, weak vines like Zinfandel or Muscat to 36 or 48 inches for vigorous vines like Malaga or Tokay. From three to four ties usually will be needed by each vine.

Method of pruning and tying up vine that has made only a moderate growth. For varieties to be head pruned with either spurs or canes.

Exceptionally well grown vine at the end of the second season. Each of the five good spurs should produce two to six bunches. After bearing, the two lower spurs should be removed and six or more spurs left on each of the remaining branches, the vine's "arms."



If this single reserved shoot reaches this height before the middle of August it should be tipped; i. e., an inch of the growing tip should be pinched off. This will divert the growth of the vine into the lateral shoots which start on the main shoot at the base of the leaves. This growth of laterals will make the main shoot "stockier"—that is, thicker—and laterals which are well placed can be used for spurs at the next winter pruning.

Soon after the leaves have fallen the vines should receive their second winter pruning. Each vine will consist of a single cane, with or without laterals. This cane should be cut back to the length at which it is desired to head the vine. The cut should be made through the first bud, above the last bud which it is desired to have grow. This is to give a stub at the end to facilitate tying to the stake.

If the cane has strong laterals above the middle which are at least one-quarter inch thick, with plump, well-matured buds, they should be cut to spurs of one, two or three buds, according to their size and vigor. All laterals below the middle should be removed. Any vine which does not possess the above requirements should be cut back to two buds as was done at the previous winter pruning.

Figure 1 shows a good cane, 30 inches long, without laterals. Figure 2 shows an extra heavy cane with four laterals cut back to spurs. Some of these laterals are so vigorous that they have sent out secondary laterals which have been left with one bud.

The first vine has six or seven buds, which may be left to produce canes and which may bear some grapes. The second has two or three times as many buds and can produce two or three times as much crop.

Each vine is tied up carefully with good heavy twine. A material known as grape twine, which resembles ordinary binder twine but is twice as heavy, is excellent. If tarred, it holds and lasts better. A tie with a hitch around the upper joint, of which the top bud has been killed, and one tie about the middle are needed—or two equally spaced if the cane is longer. All ties except the top one should be loose and should not turn around the cane, or the vine will be strangled as it grows in the following summer.

We now have the vines at the end of the third growing season. They have strong systems of main roots radiating from the bottom of the original cuttings and branching and rebranching throughout the whole area of the vineyard. Each vine has an embryo trunk in the form of a single stout cane tied up to a vertical stake. Each cane has from eight to twenty buds from which to develop arms and to produce fruit. During the following season the vines should produce sufficient foliage to cover the ground, and they will require much more water than they have used during the first three years.

The removal of surface roots should be attended to this winter again, and if this has been well done during the preceding two winters this will be the last time that it is necessary.

During the spring and early summer the vines must be carefully disbudded and suckered. All shoots starting on the lower third of the cane should be removed before they are more than four inches long. All suckers from below the surface should be carefully cut or rubbed off close to the stem. Extreme care in suckering during the first three years will cure the vines of the tendency to form suckers and save much expensive work when they are older.

Vines at this stage should make a very rapid and vigorous growth during the spring and early summer. As the growth is limited to the buds on the upper two-thirds of the cane, the shoots will tend to be large and succulent. In windy districts it may therefore be necessary to "tip" them. This should be done when they are about 18 inches long. At this time the blossom bunches are formed, and tipping can be done without injury.

The effect of tipping is to arrest the increase in length and to cause the shoots to thicken and toughen before they form a new growing tip. By this time the worst winds usually are over and the shoots are better able to withstand them if they come. This tipping should be limited to pinching off the extreme end of the growing top. Topping or cutting off several inches or a foot or more is very weakening and decreases both the growth and the crop.

If the vines are trellised it is much better to omit even tipping and to protect the growth by tying two of the strongest shoots to the twine. The other shoots will protect themselves by attaching their tendrils to those tied to the wire.

The upper picture shows a three-year-old Sultanina vine, ready for the fourth season. Three excellent fruiting canes have been left just below the 30-inch wire, also four renewal spurs of two buds each. Such a vine should produce 50 to 100 pounds of grapes. The vigorous Muscat vine, at the right, has had its third winter pruning. Seven spurs, each with two to four buds, have been left to bear a heavy crop.

INSTALL FORTY PUMPING PLANTS

More than forty new pumping plants have been installed this year on the Holland Land tract near Sacramento. Representing an aggregate of more than 800 horsepower, these pumps, throwing from five to fourteen inch streams of water, will provide irrigation for diversified crops and stimulate intensive farming operations in this 20,000-acre district.

Successful Farming in the Salt River Valley

By HARRY WELCH

TRUCK gardening in the Salt River Valley of Arizona has attracted many Americans who are making a conspicuous success of the business. It is true that there are quite a few Japanese gardeners and some Chinese, but they by no means monopolize the industry.

There are four truck garden crops which are now shipped out of the Salt River Valley in carload quantities—cantaloupes, lettuce, spinach and peas.

Cantaloupes have been grown here for many years and almost always have brought the grower good returns. The past season there were about 1500 carloads of cantaloupes shipped from the valley, mostly to large Eastern cities. The average yield is approximately 190 crates per acre.

Over 500 carloads of lettuce were shipped out the past season. Lettuce growing has reached a stage where it has become a real art, skilled growers making good money. The highest priced lettuce is that which matures in November and early December. Plantings maturing in March and April bring better prices than the January and February crops. The acreage of lettuce will be considerably increased this season.

William Thompson, secretary of the United Produce Growers' Association of Glendale, is one of the best lettuce growers in the valley. For several years he has produced lettuce which he has named the "Dining Car Special," with which from November to April he supplies Harvey, the celebrated caterer to rail travelers.

W. O. Ferris, also of Glendale, has specialized during the past few seasons on late lettuce, which develops after the main crop is off the market. He markets this crop in Phoenix. Mr. Ferris also has been quite successful in growing late cantaloupes.

The shape of this fine cluster of Arizona pomelos, shows why they are commonly called "grapefruit."

Alfalfa is one of the leading crops of the Salt River Valley, replacing some of the cotton fields when the market broke.

SPINACH ACREAGE INCREASING

Spinach promises to pay as well as lettuce. Carload shipments were made for the first time this season. Quite an acreage also will be planted to green peas this year for shipment to Eastern markets.

Clyde Stevenson was forced by ill-health to retire from the banking business in Texas three or four years ago. Coming to the Salt River Valley, he located on a five-acre farm and engaged in the poultry industry. He has gradually increased his flock of White Leghorns to about 2000 and is building up a high producing flock. He has yards and houses well arranged, feeds economically and probably has one of the best paying poultry farms in the Salt River Valley.

A. C. Olin retired from the mercantile business in Kansas and came here in 1920. He became interested in cotton growing and purchased a 75-acre farm east and north of Phoenix. He maintained as a side line 200 to 300 White Leghorn hens. These proved so profitable that he greatly increased his flock and by the beginning of the fall laying season will have about 5000 hens. He has studied every phase of the poultry business, comparing notes with other successful poultry farmers and has built a model poultry plant. He expects to raise grain for his chickens.

SUCCESSFUL TRUCK GARDENERS

Among those who have been conspicuously successful in growing of truck crops are J. G. and L. G. Doby. They have a 10 acre farm adjoining the city of Phoenix and specialize in onions, cauliflower and a few other vegetables. Their Crystal White Wax Onions yield an average of five tons to the acre. They also have developed a cauliflower which has given them exceptional yields of splendid quality.

L. G. Doby is developing a small farm west of Phoenix and is making a special study of strawberries, dewberries and blackberries.

Lynn Orme, a pioneer farmer in the Salt River Valley and one of the most successful, has recently increased his poultry operations, making this one of the major activities on his quarter section farm.

WAGE WORKER DEVELOPS DAIRY

Frank Lenherr came to the Salt River Valley about nine years ago. For three years he worked for wages, all the time feeling that this was the ideal dairy section and that if he could get the right kind of a start in the business he could "make good." He saved his money and six years ago bought 80 acres of land west of Phoenix.

Lepherr is a hard worker and a good judge of dairy cows. He had $4000 to pay down on his farm and borrowed money to stock his place with dairy cows. He is a member of the Maricopa County Dairy Association, but even before he became a member he was weeding out all poor producers, using pure-bred bulls and raising all the heifers. His cow, Tilda, made the best record in the county testing association.

Mr. Lenherr sells sweet milk to the creamery for the retail trade. During the six years that he has been farming for himself he has raised as many heifers as possible, and sold a number of cows, buying others when the transaction was profitable. He does practically all of the work of caring for his dairy and farm, except putting up hay.

Today Lenherr is worth $18,000, which, after deducting the $4000 originally invested, leaves an annual net profit of more than $2000.

The possibilities of berry culture are well illustrated by the achievement of J. W. Black, who sold $5600 worth of strawberries from a 2½-acre patch near Phoenix. The net profit of this crop was estimated at $3200.

Most Arizona honey is obtained from alfalfa blossoms. Nectar drawn from a desert plant called "Cat's Claw" makes a delicious honey that is almost water-white. Mixed with alfalfa honey a valuable amber product is obtained. The average yield of honey in the State is estimated at 65 pounds per colony. The product is mostly sold by the Arizona Honey Exchange, a co-operative association.

Fruit growing is a comparatively new industry in Arizona. In 1906 there was only 543 acres of citrus trees in the State; now there are over 2000. Oranges, lemons and grapefruit ripen exceptionally early and bring high prices. Grapefruit grown in the Salt River, Imperial and Coachella Valleys is in a class by itself, lacking the bitter taste of that produced in other sections. Citrus land is comparatively cheap, $300 to $500 per acre.

The acreage planted to olive trees is small, but with profit could be greatly enlarged. One firm expects to pack 5000 cases of olives this year.

POULTRY INDUSTRY EXPANDS

During the past decade California was the only other State that showed a larger expansion of the poultry industry. An excellent home market perhaps is the chief reason for the rapidly increasing output of poultry products.

In spite of the slump in cotton prices two or three years ago, the cotton fields of the Salt River Valley now cover 100,000 acres. It is expected that 42,000 bales will be harvested, an average yield of 200 pounds per acre. Freedom from the destructive boll weevil and the production of the high-priced long-staple Pima variety are favorable factors in the Arizona cotton industry.

During the past winter 50,000 steers were fattened in the Salt River Valley, where they enjoyed the advantages of a mild climate, winter wheat and alfalfa pasture, silage, hay, cottonseed and milo meal, ground barley and other excellent feeds.

Agricultural co-operation is of great assistance to Arizona farmers. The producers of melons, honey, grain, citrus fruits, poultry and dairy products have marketing associations similar to those which are functioning so successfully in California.

This fine Holstein cow made the best record in the Maricopa County Testing Association. She belongs to Frank Lenherr.

Lettuce has become one of the leading crops of the Salt River Valley, over 500 carloads having been shipped last season. The November-December crop pays best.

ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

JULY 1, 1923

A Poultry Professor as a Practical Producer

A Visit to the Dryden Ranch

FOR more than twenty-five years Prof. James Dryden, world famous head of the Oregon Agricultural College poultry department, has wanted to operate a commercial breeding plant of his own. At last he has realized this ambition, but in order to get away from the college experiment station, where his work made him loved by farmers and poultrymen of the entire Northwest, it is said he almost had to slip out the "back door" and leave his resignation on the president's desk. At any rate, he finally located in Contra Costa County, California. Here's a brief sketch of his accomplishments, theories, and plans for the future. —*The Editor.*

By JAMES C. KNOLLIN

UP at Corvallis, most of the O. A. C. folks don't even admit as yet that Professor Dryden has left the college; the general feeling is said to be that he is just away on leave of absence. But to visit his ranch at Concord (Contra Costa County), Cal., and to see the wonderful flocks of Barred Rocks and White Leghorns he is building up, one is led to believe that he really is in the business to stay.

What kind of a plant would a poultry professor be likely to equip in order to put his own theories into practice? If you have visions of utility sacrificed for perfection of detail, you will be agreeably surprised upon visiting the Dryden farm. Mr. Dryden is starting at the beginning and building from the bottom up. He is considering good stock ahead of fancy equipment and profits before theories.

This is a breeding farm, rather than a commercial egg and poultry farm. White Leghorn and Barred Plymouth Rock breeding cockerels with long trapnest pedigrees will be sold. The stock is the Oregon Agricultural College strain developed by Mr. Dryden in the fifteen years that he was in charge of the poultry department at that institution, one of the oldest and most favorably known strains of egg layers in the world.

BRED HEAVY LAYERS

Mr. Dryden bred the pen of Leghorns and the pen of Barred Rocks that won first, second third places at the international egg-laying contest at San Francisco. He also produced the first 300-egg trapnested hen in the world.

Starting with a foundation stock fifteen years ago that laid less than 100 eggs a hen, he bred flocks of both breeds in six or seven years to average 200 eggs a year. He also bred the Barred Rock hen that made the world's record of 324 eggs a year at the Santa Cruz Farm Bureau egg-laying contest two years ago. At that time that was the highest record made by any hen at any egg-laying contest by trapnest. Some of the matings on his farm contain sons and daughters of this hen.

Dryden believes more failures in poultry husbandry are due to "overshooting the mark" than to any other one cause: that is, investing too heavily in equipment without sufficient capital for stocking, jumping into the business without sufficient observation and experience, or attempting to operate on a larger scale than justified by individual circumstances. Needless to say, he avoids all these pitfalls.

Less than a year ago he took over a 20-acre ranch which had been fitted up for breeding poultry, rabbits, ducks, pheasants and dogs. This statement may explain the former operator's failure. At any rate, the present plan is to concentrate upon poultry breeding. About half of the land is planted to almonds and other fruit, but the orchards are regarded as of secondary importance and have been fenced into three "pastures" for cockerels. The birds roost in the trees and develop vigor and size by exercising under natural conditions. The only serious problem in handling the males is to control fighting. Although some breeders are said to have dogs which act as policemen, Mr. Dryden considers a good game cock the best insurance against serious injury. Such a natural "scrapper," shorn of his spurs, enters into any and all controversies, with the result that the combatants are separated before they can batter each other.

ROCKS AND LEGHORNS BRED

Some 250 Barred Rocks and an equal number of young Leghorns, hatched last fall, now occupy these orchard runs and present an attractive sight. Prices of from $10 to $50 each are obtained for the cockerels, all of which are of the famous O. A. C. heavy laying strain.

The total number of birds on the ranch now is around 5000, including laying fall pullets and some 4000 spring-hatched chicks of various ages.

The production of eggs is of importance on this ranch only from the breeding standpoint. Every nest is a trapnest, and accurate records are kept of all layers. The owner attaches great importance to early laying. He believes that, other factors considered, "early layers are best payers." Therefore, the leg bands are attached to the pullets numerically, in order, as they lay their first eggs. The number, therefore, indicates roughly the relationship of each pullet to other members of the flock of similar age in the matter of *(Continued on Page 9)*

James Dryden and one of his prize Plymouth Rock Roosters, of the famous O. A. C. strain. Mr. Dryden bred the first 324-egg Plymouth Rock hen.

Battery of brooder and colony houses, where productive pullets are produced

BROODING equipment on the Dryden farm includes a "battery" of ten colony houses, mounted on runners and equipped with movable fences as shown in above illustrations:

The houses have tongue-and-groove floors. The door is 2 ft. 6 in. by 6 ft., of regular stock pattern, the upper part being fitted with one-inch poultry netting, inside of which is a removable canvas frame. The latter is used at night or on cold days and is hung up out of the way when not in use.

This door provides one method of ventilation. In addition, there is an opening above the plate, between the rafters. Furthermore, the windows are set in—not hinged—and may be opened by leaning them back against triangular or 'V'-shaped boards, fastened each side of the window frame. This arrangement avoids drafts which might otherwise come in at bottom and sides of windows. When the window is let back there is a six-inch aperture at the top; this opening can be regulated.

Each house is equipped with a coal-burning brooder stove, set in center of room, with a five-inch stove pipe extending through the roof. Formerly carbon briquets were preferred for fuel, but their scarcity led to the use of anthracite coal. By firing up the stove at 4 or 5 o'clock in the afternoon it is possible, by means of thermostat control, to maintain an even temperature all night.

Before the chicks are put in, a half inch of clean sand is spread on the door. On the third day this is covered with short straw or chaff.

A roost frame, with perches, is provided in each house. This hangs out of the way at the rear until the chicks are about thirty days old, when it is lowered in order to teach them early roosting. This is facilitated by the construction of the roost, which at the rear is 10 inches from the floor; the front resting on the floor, providing a gentle slope. One-inch mesh netting, which covers the roost frame, prevents the chicks from getting underneath.

During the first week, rest and quiet are deemed essential. In fact, burlap bags are hung over the windows in order to darken the room. Mr. Dryden believes this tends to prevent toe-picking.

He maintains also that best results are secured by keeping chicks in small units, especially on a farm such as this, where valuable birds are raised for breeding purposes. Each house accommodates 300.

The yard behind each house is 30x70 feet. The fence is built in portable sections, 10 feet long. Since the entire brooding "plant" is set in an alfalfa field, it is necessary only to move the house or yard in order to provide fresh pasture. Irrigation keeps the ground moist, and the alfalfa fresh and tender. Mr Dryden is enthusiastic about alfalfa as a food for growing chicks.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JULY 1, 1923

Selling Eggs at Auction Turns Loss Into Profit

How California Eggs Are Sold in New York—An Interview With J. H. Barber, General Manager Pacific Egg Producers

By W. J. DRYDEN

"WHILE still in its experimental stage, the results of the daily auction sales of Pacific Coast eggs in New York have been very gratifying," declared J. H. Barber, general manager of the Pacific Egg Producers.

"In previous years there always has been a heavy loss to the association during the months of January, February and March, due to the sharp decline in the market," explained Mr. Barber. "The auction sale has overcome this condition, so that changes in the market during these months have been gradual and at the same time has enabled us to obtain full value for our product. This resulted in a profit of $60,000 to the association the first quarter of this year, in addition to making up a loss which was carried over."

This favorable result was made possible by the auction sales being the largest factor in setting prices, points out Mr. Barber. Prices are based on the result of the auction sales the previous day, and as the Pacific Egg Producers set a bidding-in figure the sale causes a more stable market, with gradual declines and rises, doing away with slumps that in the past have resulted in heavy losses.

ORIGINATES AUCTION IDEA

Mr. Barber originated the idea of selling eggs by auction in 1918, when the sales were handled through a local fruit auctioneer company. The result was the moving of surplus eggs, proving the plan was practicable. Soon after taking up his new position with the Pacific Producers, Mr. Barber suggested the auction method which met with considerable opposition.

"The plan of auction sales of eggs," related Mr. Barber, "was discouraged by the wholesale trade and by some of the shipping associations. While our organization at first was not entirely in sympathy with the auction method, the results have converted every member.

"The impression that selling produce by auction in a consuming market involves price sacrifice no longer is held by Pacific Egg Producers members, who have found that it has created a demand for a certain quality and grade of eggs and that the distribution by competitive bidding—with the association's option of fixing the minimum price—keeps the price level closer to actual market values than did private sales."

Mr. Barber also pointed out that the auction has been a wonderful advertisement for Pacific Coast white eggs and the Producers organization. Not only are the sales advertised in the market journals, but the hundreds of buyers who attend the daily egg auction also are good advertisers of our eggs and selling methods.

"The public has become acquainted with actual values and know just what the large and small dealers are paying for eggs," continued Mr. Barber. "This tends to stabilize retail sales and to encourage a set price for each grade of eggs. As the small jobber can buy on the same terms as the largest jobbers, it is possible that the latter will be eliminated, thus cutting out one middleman, which will bring the producer and the consumer closer together.

"It is the small bidders who often force the large chain store buyer to raise his bid in order to obtain a sufficient stock of eggs. Supplies not bid in above the minimum set by the management are either held over to the next day or placed in storage.

SMALL BUYERS ATTRACTED

"The more goods and the greater the variety offered at one auction sale, the more buyers will be attracted and the more competitive will be the bidding," pointed out the Pacific manager. "It is therefore desirable to make the auction as big and comprehensive as possible. In order to do this our association has been handling eggs for other co-operative organizations. The Oregon Egg Producers, who no doubt soon will join with California and Washington in the Pacific Egg Producers, have sent surplus eggs to the auction, as have other organizations."

Mr. Barber is reported to have turned down a very flattering offer to enter a new corporation organized in New York City for the purpose of carrying on similar egg, dairy and poultry auction sales. He has decided to stay with the organization which he has been instrumental in placing on its feet and to carry on the work that he has started for the poultry producers of the State.

The Pacific Egg Producers have lost as much as $44,000 in one year on sudden market declines during January, February and March. From a loss of $44,000 to a profit of $60,000 is an improvement, which speaks well for the auction plan.

In summarizing the effect of the auction sales, Mr. Barber said: "The auction realizes the general tendency of the market more quickly than do private sales. Thus with increasing supplies, when the market naturally drops, auction prices decrease gradually and not in one big slump. The sudden and heavy price fluctuations which caused the previous severe losses suffered by our association are thus avoided.

"The gradual decline also is reflected on the Pacific Coast markets and helps to keep them more closely in line with the general conditions of Eastern markets. The auction tends to eliminate speculative profits and to improve legitimate merchandising conditions."

During the months of January and February, according to Mr. Barber, the average number of buyers at the auctions was 26. Out of this number the 10 and 20-case buyers numbered 23. In order to accomplish the best results, it is the aim of the association to get as many small buyers as possible, which these figures indicate has been done by the present method of handling sales. The eggs are sold at auction in any amount and it is this feature that encourages small jobbers to do business with us direct.

When the auction sales were first started in New York City it was possible, according to Mr. Barber, for the New Jersey producers to demand six cents a dozen above Pacific Coast egg productions, which margin has been reduced to about one cent.

This narrow margin is considered exceptional, as the New Jersey eggs are not only closely graded and of good quality, but the distance of shipment would indicate that they are in fresher condition when offered for sale in New York.

All Want Barber to Sell Their Eggs

J. H. BARBER

SO successful was J. H. Barber in selling eggs for Central California poultrymen that when the five Pacific Coast egg associations wanted a man to represent them in the New York market the Petaluma man was chosen unanimously. Now the middle Western poultry people want to come in out of the open market rain and have Barber sell their eggs. When the bottom dropped out of the grain market a few years ago corn belt farmers sold eggs to pay their grocery bills. They heard of the big prices Barber was getting for Pacific Coast eggs and now are organizing and grading their eggs so he can sell them to advantage.

Fruit Canners Forced to Adopt Stringent Grading Rules

By GEORGE P. WELDON

Pomologist Chaffey Jr. College of Agriculture. Contributing Editor

WHILE the fruit business may not be more precarious than any other line of business, it must be admitted that those who have been engaged in the growing of fruit since the war have faced a situation which has been anything but pleasant. With land, labor, water tools and everything else used by the fruit grower high - priced, the only thing that could mean prosperity for him was high-grade fruit — and he hasn't in all cases been able to "deliver the goods."

GEORGE P. WELDON

It would not be just to place all the blame on the grower for losses that have come to him, for the above-mentioned factors have meant the expenditure of more money than could be paid out with a possible chance of fair profits. Only in the case of very fine fruit and exceptional yields has the grower made as much as his investment would entitle him to make. The average grower today is facing a hard struggle for existence, unless a change for the better can be speedily brought about.

The writer is not a pessimist and therefore does not believe the present serious situation will continue. It is nevertheless very evident that canners and growers must come to an agreement as to what kind of fruit is to be canned and then stick to that agreement, regardless of the fact that some individuals may suffer.

The time has come when the industry, which is bigger than any individual's holdings, must receive the lion's share of consideration. In trying to protect certain individuals some of our canners have purchased large quantities of small and inferior fruit, which has been canned at a loss. It is only necessary for one to step into the warehouse of any large cannery in Southern California today to be convinced that a great mistake was made in the purchasing and canning of this class of fruit.

Canners are unanimous in their declaration that there has been little difficulty in disposing of the fancy and choice grades of peaches and apricots, but the lower grades are crowding the warehouses today.

Business foresight might have prevented this holdover. The blame for this situation must be laid at the doors of both canners and growers. The former took a chance on purchasing fruit which he knew from past experience would not sell readily, while the orchardist eagerly sought a market for a class of fruit that should have remained on the farm.

It is true that the past season's peach crop was one of the largest in the history of the industry in California. Every tree and every branch seemed to load itself full. Never was thinning more important. In some cases this work was well done, but in most peach orchards the trees were asked to bring to a proper size an impossible number of fruits.

In his eagerness to secure heavy production, many a grower "cut his throat," for while production may have been satisfactory, size was lacking and today the canner holds this small fruit in cans at the warehouse, waiting for a market that will enable him to unload at a profit. Under such conditions a good price cannot be paid for low grade fruit.

The situation should not worry the grower of high class fruit greatly. Since the market has taken the better grades that were canned last season, there would seem to be no good reason why fair prices for good fruit should not be paid this season. There is every indication that the kind of fruit that the trade demands will pay the grower a fair return upon his investment, while the poorer grades will not be worth picking and hauling to the cannery.

CANNERS ADOPT STRICT RULES

One of the most hopeful things in connection with the present fruit situation is the action of the Southern California Canners' Bureau in adopting strict grading rules which are embodied in a standard contract form:

Considerable uneasiness has developed among peach and apricot growers as a result of these rules. It is contended by some that certain varieties of cling peaches can be made to reach 2⅝ inches only under very favorable conditions. This may be true when too much fruit is left (Continued on Page 10)

Grading Rules, Southern California Canners' Bureau

1. Seller shall deliver promptly, after harvesting, all fruit or vegetables covered by this contract, of good color, ripe but firm, and in good condition for canning; free from worms, scab, frost rings, red streaks in flesh, split pits, scales, fungus, bruises or other imperfections.

1-A. Apricots shall be of a size counting 14 or less to the pound. No individual apricot shall weigh less than one and one-seventh ounces.

1-B. No. 1 peaches shall be 2⅝ inches in diameter, or more.

1-C. No. 2 peaches shall be not less than 2½ inches in diameter.

1-D. No. 1 pears shall be 2⅝ inches in diameter, of a length not less than 1 1-2 times the diameter of the pear. No. 2 pears which will produce one perfect peeled half shall be not less than 2⅝ inches in diameter; No. 2 pears which will produce two perfect peeled halves shall be not less than 2¼ inches in diameter.

2. Seller agrees not to deliver and it is understood that buyer is not obliged to accept any No. 2 fruit or vegetables of any variety in excess of 10 per cent of the total tonnage delivered of said variety. Said 10 per cent of No. 2 fruit or vegetables shall be paid for at one-half the price for No. 1 fruit or vegetables. Any No. 2 fruit or vegetables delivered by seller in excess of said 10 per cent of each variety shall be paid for at $1.00 per ton. No. 2 fruit or vegetables shall be delivered in separate boxes by seller.

3. No. 2 fruit or vegetables mixed by seller in boxes of No. 1 fruit or vegetables shall be paid for at $1.00 per ton.

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Pithy Paragraphs

BANKER HELPS PIG CLUB WORK

One hundred dollars in cash prizes was given to the boys' and girls' pig-feeding clubs of Western Washington last year by J. T. Alexander, Chehalis banker, who has offered them a similar sum this year. Mr. Alexander also raised $115 among other bankers to send five children to the Children's Week at Pullman.

This is but one of the many instances where bankers of broad vision have seen the advantage of encouraging the development of agriculture in their community by interesting young people in better farming, and, through them, their parents.

VALUE OF FARMER'S DOLLAR

The Country Gentleman calls attention to the apparent discrepancy in the alleged statement of the U. S. Department of Agriculture that the farmer's dollar is worth only 69 cents, while the Department of Commerce declares the same piece of money has a value of $1.02.

Secretary Wallace explains that his department did not state that the farmer's dollar was worth only 69 cents, but that most of his products could be exchanged for only 69 per cent as much merchandise as in 1913. This estimate was based upon the prices of four-fifths of all farm crops and almost all meat animals, compared to the prices of most standard commodities sold by merchants.

A DIFFERENCE OF OPINION

To lay down certain rules intended to apply to different agricultural sections is so absurd that one wonders why some "experts" persist in doing so. The traveler through the horticultural districts of California may find two growers of a certain fruit who, living in widely separated parts of the State, issue opposing statements. What folly to say either is wrong! Nine times out of ten both are right. A difference of opinion does not necessarily indicate that one of the factions is in error. Often there is more than one good road to a given destination. The safest is to listen to both sides—and draw one's own conclusions. There's plenty for all of us to learn from each other!

SUPPLY LOCAL MARKETS FIRST

J. H. Collins, who was sent by the Federal Government to Arizona to study market conditions, calls attention to one of the commonest mistakes of the average farmer—failure fully to supply the local demand for farm produce.

It is no uncommon experience for cull or second grade fruits and vegetables sold on the local market to bring more money than fancy stock, carefully packed and shipped to distant dealers. Neither is it unusual for home folks to be forced to eat inferior garden and orchard products because all the best specimens have been sent to the city. After deducting cost of packing, shipping and selling, the net returns on this class of goods often is less than what local consumers would have paid.

SHIP GRAPES OR APPLES?

Bert Wilson, manager of the Oregon Orchard Company, Corvallis, has declared war upon the grape growers of California. The latter are accused of getting more than their share of cars for Eastern shipments last year, the result being that a large quantity of apples could not be marketed.

The grape men also lost heavily on account of car shortage, but Wilson points out that most of the grapes shipped were used in making intoxicated beverages, while the apples were needed for food.

Shall the Interstate Commerce Commission assign cars for the shipment of material for making liquor—much of which is sold in violation of the laws of the land—while fruit needed for food is allowed to rot in the orchard? This is the question asked by the Oregon grower, who has carried the issue to Washington.

TURNING A LIABILITY INTO AN ASSET

About one hundred miles north of Sacramento, along the big river, is one of the most fertile areas in California. Ten years ago a young man, looking for an opportunity to acquire some low-priced land, was attracted to a certain property. "But," he was warned by incredulous friends and local farmers, "the river floods that land every year. It is worthless unless dikes are built and the water controlled."

The young man listened attentively, thanked his well wishers—and bought the land. He cleared part of it of a tangle of native trees and brush and planted orchards. The floods came, as predicted, deposited several inches of rich silt—and receded without doing any serious damage. He installed a pumping plant which he could move bodily to higher ground, established headquarters on the only knoll which was above the high water line, and now has one of the most productive farms in the valley. The water covers it every year, sometimes rising crotch-high on the fruit trees. But he never has to apply fertilizer, and folks say he's making a lot of money!

Which only adds further proof to the adage that "Things are not what they seem." A little vision and nerve may turn an apparent liability into a real asset.

"What's New?"—Keeping Abreast of Agricultural Progress

Remarkable Yield of Oats

A SINGLE grain of oats grown by George E. Sutton near Red Bluff produced 180 stalks, each bearing an average of 120 grains, making a total of 21,600 kernels from one seed, according to reports.

Tehama Women Make Hats

THE extent to which Tehama County farm women are taking advantage of the help afforded by the Farm Bureau demonstration is indicated by the fact that during a single month, April, they made 277 hats and 152 garments.

Selling Much Yolo Land

NEARLY two-thirds of a million dollars' worth of land has been sold this year in the Holland tract near Clarksburg (Yolo County). One of the latest purchases was 60 acres acquired by C. E. Holmes, who now owns 260 acres of Holland land. Beans and sugar beets are staple crops.

Growers Add New Crops

THE slump in the berry market two or three years ago caused growers in the Puyallup Valley, Washington, to add other and more surely profitable crops. As a result 3000 carloads of lettuce, valued at $3,000,000, were shipped last year. Flower bulbs also have been found a paying crop.

Mules Replacing Horses

DURING the past year the number of mules in the United States increased 39,000, while the number of horses decreased 203,000, according to the U. S. Department of Agriculture. The demand for good horses is said to be increasing, although the production has not kept pace with the death rate.

Large Peach Project Planned

YUBA COUNTY will have the largest single peach growing project in Northern California, if plans under consideration by a Marysville company do not go amiss. One thousand acres will be planted in the Cordua district northeast of Marysville. As soon as feasible the orchard will be sub-divided. —M. L. W.

Breeders Win Many Premiums

DR. J. J. SUMMERFIELD, Sonoma County stock breeder, won 14 first prizes and a dozen seconds on 18 Tamworth hogs which he exhibited at the recent fair at San Carlos (San Mateo County). Thomas Harrison, another Sonoma stockman, won 13 first and 2 seconds on 10 milking Shorthorn cattle. One of his cows, Lovely Perfection, gave 34 quarts of milk in one day while on exhibition. —K. R.

Tehama Cattle Are Healthy

SIX thousand cattle in Tehama County recently have been tested for tuberculosis by the State Department of Agriculture. Only 15 reactors were found, a quarter of one per cent. The work was performed by Dr. I. G. La Rue of the Division of Animal Industry. Cattle owners have expressed great satisfaction with the result.

The tested animals are being pastured in the forest reserve lands of Modoc and Lassen Counties, which are tubercular free areas.

Will Build Stock Pavilion

DEFINITE plans have been matured for the building of San Francisco's $2,000,000 stock pavilion, according to Bob Jones of the California Dairy Council. Stockmen are to be asked to buy part of the bonds which will be issued to finance the undertaking.

Because this building will not be ready in time and other suitable quarters are not available, the California National Livestock Show will not be held in San Francisco this year.

Grafts Grow Against the Wind

THE difficulty of getting walnut grafts to grow against the wind is being overcome by D. D. Pittman, Marin County orchardist, by fixing them in position pointing toward the prevailing wind, from horizontal to an angle of 45 degrees, the higher interior grafts being more vertical.

Three-inch boards seven feet long are nailed to the tree beside the graft, in the direction which it is desired the latter shall grow. The grafts grow about seven feet in a year and are loosely tied with cloth to the board support at intervals of one foot. This method is used in changing black walnut trees to the English varieties.

Losses From Smutty Wheat

AN Arizona miller estimates that half the wheat in his district is smutty. Last year 15,000 sacks of very smutty wheat was handled in the Salt River Valley and 6300 in the Safford section. Not only was the yield reduced by the presence of smut, but a considerably smaller price was received for the damaged grain.

Dusting seed again with finely pulverized copper chemicals is rapidly supplanting soaking in formaldehyde and copper sulphate solutions, as a preventive of smut. The wet treatment reduces the yield by killing the germ of some of the seeds and is also more expensive than the dry method. The latter may be applied at any time before the seed is planted.

Wheat Yields 82 Bushels

ONAS wheat yielded 82 bushels per acre at the University Farm at Davis last year. Twenty other varieties were tested. There are 260 fifth-acre plots of wheat now being grown experimentally; also many common and several rare legumes are being tried out.

Hog Fakers Headed West

PORCINE promoters of unsavory reputation recently have swindled Eastern farmers and apparently are headed west, since they were last heard from in Colorado.

Their plan is to sell a farmer a brood sow for $150 and promise to buy back the animal and all of her pigs for $75 each. The notes which purchasers give are immediately discounted at the nearest bank, but it has been found impossible to force the salesmen to fulfill their part of the contract.

Vetch Hides Fruit Trees

A COVER crop that covers trees as well as ground has been grown by A. A. Hubner near Wheatland (Yolo County). Vetch sown in a 20-acre peach orchard grew 10 feet high, covering and hiding from sight the trees. Oats was planted with the vetch and the entire crop was said to average eight feet in height. It is estimated that the yield of cured hay would have been six or seven tons per acre.

The vetch and oats were neither cut nor plowed under, but dragged down, making a solid mulch a foot thick, which was left to shade the ground and prevent weed growth.

A Poor-Farm's Good Cow

HOLLYWOOD Lilith Palmyra Abbekerk of the Los Angeles County Farm produced 21,316 pounds of milk, contained enough fat to make 1003 pounds of butter in 214 days, and at last reports was still going strong. At the beginning of this lactation period she gave as much as 126 pounds of milk in one day and for 209 days averaged 100 pounds per day. Her best seven-day butter record was 39 pounds; milk, 844 pounds.

Lilith already holds the Pacific Coast record for both milk and butter in the senior four-year-old class, 22,245 and 982 pounds.

Less Lima Beans Planted

THE total acreage planted to lima beans in California this year is 81,000, compared to 100,000 acres last year. More than half the acreage is in Ventura County. The largest shrinkage is in the Irvine ranch, Orange County, which has only 7000 acres of beans, compared to 15,000 in 1923.

Residences have displaced bean fields between Los Angeles and the ocean, while sugar beets, orchards and green vegetables have reduced the bean acreage in Ventura County.

The acreage of baby limas is 17,500, a slight increase over last year, due to larger plantings in the San Fernando Valley.

Inspector Rejects Cockerels

ONLY 15 per cent of the 4000 pedigreed cockerels recently imported by the Must Hatch Incubator Company were rejected by inspectors of the Sonoma Accredited Hatcheries. The birds were bred by Arnold, Wire and Miller of Oregon, and are of the O. A. C. heavy-laying strain of White Leghorns. This is said to be the largest shipment of cockerels ever received at Petaluma.

Of the 1000 double pedigreed cockerels furnished accredited hatcheries by Sonoma breeders, 20 per cent were rejected. Two breeding flocks were rejected because of the presence of tuberculosis.—K. R.

Low Peach Prices Prevail

CLINGSTONE peach growers of Sutter County were surprised when the price of the 1923 crop was announced at $45 a ton for No. 1 fruit. They expected at least $50 and some thought last season's price, $60 a ton, would prevail again this year. The price for the No. 2 sizes is $22.50; freestones, $30 to $35.

Canners have established the grade of No. 1 fruit at 2⅝ inches, instead of the last year's size of 2¼ inches. For No. 2 grade the size will be 2¼ inches, instead of 2 inches. The drop in price is said to be the result of a large hold-over of canned goods.—M. L. W.

Poison Hoppers With Bran

POISONED bran is recommended for killing grasshoppers, which are reported to be doing considerable damage in California this year. The following formula has been used with good success, according to the Extension Service.

Paris green or white arsenic, one pound; black strap molasses, two quarts; six lemons, ground very fine; water, four gallons; wheat bran or alfalfa meal, 25 pounds. This will cover four or five acres.

The poison, molasses and lemons should be added to the water first and then poured over the bran and stirred until an even mixture is secured. The wet poison bran should be scattered very finely over infested ground.

Silage Feeding Suggestions

Helpful Hints on Using Valuable Dairy Feed—Should Be Given With Hay and Grain

By H. A. WEINLAND

Sonoma County Farm Adviser.

WITH the increase in corn acreage in the dairy sections, every year more dairymen are having their first experiences with silage feeding. As may be expected, very often a lack of understanding of the best methods to follow brings unsatisfactory results.

We find dairymen with very wrong impressions in regard to the results of silage feeding, even to the extent of believing that it is the cause of tuberculosis, which is entirely untrue.

Corn which was put in the silo in good shape, containing a reasonable amount of grain, makes a most excellent basis for fall and winter dairy ration and will supply the necessary succulence until green grass is plentiful.

DISCARD SPOILED TOP LAYER

Silage is ready for feeding two to three weeks after filling. In opening the silo the top six to twelve-inch layer of spoiled material is removed, below which a good quality of silage will be found.

Silage will improve in quality as the silo is being emptied until the last foot or two is reached, which will likely be rather acid if the siloed mass contained considerable water. If used for feeding, this sour silage should be fed to stock in only very small quantities.

Silage should be kept level in the silo all the time during emptying so that as little silage as possible is exposed to the air and secondary fermentations thus avoided. A sufficient amount of silage should be removed daily to keep the silage from spoiling: one to two inches, according to the air temperature.

SHOULD FEED SILAGE DAILY

Silage must be fed out more rapidly in warm than in cool weather. It is therefore important that the diameter of the silo be no greater than that the stock on hand will be able to eat a layer of silage daily of the thickness suggested.

Once sealed in the silo, silage will keep indefinitely without material changes after the first few weeks. Instances are on record of silage a dozen years old or more having been found of excellent quality and eaten by stock with great relish.

In emptying the silo it is necessary to provide a chute or conveyor through which the silage may be thrown directly into the feed truck or wagon. The silage should be placed before the stock in one or two handlings and should not be allowed to dry out appreciably before being eaten by the animals, as it will otherwise lose some of its palatability.

In the case of weedy alfalfa silage and barley silage, the foxtail and barley heads will soon dry out if left exposed in hot weather, and will be likely to injure the mouths of the animals.

MAKES GOOD DAIRY FEED

Silage makes an excellent feed for dairy cows, fattening cattle and sheep and is also fed to advantage in small quantities to other classes of farm animals. The following amounts of well-preserved Indian corn silage may be fed safely to the different classes of livestock, somewhat smaller amounts of other kinds of silage being given:

Dairy cows, 25 to 40 pounds per head daily.

Heifers and young beef stock, 10 to 20 pounds.

Fattening steers and beef cows, 20 to 30 pounds.

Horses, 5 to 10 pounds.

Wintering work horses, 10 to 20 pounds.

Sheep, 2 to 3 pounds.

Brood sows, 2 to 3 pounds.

Silage should never be fed as the sole rough feed to any class of farm animals, but always with dry roughage, like alfalfa, wild or grain hay, corn stocks, sorghum or cereal straw. In the case of dairy cows, growing or fattening animals, an allowance of grain feeds with silage and hay will produce good results.

The following sample ration for dairy cows is recommended:

Indian corn silage, 35 pounds.

Alfalfa hay, about 8 pounds.

Concentrates: Rolled barley, oats, dried beet pulp, wheat bran or shorts, linseed meal, cottonseed meal, cocoanut meal, etc.; to or three mixed, according to current market prices, 5 to 8 pounds per head daily.

Starting in the Milk Goat Business

By ROSE SAUNDERS

(Editor's Note—A few months ago ORCHARD and FARM printed an illustrated article about the goat breeding business of Miss Saunders and her business partner, Miss Violet Kirby. Their place is located in Live Oak Canyon, near Redlands.)

WE have been in the goat business for twelve years. We began when goats were still objects of curiosity or prejudice to most people; saw their rapid rise into favor and the great goat boom during the war; shared with every one else the sharp slump and hard years that followed, and now are ready for the better times, which are just beginning.

We often are asked, "Can people make a living in the goat business?" Our experience will serve to answer this question.

We began, like most beginners, by investing in grade goats, because we had not much capital and could not see that purebred stock was preferable. Now, we grow only purebred, imported Swiss Toggenburgs and have ready sale for all our surplus stock.

We believe in advertising continually, whether times are good or bad. Our best market is in the Middle West States.

FIRST SELL MILK AND CHEESE

Beginners do not always find it easy to market surplus animals. It is better, therefore, to depend mostly on the sale of the goat's milk and cheese, at first. The latter takes care of all the surplus milk when the supply is greater than the demand, as during vacation time, when one's best customers are away.

It probably is best, if little capital is available, to begin by buying grades, learning the business with low-priced animals. Not any old scrub goat, of course, for such are no joy to handle and yield no profit. Buy good, registered high grade goats, which can be had at very reasonable prices.

Never use anything but a purebred buck. Many persons do not wish to keep a buck. This is unnecessary for there are purebred bucks whose services can be had at a reasonable fee.

As for breed that is entirely a matter of taste. We prefer the Toggenburgs, but other breeders are just as enthusiastic over Saanens, Anglo-Nubians, Alpines or Murcianas.

In boom times grade goats used to cost from $50 to $200 each; purebreds from $500 to $1000. Now one can pick up a registered grade for $20 to $50 and a purebred for $100 to $500.

No milk goat is worth keeping that gives less than two quarts of milk a day at her best. Good registered grade does give at least three quarts a day. We keep none that gives less than four quarts and some give five to 6½ quarts, on range. Corral fed goats give even more than this.

GOATS FEED LIKE DEER

On our 44-acre ranch we do not have to feed hay, except on wet days, which are rare in Southern California. The hills and valleys furnish an unlimited supply of pasture and browse, which goats love so much, for they are much like deer in their feeding habits.

Goats are interesting, gentle, affectionate creatures. The females have no offensive smell whatever. Their milk is wonderfully sweet and health-giving and makes excellent butter and cheese. It is an invaluable food for delicate babies and invalids, and is especially good for any form of stomach trouble.

Goat's milk is becoming better known. Doctors are beginning to realize its valuable properties and to order it for their patients. Some hospitals use nothing but goat's milk in their children's wards.

FREE FROM TUBERCULOSIS

Goat dairies are being started all over the country. One does not need to fear tuberculosis germs when using goat's milk. It does not need pasteurizing, a process which tends to neutralize or destroy lime salts and life-giving vitamines.

Co-operative plans are being tried by goat breeders for the better marketing of their dairy products, especially cheese. In Northern California an excellent cheese factory has been started. In Southern California, at Baldwin Park, there is a small goat breeder's colony organized on the co-operative plan.

"Show Cases" for Breeding Fowls

BEFORE he constructed this "battery" of coops, W. S. Freeman, Hayward (Alameda County) poultryman, found it difficult to show his sale birds to prospective customers.

"When an individual is running with the flock, it is hard to sell him at a price representing his real value," says Freeman. "But when a fine male is isolated, he shows up to best advantage."

Mr. Freeman has six of these coops in the family orchard along the highway and has made a number of sales at good prices to persons who were attracted by the sight of the fine fowls near the road.

Another advantage of the individual coops is that they prevent fighting, the owner points out. They were constructed at a cost of less than $5 each. The enclosed portion is 2 by 3 feet, and 4 feet high. The "run" is 3x6 feet, covered with fine-mesh netting.

New Bean Gathers Much Nitrogen

AFTER experimenting for eleven years with eight different clovers and twenty-one kinds of beans, I am thoroughly convinced that there are two essential points to consider when selecting a cover crop: foliage and bacteria. Many plants have a sufficient amount of foliage, and large, well-developed roots extending to a great depth, yet lack the proper amount of nitrogen-gathering bacteria.

I have grown several kinds of beans with large spreading roots which had no nodules, yet the foliage was very heavy.

Ninety-day nodule laden roots

These beans made a very good cover crop, but did not begin to compare in value with those of the bacteria-gathering class. The best of the latter is the All Year 'Round bean, which grows the largest nodules, in proportion to size of the plant, that I have ever seen.

Sowed on light, sandy soil here in Merced County, this bean withstood a temperature of 23 degrees above zero. It was 10 to 14 inches high March 24 and ready to plow under for a cover crop. It was harvested for seed April 18.

Some roots were 26 inches long and all of them averaged 14 inches. They were simply covered with large nodules loaded with nitrogen. The stems are small and thickly set and bear an abundance of well-filled pods. I picked from one plant 251 perfect pods containing 1873 beans. Ninety-six per cent of those planted grew.

I have grown four crops of this bean, each more prolific than its predecessor. I want to see the orchardists of California, where I have tilled the soil for twenty years, get a start of this wonderful cover crop and therefore have arranged to distribute small quantities among growers. One thousand seeds planted in June will produce enough beans to plant an acre or acre and a half for a winter cover crop.

I have followed the plow long enough to know that soil, like man, will soon perish if not properly nourished. Any one cannot help noticing this when passing through valleys where many well-pruned orchards are simply starving for nitrogen. Only recently I was astonished to see three twenty-acre orchards with barely enough vegetation to cover the ground.

Upon inquiry I was informed that this thin crop of grass had been growing, or rather trying to grow, since the first rains fell last November. "Don't you ever use any fertilizer?" I asked. "No, can't afford it," was the reply.

Why are orchards and vineyards, after they have produced for their owner, simply left to starve, when a few dollars spent for seed, together with a little time and effort, would start a cover crop that would in a short time supply proper nourishment? Ninety per cent or more of the market gardeners of California are foreigners, yet they are making a real success. Fertilization is their watchword. Seldom do they take a crop off the land without putting back something for plant food and humus.

It is high time we were awaking to the fact the fertilization is necessary for continued production.—C. E. HALL.

New Trees in Old Holes

CAN a "replant" be raised successfully in the same hole from which a dead or diseased tree was removed? There is a belief quite general among fruit growers that this practice is certain to result disastrously.

In general, the result depends upon conditions. If the old tree were killed, for instance, by some pest or disease attacking the roots or lingering in the soil, it would be most unwise to invite further loss by replanting in the same hole. But the mere fact that another tree has been removed does not indicate failure in the second attempt; any number of orchards throughout the State bear witness to this fact.

Many growers now place the fear of resetting in the same category with planting potatoes at a certain phase of the moon, and other agricultural superstitions.

Killing Johnson Grass.

E. D. McSWEENEY, Southern California's big grower of certified seed potatoes, does not consider Johnson grass a hard weed to kill out. In fact, he has chosen to lease fields infested with this pest, the use of the land costing only $5 per acre.

The method of handling this kind of land is to plow, harrow and then go over it every two weeks with a cyclone weeder, until the Johnson grass is pretty well subdued. Pumpkins are then planted, the hills being eight feet apart each way. The cheese pumpkin grows well on comparatively dry land. Pumpkin yields as high as 30 tons per acre have been secured.

The broad pumpkin leaves shade the ground so completely that the Johnson grass has a hard fight for life, and soon gives up the growing ghost, after which the land produces a profitable crop of potatoes.—O. H. S.

Baby Calf Feeding Stable

By HERBERT A. SHEARER

IT IS the ambition of feeders of baby dairy calves to coax them to grow rapidly and to develop the good characteristics transmitted to them by their well-bred ancestors.

It is not easy, but it is possible, to produce top-notchers by hand feeding, without the assistance of the mother cow. The combination of proper breeding, feeding and housing, together with knowledge and constant care night and day, will accomplish this result.

Dairy calves worth raising are well bred, through a long line of worthy ancestors carefully mated to "nick together" in order to bring out the best there is in both male and female. Then if the feeder knows how to combine the different food materials in the best proportions to build bone and muscle during the first months of the calf's life, and to gradually add fat-producing feeds after a large framework of bone and muscle has been built—that feeder will succeed.

But all the skill of the expert feeder will not avail unless he has proper housing to keep the calves comfortable, together with facilities for separating the animals at feeding time in order that each one may be given individual attention.

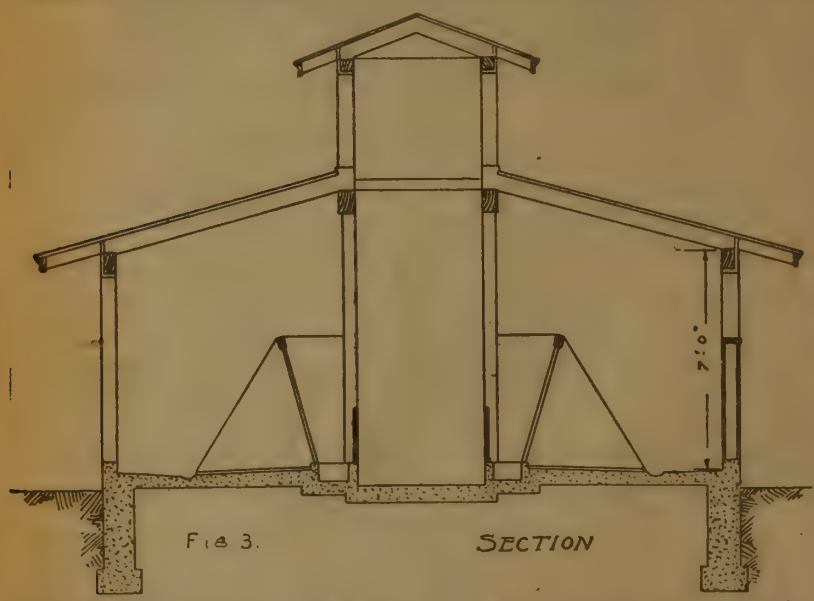

FIG 3. SECTION

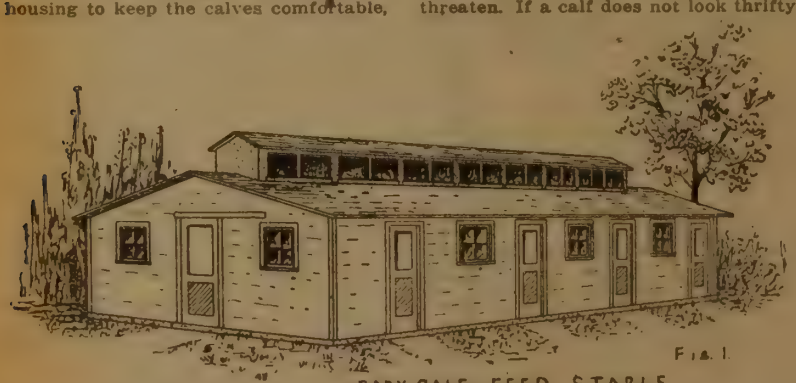

FIG. 1. BABY CALF FEED STABLE.

SELECT SUITABLE LOCATION

A clean, sandy hill or raised ground should be chosen as a site for the buildings and corrals. Good yards and plenty of them, provided with gates that will open and shut easily, are absolutely essential. Different size calves must be kept separate or in small bunches until they become sufficiently independent to fight for their feed.

Cleanliness is more important than any other thing. This depends largely upon the facilities provided for keeping calf quarters clean. Washing and sterilizing of the feeding vessels cannot be done without hot water and steam, together with sinks and vats and drainage.

Shelter is almost as important as cleanliness. One cold rain coming at a critical time in the calf's life may stunt its growth and retard development beyond the skill of the feeder to repair, so that a thousand-dollar promise may dwindle into a pedigreed scrub—and the owner may never know why the great milking qualities of its ancestors were not transmitted.

DIVISION BOARDS NECESSARY

Separating the calves by division boards between the stanchions is another stable necessity. The danger of propagating pathological forms of bacteria demands this precaution.

Hospital stalls should be provided and kept in readiness for use in case distemper or other malady should threaten. If a calf does not look thrifty, or does not lick itself, it should be put in a stall by itself and carefully examined for lice, mange, foot disorders and tooth trouble.

With a stable conveniently arranged, these important details easily may be attended to; but with a number of calves on one's hands and no building properly equipped for handling them it is not worth while to make the necessary effort.

The details of the baby calf barn here shown have been carefully worked out to meet all the requirements of segregation at feeding time, of warmth, ventilation and labor saving. It is built with concrete foundation walls, floors and mangers. The side walls of the building are of the hollow wooden wall type. The studding is first covered with building paper, both inside and outside. The boarding is rabbeted to lay smooth against the paper. This makes a four-inch dead air space, which serves as a nonconductor of heat and cold.

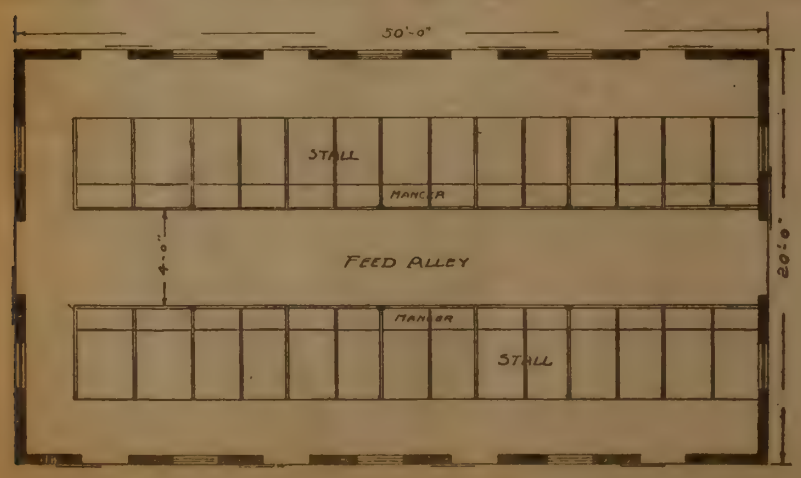

FIG. 2 FLOOR PLAN

FIT ROOF WITH WINDOWS

The mansard roof may be fitted with windows or left open, depending upon the climate. A dry stable is preferable to dampness, even at the loss of some heat.

A good plan, in some sections, is to stretch a sheet of white cheesecloth along over the cross timbers at the bottom of the mansard opening. The cheesecloth should be tacked or hooked at the edges to prevent gaps or draft holes. With the lower doors and windows all closed, the calves would then breathe filtered air. The air would be dry and there would be no draft.

The perspective view, Fig. 1, shows the building with four doors on each side and one door in each end. The end doors are necessary to run the feed wagon through the feed alley. The extra doors at the sides are to divide the calves into different lots, according to size, and to keep each lot separate for weighing at intervals. Fences divide the barnyard into small yards, with gates that open in line to make passages to drive through when necessary.

Fig. 2 shows the floor plan, together with dimension figures and the location of doors, stalls, windows, etc.

Fig. 3 is a cross section, showing the concrete foundation, walls, floor, mangers, timbers, stall partitions, mansard and the pitch of the roof.

FRAMES HOLD FEED PAILS

Fig. 4 is a loose, bottomless frame of wood. It fits into the concrete manger, to prevent the calves from pushing their feed out of reach. The openings in this rack are spaced in order to bring a square before each stanchion. The ten-inch squares are intended to hold the pails from upsetting when slop is fed.

FIG 4 MANGER FEED RACK.

This rack should be lifted out and the manger scrubbed with clean water every day.

Cleanliness is very important in feeding calves. All wet feeds must be fed in tin pails, and these must be scalded and sterilized after each time they are used. If not used every day, the pails should be treated before they are used again.

Treating Scaly Bark

SOME years ago Dr. H. S. Fawcett of the Citrus Experiment Station worked out a method of treatment and control for scaly bark of orange trees. This method has proven very satisfactory where it is carried out according to direction. Unfortunately, however, a great deal of scaly-bark work has been done by persons who did not understand the directions for its control. The Fawcett treatment consisted of scraping away the surface of the diseased spots by a certain method and covering the exposed tissues with bordeaux paste. It was found that in certain cases trees which had been treated in this manner and later fumigated were injured by some chemical reaction between the copper in the bordeaux and the cyanide in the fumigating gas. It therefore became customary for companies and others who fumigated trees to include a clause in their contract to the effect that they would not be responsible for damage when fumigating orange trees which had been painted with bordeaux.

The presence of this clause has done much to magnify and exaggerate the importance of this injury in the minds of some growers. In my experience I have found that the injury noted is often due to the sick condition of the tree, rather than to the bordeaux, as every one knows that sickly trees will be injured by a dosage which will not affect healthy trees.

It also is the custom to apply the bordeaux in the form of a thick paste, which I now believe is unnecessary. The bordeaux is not a poultice to draw the disease out of the tree, but a sanitary antiseptic wash to prevent the accidental infection of the wound. The scraping is what cures the disease, not the bordeaux. If it were not for the danger of infection with brown rot fungus and the killing of trees by brown rot gummosis, it would not be necessary to paint treated scaly-bark areas with anything.

It only requires a very weak solution of bordeaux to accomplish all sanitary purposes. One tablespoonful to a pint of water is plenty. Judging by my experience, a wash of this strength will not cause any injury in fumigation either on lemon or orange trees, as we have fumigated after bordeaux treatment repeatedly in many different groves, so far without any injury whatsoever.

If, however, any one is nervous about the use of bordeaux preceding fumigation, it would do no harm to paint the trees with carbolineum, which apparently is as good an antiseptic as bordeaux, the only objection to it being that it costs more and is more unpleasant to apply.—J. ELIOT COIT.

Hawaiian Molasses New Source of Yeast

TO cite the many associated industries and by-products dependent upon sugar cane production in the Hawaiian Islands would require a lengthy discourse.

The molasses industry alone involves an enormous by-product business. Thousands of tons of the sweet stuff will be used this year by western stockmen for feeding animals, according to W. H. Young of San Francisco, who imports this material by the shipload.

It is also the basis of a great chemical industry. The entire $2,000,000 plant of the Mason By-Products Company at Sausalito, for instance, operates with Hawaiian molasses shipped from the Islands in tank ships.

MANY BY-PRODUCTS

From molasses are manufactured products in variety almost incomprehensible to the layman. These include various kinds of industrial alcohol; ether; carbonic acid gas, used in soda fountains and refrigerating plants; "canned heat," popular for camp cooking; acetone; ketone oils; creosote oils; ammonia; vegetable charcoal; fertilizer, and a form of yeast said to be very valuable for stock and poultry feeding. The yeast is settled and ripened for months in great vats.

This yeast, although in rather unattractive form, is becoming increasingly popular for mixing with coarse cattle feeds, together with molasses. It is fed to poultry by mixing either with the drinking water or with the mash, and has been given with good results to hogs.

Experiments in drying the yeast are in progress, but meanwhile it is being handled in semi-liquid form as a sort of "sludge," in barrels and pails, coated with paraffin. Tons of this yeast are "grown" in the treatment of molasses. The yeast, when maintained under low pressure and with air excluded, has the amazing power of converting molasses into alcohol and carbonic gas, without apparently taking anything from the "host," and at the same time increasing its own volume several hundred times. Yeast produced in this manner is said to be rich in mineral acids.

Previous experiments with standard forms of yeast have demonstrated the valuable qualities of this substance.

Apparently it has the effect of a tonic upon animals, not only furnishing valuable vitamines, but also increasing the assimilation of the regular ration. Analysis of the droppings of yeast-fed fowls has shown that no undigested food passed through the intestinal tract of the birds, whereas when not fed yeast the same fowls passed from 5 to 10 per cent of undigested food. It is pointed out yeast may be substituted for a part of the regular ration, and when fed, therefore, need not be regarded as an additional expense.

For animal feeding, a number of mixtures have been used successfully, as, for example, rice bran, made into a crumbly substance by mixing with yeast and molasses. The latter adds palatability to the otherwise unattractive bran, and the yeast is assimilated readily with the other ingredients.

Prefers Horses to Trucks

"WITH the best truck and repair service that money could buy, our delivery system should have been ideal, but it proved less reliable than horses, and the increased costs over horse delivery were appalling," relates Henry W. Young of the Reading Terminal Market, Philadelphia.

"It took me five years to get rid of the truck outfit and to get back to horses. For the past year I have been using ten horses, which give me much better and more reliable service. My books show a saving of $10,000 for the past year by the change from trucks to horses.

"My saving of $2500 in licenses, insurance and indemnity costs would pay the feed bills of the ten horses and also pay for the shoeing and wagon repairs for the year.

"In delivery of all lines of food products the horse is here to stay, and where costs and service must be considered, horses will come back much more in city delivery work."

The Care of Electric Motors

By A. W. FARRALL

Division of Agricultural Engineering, University of California

THE electric motor does its work so quietly and efficiently that we oftentimes come to consider it as being almost able to take care of itself. A little attention at times, however, will be repaid by longer and better service.

The most troublesome parts of the average motor are the brushes and commutator. Trouble is usually shown by much sparking at the commutator, or by the motor failing to start. Sometimes the reason for this is that the brushes have become worn, or so burned that the contact with the commutator is poor and causes resistance and heating.

The remedy is first to clean the commutator thoroughly with gasoline; then, using fine 00 sandpaper placed between the commutator and brushes—with the rough side of the sandpaper next to the brushes—move the sandpaper back and forth until the brush has been dressed down to a good fit with the commutator.

When it becomes necessary to replace the brushes, the proper kind should be ordered from the manufacturer. Brushes should not be made from discarded dry battery carbons or similar material.

Another cause of sparking of the brushes is a dirty commutator. This can be remedied easily by cleaning the commutator with gasoline and then dressing it down lightly with fine 00 sandpaper, held against the commutator by means of a flat block of wood while the armature is revolved. In case the commutator becomes worn so that it is not exactly round, it will wear out brushes very rapidly, as well as give poor contact. If in this condition, the commutator should be turned down very carefully on a lathe.

Sometimes the commutator wears down until the mica insulation between the commutator segments is exposed to contact with the brushes. If this be the case the mica should be cut down by means of an undercutting tool, or by means of an old hacksaw blade, until it is below the surface of the commutator.

The bearings of an electric motor very seldom give trouble, but it is well to note that the ring-in-the-ring type of bearing is free to turn, is in its slot and that there is plenty of oil in the well, in order that oil may be carried up to the shaft by the ring.

Motors usually are made with very little clearance or space between the movable or rotating part and the stationary part. For this reason it is important that motor bearings be kept in adjustment and replaced when worn. Otherwise, the motor may come in contact with the stator and generate heat enough to burn out the motor, or at least cause much loss of power. Most small and medium-sized motor bearings have removable bushings, which may be driven out with a wooden block, after the retaining screw has been loosened.

For lubricating electric motor bearings a good high-speed electric motor oil should be used, not ordinary machine oil.

The proper selection of fuses is a very important part of any motor installation. The fuse is the protective device which is expected to melt out and stop the flow of electricity to the motor, in case of an overload or where the current flow is greater than that which the motor can safely stand. Fuses to be of value must be of the proper size, for if they are too small they will burn out very often and the motor will not be able to develop its full power, and if they are too large they will not give the protection desired.

For small motors of less than five horsepower it is customary to use fuses of practically twice the capacity of the motor. For instance: if upon the name plate of the motor is five amperes, a ten-ampere fuse would be the correct size to use. In large motors it usually is necessary to employ a special set of starting fuses of practically twice the amperage of the motor and a set of running fuses of from 10 to 25 per cent greater capacity than the amperage.

Electric motor pumping plant on E. L. White Dairy Farm near Burbank (Los Angeles County)

NEED TWO SIZES OF FUSES

The reason for the use of the two sizes of fuses is that in starting under a load a motor always draws much more current than its full load rate; therefore, fuses which would take care of this demand would be too large to give the motor running protection. It is especially important that the starting fuses be not placed in the running side.

In placing a motor it should be mounted in a cool, dry place and not allowed to accumulate dust and dirt.

The temperature especially should be watched, for if the motor is operating to capacity, or at a slight overload, it will develop a great deal of heat in its windings; and if there is no air circulation to carry away some of the heat, the high temperature will cause the insulation of the windings to become brittle and greatly weakened.

Motors are made as 50-degree motors or 40-degree motors, which means that the manufacturer guarantees them to operate at full load for a certain length of time, with the temperature of the windings rising not more than 50 degrees or 40 degrees centigrade, as the case may be, above the temperature of the surrounding air.

What One-Seventh Acre Will Grow

THE possibilities of intensive gardening are well illustrated by the work of Paul H. Steude, who last year grew 165 varieties of fruits, flowers and vegetables on a Sacramento lot 40 by 151 feet—less than one-seventh acre.

There are 12 fruit trees, none less than 16 feet apart; 10 kinds of berries, 300 strawberry plants, a 40-foot row of raspberries, red, white and black; two kinds of currants, three gooseberry bushes, blackberries and loganberries; Globe and Jerusalem artichokes, horseradish and enough rhubarb to feed ten families; cotton, tobacco, castor beans, okra, peanuts, olives, leek, garlic; four kinds of onions and several varieties of radishes.

A 80-foot row of sweet corn promises an abundance of roasting ears, while two varieties of watermelons and several kinds of cantaloupes and muskmelons are growing vigorously. Cucumber, hop, pumpkin and squash vines climb trees and fences, while eight kinds of beans also seek the higher places, reaching the roof of the dwelling house.

VARIETY OF VEGETABLES

Four kinds of onions are growing odoriferously; beets, carrots, turnips, chard, endive, watercress, lettuce, spinach, cabbage, kale and six kinds of peppers add to the variety of vegetables. There are a dozen egg plants and bean rows having a total length of 450 feet. The latter were replanted three times, because of insect depredations, which six sprayings failed to stop. "I just keep on planting," says Steude.

Twenty-five grapevines cover fences and buildings, utilizing the sunshine not needed by other crops. Celeric, sweet anis, sage, basil, caraway, celery, dill, hoardhound, lavender, majoram, thyme, wormwood, parsley, oysterplant, asparagus and several other plants fill in spare corners.

Flowers have not been overlooked, for Steude is a lover of the beautiful in nature and art. He has twenty kinds of geraniums, several varieties of crysanthemums, thirty rose bushes, twenty Canterbury bells, carnations, pinks, gladioli, centauria, petunia, pansies, daisies, verbenas, calla lilies, tuberoses, asters, marigold and snapdragon; zinnas, candytuft, poppies, violets, phlox, Virginia creepers, larkspur, bluebells, mignonette, balsam, celosia, firebrand and several foreign herbs.

SUBSOILS TWO FEET DEEP

The garden ground is subsoiled two feet deep and irrigated with water in ditches, no hose being used. Steude is 62 years old and twenty years ago was given by doctors but one month to live.

"But I fooled them," smiling remarked the industrious gardener. "I have been on this place four years and have done all the work, except build a fence. I have better health than before I came, more good things to eat and beautiful flowers to enjoy.

"I read four daily papers and several other periodicals, do all my housework and have plenty of spare time, putting in an hour every day playing solitaire. My garden work is always finished in time for me to leave home at 8:30 o'clock in the morning.

"My last year's motto was, 'Watch Us Grow.' This year it is a verse from Schiller: 'From the heated brow, sweat must freely flow. Do the work the Master showeth, take the blessing Heaven bestoweth."

How about the profits? These are enormous, but cannot be measured in money, for Steude never sells anything, "preferring to divide my products with my friends and neighbors," as he generously puts it. June 1 he was eating and giving away eleven kinds of berries, including red, white and black raspberries; two kinds of currants, Dollar and Oregon strawberries, Cory and Burbank blackberries, gooseberries and loganberries.

Steude has picked fifty-three melons of eight different kinds in one day and fifty pounds of beans. He has an agricultural college education and does garden work solely for health and pleasure.—O. H. BARNHILL.

Wheat Seed 2000 Years Old

TWO quarts of fine wheat was grown last summer by A. J. Hunsaker, Tulare County farmer, from a handful of seed found in an ancient cliff dwelling in the Grand Canyon. It is estimated that the kernels were at least 2000 years old. The Canyon wheat grew heads nine inches long and yielded heavily. Hunsaker expects this year to harvest a sack of the new-old variety. —BYRNES.

AUTO TIRES PROTECT TREES

Wornout auto tires may be used to protect fruit trees from harrow injury, by fastening them around the sides of the implement. The arrangement makes it possible to cultivate closer to the trees without danger of breaking the bark.

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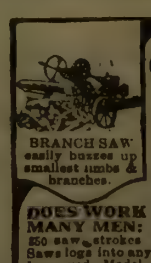

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400 acre dairy in Contra Costa County near Antioch—everything ready to step right into. A first class set of buildings, including fine 6-room house, telephone and electricity, big concrete floor milk house, sanitary in every respect; hay barns, silos, wells and motors, cream separator, all farming equipment; Dodge truck, 6 horses, 2 mules and 150 head of Holstein stock; Plenty feed, 35 acres in alfalfa, 30 acres in Sudan grass and 25 acres in corn for silage and balance in pasture land. A real bargain. $15,000 down, balance on long and easy payments. Apply J. J. MacArthur 833 Market st., R. 605, San Francisco.

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10, 20 and 40 acre tracts of the finest soil in the State; on highway, 9 miles from Davis, 2 miles from Winters, 3 hours from San Francisco and 40 minutes from Sacramento; land is level with finest irrigation system; prices $250 an acre on long and easy terms; send for full particulars and booklet to California Subdivision Co., 833 Market st., San Francisco, or phone Sutter 2357.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

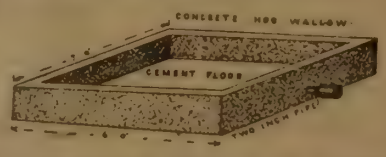
FARMS WANTED

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

Concrete Hog Wallow

THE hog is the only domestic animal that will voluntarily take a bath, and with the exception of dogs and cats, hogs are the only domestic animals that will not foul their beds. "Dirty as a pig" is a libel on the pig. It should read "dirty as the pig's owner compels it to be." Given a decent chance, the hog will keep itself cleaner than any other meat producing animal.

During the warm months of the year every hog should have free access to a wollowing vat filled with clean water with a thin skim of crude oil floating on the surface of the water. The hog enjoys the water bath and it will roll about enough to get the oil into its hair, thus killing the lice and nits and keeping its skin in healthy condition.



The drawing shows a hog wallow six by seven feet and one foot deep. This size is about right for a sow with her litter. For the herd much larger vats are needed. Shoats up to 100 pounds need about 3 or 4 square feet to wallow, 200-pound hogs need six square feet, and larger ones in proportion.

Hog wallowing-vats should be made of concrete, partly let into the ground on a sloping hillside where drainage comes naturally. The vats must be drained frequently, especially in hot weather, or they soon become disease breeders. Drainage alone is not sufficient; they must be washed and scrubbed with a broom. This vat is one foot deep. No incline is necessary for hogs of about 100 pounds or larger. If small pigs are allowed access, a level concrete block for a step helps them in and out. Inclines are slippery.

The wallow is of course concrete plastered with a coat of rather rich cement mortar, pressed on with a trowel before the concrete hardens or becomes dry. Concrete is porous. Pressing cement mortar with a trowel tends to make it waterpoof.—HERBERT A. SHEARER.

COYOTES KILL LIVESTOCK

Three thousand dollars' worth of livestock were killed in one year on the Clark ranch in Mendocino County by coyotes and other predatory animals, although the place was protected by supposedly coyote-proof fences. After a coyote control demonstration recently held on this ranch by the county farm adviser, fifteen dead coyotes were found and indications that several others had been killed.

Growing Flowers in Adobe Soil

ADOBE soil and flowers have never mixed very well. In fact, I have learned to treat adobe soil with the greatest of deference if I wish it to bring forth any of the flowers of my choice. Even then, plain, every-day adobe refuses to grow sturdy sweet pea vines, carnations or many of the other standbys.

HELEN TEMPLE

These flowers will grow and even produce a fair crop of medium-sized blossoms in such soil, if the irrigation and cultivation are systematic. But I have found that adobe has special dislike for pansies, carnations, sweet peas, myrtus and several other favorites, unless we treat it with quantities of old manure, leaves and litter each year.

Pansies must be renewed each year in heavy adobe soil, even when it has been heavily fertilized before planting. The soil must be deeply spaded and a large quantity of old manure worked into it before replanting. Adobe is not benefited by the application of sand in small quantities, though it combines well with the manure, if used in large lots, especially when it forms soil for pansies, carnations and sweet peas.

While my sweet peas refused to "do themselves proud" in pure adobe, my chrysanthemums grew and blossomed like prize winners. Then we found the zinnias refused to be daunted by the undesirable adobe. As for the asters—how they did bloom! Adobe also has no terrors for helichrysum, larkspurs and cosmos, but these flowers appreciate a little manure, as do Oriental poppies. However, they do remarkably well in adobe without fertilization, if irrigation and cultivation are faithfully attended to.

Geraniums grow as well in adobe as in the best of soil. In fact, I have found that geraniums will grow almost anywhere in California, in almost any kind of soil, if they are given a drink occasionally. Adobe—just pure, sticky, hard adobe—will bring forth the most beautiful roses in great quantities.

Dahlias appreciate good soil and send out much larger blossoms if the soil is rich and friable, but they are accommodating plants and give us a very good quality of blossoms in desired qualities when grown in adobe. Other bulbs, such as cannas, narcissus and iris, bloom almost as well in adobe as in other soil, but gladioli do not do so well, unless the soil is lightened with manure or decomposed litter.

Good sweet peas are almost impossible in real adobe. It must be lightened and enriched, or the blossoms will be small and the vines stunted. Sweet peas need large quantities of water during the blooming season and it is impossible to irrigate adobe soil often without bad effects. I found sweet peas succeeded best in adobe soil when the trench was deeper than usual and filled with layers of old manure, sand and adobe. Carnations were most successful when the young plants were set in large holes filled with leaf mold and sand.

While our flowers bloom and the plants grow in almost all kinds of soil without fertilizer, our best specimens are always found where there has been a cover crop or an application of manure. Adobe soil will become ideal after a few years if manure and litter are worked into it each year.

Brown Turkey Fig

EARLY in May the writer made a trip to the Coachella Valley, where special attention was devoted to the possibilities of fig growing in that locality. The two or three commercial fig orchards in the valley were visited and a number of family trees observed.

From even a casual examination it is apparent that the fig is unusually well adapted to the Coachella Valley. The trees make a remarkable growth, are thrifty and appear well adapted to the unique environmental conditions prevailing in that region.

Of the various varieties observed, the Brown Turkey appears to be by far the most satisfactory. Fruits of the first crop of unusual size and unexcelled in quality were picked May 10, and Eastern shipments were being made. According to reports, 30 to 50 cents a pound was being received, indicating attractive profits.

The total acreage in the Coachella Valley planted to figs at the present time is surprisingly small, considering the unusually early fruit produced and the health and vigor of the trees. Beyond any doubt there is no section of the United States which can successfully compete with the Coachella Valley in the production of early figs for Eastern shipment. Since the first crop of the Brown Turkey usually fails to set in other parts of California, there should be no competition with the second crop as produced in the Coachella Valley.

While much has been said of the Coachella Valley for early grapes, dates and other fruits, in the opinion of the writer there is no crop which offers greater promise than the Brown Turkey fig.—R. W. HODGSON.

Road Runner

THAT rare and curious bird, the road runner, a native of the Pacific Coast, always has been of great interest to me, because of its peculiar habits and extraordinary appearance. The first time I saw one I gazed at it in amazement. Its great length, 22 inches, in proportion to its size and its astonishing speed on foot was surprising. The bird's outstretched wings and spread tail act like aeroplane wings. I once followed one on a country road for a quarter of a mile at a speed of fifteen miles per hour by the speedometer.

The road runner's food consists of caterpillars, lizards and small snakes. I used to wonder why a pair nested each season near each of my outlying apiaries. Their diet explains this location. Bees attract spiders, lizards and other vermin, which in turn attract the birds. Also, Mr. and Mrs. Road Runner are fond of drone bees. Last summer, at a time when the bees were driving out their drones, I drove within a few feet of a road runner who was so busy dining on drones that he did not notice my car.

The road runner has various local names, such as "chaparral cock," "snake killer" and "ground cuckoo." They have four toes, two in front and two behind. Their mating note faintly resembles the mourning doves, but is coarser.

Some literary genius has recently resurrected the old fairy tale, which is probably contemporary with Bret Harte's "Jumping Frog," of the road runner surrounding the rattlesnake with an impenetrable hedge of cactus leaves and starving him to death. A long and entertaining story has been written around this tale, which you will find more credible after you have seen the road runner throwing "flip-flaps" along the road in front of your machine.

The road runner is a legally protected bird, as well as one that is growing scarcer every year. Don't shoot him. He does a great deal of good. The University of California has a record of one of these rare fowls having thirteen young rattlesnakes in its crop.—J. D. BIXBY SR

Kiwi Chickens

KIWI chickens have plumes instead of feathers, explains Z. T. Spencer of Santa Cruz, breeder of this new and interesting fowl.

"The Kiwi chicken is the only one that cannot fly," states Mr. Spencer. "A two-foot fence will hold them. Their wings are merely rudimentary and will not lift them off the ground. Kiwis, therefore, are ideal back-yard chickens.

"This interesting bird was originated by crossing a common white hen with the Australian Kiwi. The latter is a small species of ostrich, having three toes and body covered with a downy fuzz.

"These chickens are sometimes skinned and the pelts used instead of white fur, such is the high quality of their soft, snowy plumes. The hens weigh from five to seven pounds. They are superior for roasting, having a more delicate flavor than ordinary chickens.

"Kiwis are good winter layers, docile and happy in confinement—in every way an ideal fowl."

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SURELAY
MEANS MORE EGGS
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Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES

REMARKABLE RECORD.

Kitty is a cow 25 years old, has given birth to 22 calves and has a year's butterfat record of 600 pounds. She is a grade Jersey, owned by F. H. Williams of Valley Ford and was exhibited recently at the Sonoma-Marin Fair. When I saw her Kitty appeared to be in excellent condition and her owner hoped that she would, in due time, bring forth another descendant to carry on her remarkable strain of productivity.

It is difficult to say too much in praise of this wonderful cow. Perhaps her long life of usefulness is a tribute to the California climate. If any reader of this column knows of a cow with a record that equals Kitty's or approaches it we should be glad to hear from him.

DEAN HUNT RESIGNS POST

All persons interested in California agriculture learned with deep regret of the recent resignation of Dean Thomas F. Hunt of the California College of Agriculture. Yet there is not one but will grant that he has earned by his work the right to retire to a less arduous task, for there are few men in the United States today who have given as much time, or accomplished as much for the advancement of American agriculture as he has.

California's great agriculture Extension Service has come into being since Dean Hunt took charge of the College of Agriculture. The latter has been brought into closer contact with the farmer, has made a remarkable record for achievement in many lines and has overshadowed every other institution in the State in the rearing of fine livestock.

Doctor Hunt will not be lost to California agriculture, for he will still be an instructor in the College of Agriculture.

FAKE FRUIT DRINKS MENACE.

J. A. Teagarden of Auburn, regional director for the Farm Bureau Federation and a fruit grower of prominence, is a big man, with vision. Teagarden is on the battle front of the fight against chemical drinks that get public attention by trading on the name of California fruits. He recently had an opportunity before the Legislature successfully to combat a law which would let down the bars.

Honestly, doesn't it make you mad to buy a drink luridly advertised as "Orange Something-or-Other," only to find that it is a chemical concoction? And doesn't it seem rather queer that this great State, so dependent on the citrus industry, should permit fake drinks to injure the sale of the real article? Out on the wash somewhere between Monrovia and San Bernardino, there is a delightful roadside market which serves real orange juice at 10 cents a glass.

With Teagarden, I say, let's wipe out all the imitations. The fruit industry is voluntarily submitting to more rigid regulation for the sake of quality. Let no fake get a foothold.

GROWING CITRUS FRUITS.

Sacramento Valley people are much elated over the fact that Dr. H. J. Webber has bought 100 acres of land in the Oroville-Wyandotte irrigation district, near Bangor, to plant a commercial citrus grove. I can remember, perhaps eight or ten years ago, when the Sacramento Valley people were similarly elated over the purchase of lands for citrus purposes by James Mills at Maxwell and Hamilton City. Mills had made a great reputation for citrus fruit growing at Riverside. He is one of the big men of California horticulture.

Yet citrus growing in the Sacramento Valley never has gone forward very rapidly. There are many cases of successful citrus groves in the North, and land certainly is much cheaper than in the South. Then, too, the Northern oranges are usually off in the fall before the more severe frosts come. On paper, it looks like the North has many advantages, but growth certainly has been slow. Why?

Perhaps Bob Hodgson can answer. He was raised up Oroville way and now is reported to know every orange tree in Los Angeles County by its family name.

Dryden's Poultry Practice

(Continued from Page 2)

starting to lay. Those commencing at six months or earlier are considered most valuable, provided they then lay consistently, while those commencing as late as nine months may be discarded.

UTILITY CONSIDERED FIRST

Culling of chicks, pullets and older fowls is rigorous and unrelenting upon the Dryden farm. And this practice is governed more by utility than by fancier's standards. Professor Dryden was the pioneer in breaking away from plumage and similar considerations in favor of utility. With considerable courage, he maintained, more than 20 years ago, that the egg basket was the real test of value, and in 1913 produced the first 291-egg hen ever bred, a White Leghorn. This feat brought him and the Oregon College international fame.

Later the O. A. C. strain yielded the famous 324-egg Barred Rock hen, which still holds the world's official trapnest contest record for breeds other than White Leghorn, and many noted Leghorns, including leading pens at numerous egg-laying contests.

A young cockerel, son of K-24, now in the Dryden breeding pens, is not for sale and is said to be valued by the owner at $500. Mr. Dryden, however, does not believe in boosting prices for breeding stock too high. He says, "No cockerel is really worth more than $100, although some one might be willing to pay more for it."

In all his operations, conservatism and common sense rule. Nor does Dryden belittle the beliefs of others. "I do not say," he points out, "that the methods of feeding and breeding I am following are infallible. There are almost as many plans of management as there are professional poultrymen."

MASH VS. GRAIN FOR CHICKS

Many producers, for instance, disagree with Mr. Dryden's plan of raising chicks. However, he follows it with signal success. Instead of feeding grain at first, he starts them on semi-solid buttermilk (1:6 or 1:7), keeping it before them at all times and withholding water. As the first solid food, he gives a crumbly-moist mash, consisting principally of bran and egg. Mr. Dryden points out it is possible thus to feed many infertile or damaged eggs which might otherwise be wasted and that chicks seem to thrive best when some egg is given. During the first week the chicks double their weight, and great care is necessary in order to see them through this critical period. Two or three feeds of the moist mash are given, and a little chick grain is fed between.

A substitute for the egg-bran combination is bran, cornmeal, or oatmeal, mixed with milk. Or a dry mash, with milk to drink, may accomplish the same results. When grain is fed, buttermilk is deemed essential by Mr. Dryden. Green feed is fed early, lawn clippings being used, when available, for the little chicks.

For all his stock, Mr. Dryden provides green feeds in great variety and believes in giving them all they will eat. Eight acres of the ranch is in alfalfa and it is the idea of the owner to produce what he terms "alfalfa-grown fowls." The colony brooder houses, fitted with coal stoves, are portable, as are the fences forming the yards, and all are set in the alfalfa field. They may be moved to fresh pasture when necessary. The chicks have the run of the alfalfa, therefore, as soon as they are old enough to be outside. The alfalfa is irrigated frequently in order to keep the stems soft and the ground fresh and moist.

"Back to nature" is Dryden's slogan. He does not like the idea of close confinement unless absolutely necessary. All pens are equipped with running water. Cleanliness and bodily vigor are relied upon to ward off disease. "Medicines should be unnecessary," maintains the veteran poultryman, "if foundation stock, feeding and care are correct. And, after all, it is the constituents of the feed that count. We now know vitamines are even more important than calories, carbohydrates, proteins and other analysis factors and digestibility is of primary importance, also. A variety of grains and plenty of greens should provide the necessary vitamines, although the feeding of yeast, cod liver oil and similar substances may assist in stimulating growth and yield.

FORCING MAY BE OVERDONE

"I do not believe, however, in forcing growth or egg yield beyond a certain point. It is impossible to do so without sacrificing length of life and total production. The use of electric lights in the laying houses, for example, can be abused. I do not think breeding stock should have longer than a 12-hour day nor laying stock more than 14 hours."

In addition to electric lights, the laying house, 20x300 feet, is equipped with litter and feed carrier, trapnests, elevated mash boxes and water troughs, as well as the usual shell and grit hoppers. The laying house consists of two wings, with feed room at the center. It is planned soon to double the capacity of laying houses, and to add an incubator unit. Mr. Dryden would prefer to sell eggs for hatching, but believes it may be necessary to go into the hatching business in order to supply the demand for chicks. More brooder houses of the colony type will be constructed.

By this fall Mr. Dryden expects to have 2000 "pedigreed," trapnested pullets and within 3 years, hopes to maintain 5000. Eventually the plant is to be increased to 10,000. But quality, rather than quantity, will be the rule and all operations will be conducted with breeding ideals in mind. The value of the stock now on the place, in view of its breeding and the reputation of the owner, who has spent so many years in its development, is estimated by experienced poultrymen at $25,000—all raised since the ranch was established less than a year ago!

Professor Dryden has seen the poultry business go through a remarkable period of development and expansion. When he issued his first bulletin while with the Utah Agricultural College, in 1897, most of the eggs produced in America were from nondescript farm flocks, maintained by haphazard methods. Commercial egg farms were a rarity.

THEORIES CREATE COMMENT

Dryden's assertion, published in this first bulletin, that the most profitable year in a hen's life is the first laying year, created wide comment in view of the then generally accepted belief that an older hen was more valuable. The bulletin was reviewed in Eastern papers and the Utah college received an avalanche of letters inquiring about Professor Dryden's theories.

"I smile as I read over some of my older bulletins published at Logan, Utah, and at Corvallis, Oregon," Mr. Dryden says reminiscently. "We have learned a great deal since then, but we have yet much to learn. For one thing"—and here he looked quizzically over his glasses and drawled in a way that all his friends know—"for one thing, we had better have some big, national Eat-more-Egg campaigns. Possible overproduction of eggs is the big problem facing the industry at present."

Mr. Dryden is assisted by his son, Horace, a hustling young Stanford chap who appears to be a born poultryman. Another son is a poultry expert for a large California milling company. The eldest son is a prominent business man of Oakland. And no member of the family is more interested in the venture than the wife and mother who has uprooted old ties in Oregon and established the home at Concord. Thus it will be seen that Oregon indeed has suffered a heavy loss and we have achieved a distinct gain in the migration of this fine, happy family to sunny California.

Mash for Fattening Ducks

HARRY HALFORD, the Inglewood (Los Angeles County) duck man, has good success feeding a fattening mash composed of one gallon of rolled barley, 1½ gallons each of feed meal and bran, to which is added 5 per cent of beef scrap and half as much cottonseed meal, bulk measure. This means that to each half bushel of grain there is added one and two-thirds pints of meat scrap and four-fifths pint of cottonseed.

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New Picking Pail

AN improved picking pail has been invented by Robert and Conrad Stensgaard, who have 100 acres in peaches and apricots near Pomona. The pail holds 18 pounds of fruit and is so shaped that it conforms to the contour of the body.

The pail is supported by a padded canvas strap, which rests upon the workman's shoulders. A chain runs underneath the bucket, which is held in an upright position by hooking the chain at each end of the vessel. By disengaging these hooks the pail may be emptied without taking the strap off the picker's shoulders.

"Our pail has two main advantages over the kind usually used," explains Robert Stensgaard, who is shown in the picture with his invention. "It leaves

both hands free for picking and is so near that bruising the fruit is avoided."

The Redlands Heights Ranch Company used the Stensgaard picking pail in harvesting 800 tons of peaches and 20 tons of pears. The percentage of bruised fruit was materially reduced and a great deal of picking time saved, according to A. C. Lundin, superintendent.

"The Stensgaard pails paid for themselves in three days," states M. J. Kennedy, superintendent of the Chas. Ster and Sons Ranch at Wineville. "The picking increase ran from five to ten boxes per man per day."

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Inspection Insures Good Meat

Remarkable Growth of Work Which Is Insuring a Wholesome Meat Supply for California.

By J. P. IVERSON

Chief Division of Animal Industry, State Department of Agriculture

SINCE ancient times meat inspection has been the subject of serious consideration. Ancients looked with great concern upon the importance of a healthful meat supply. With the present knowledge of the dangerous possibilities associated with the consumption of diseased or unwholesome meat, there is little wonder that this valuable food product should be viewed with suspicion by intelligent people unless it has received proper inspection by individuals qualified to distinguish between wholesome meat and flesh unfit for human consumption.

To some extent a situation of this kind prevailed in California until 1921, when the Legislature enacted an effective, far-reaching meat inspection law. This act was introduced by Senator D. F. Rush of Suisun, and it is believed to be the most effective law of its kind in any State.

It authorizes the California Department of Agriculture to maintain proper sanitary standards in slaughter houses and to regulate and control the handling of meat food products in a suitable way to safeguard the meat-consuming public.

The Division of Animal Industry is responsible for enforcement of this act and it has proceeded with the co-operation of butchers to carry its provisions into effect in such a way that producers investments, as well as the health of meat consumers, are given consideration. It was apparent, if this could not be done, the danger of working unnecessary hardships on the slaughtering industry might eventually reduce materially our meat supply.

To avoid this, the nucleus of a meat inspection force was organized and a campaign of education conducted to afford butchers the opportunity to familiarize themselves with modern sanitary methods. This project has been carried out effectively and with splendid co-operation from the butchers, sanitary inspections of slaughter houses regularly having been made. The apparatus of these establishments is undoubtedly of a better standard than what is used in most States.

It is possible for the State authorities to conduct complete post-mortem inspection, in co-operation with cities and counties where this protection is desired, thus insuring a perfect meat supply to the public in localities where all animals are examined at the time of slaughter.

The growth of this work has been remarkable, and fifteen cities and two entire counties are now enjoying the benefits of this inspection, all meats being sold therein bearing the inspection stamp of the California Department of Agriculture. Over forty slaughtering establishments, located in various parts of California, are now operating under this inspection and all slaughtering and meat processing there is conducted under continual supervision of State inspectors.

The butchers deserve great credit for willingness shown in improving their methods of slaughtering, handling and processing meats. The public has been afforded the greatest possible protection against the spread of disease from this source. This condition will be directly reflected in the amount of meat consumed, since guaranteed quality and healthfulness always insure increased consumption of any food product.

The extent of this work is indicated by its remarkable extent in the year 1922. The number of animals inspected at the time of slaughter and passing for food is as follows:

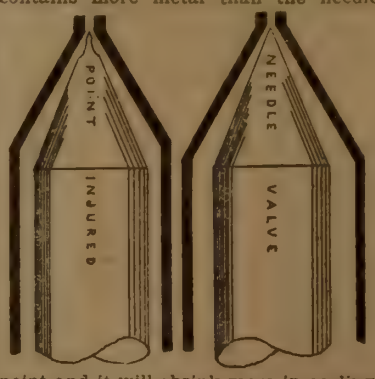
Cattle, 28,228; calves, 26,490; sheep, 56,330; hogs, 34,500; goats, 658; total number condemned as unfit for food, 959; parts of carcasses condemned as unfit for food, 18,701; total number of pounds condemned, 421,531.

The growth of this work is truly marvelous. To indicate the value the public places on it, comparison is made between last year's figures and the figures for the first four months of the current year, when 75,786 animals were inspected by this service. The animals condmned for tuberculosis in 1922 total 520 cattle and calves and 315 hogs. Condemnations for various other diseases total 51 cattle and calves, 20 sheep and 38 hogs.

With the appreciation of the public and support given by the butchers and cattle men, it is fair to assume that within a very short time practically the major part of the entire meat supply of the State of California will be produced under strict State inspection in modern sanitary plants. This is a condition not believed to exist in any other State, but the practicability of the thorough application of this work is already demonstrated in California.

The Needle Valve

MANY carburetor needle points are injured by screwing them too tight when leaving the machine at night. The metal is hot after a hard run, and the needle is softer than it is when cold. Also the needle valve seat contains more metal than the needle



point and it will shrink more in cooling, and hug the needle too hard.

The drawing shows how some abused needle value points look under the magnifier after being in use only a short time.

We have all noticed that the needle valve often is firmly set in the morning. Sometimes we are inclined to blame some one for tampering with it because we "just naturally know" that we never screwed it so tight.—H. A. SHEARER.

Kherson Oat History

IN 1896, while secretary of the Nebraska Experiment Station, Frederick W. Taylor—now one of California's agricultural experts—introduced from Russia Kherson oats, a superior variety which now occupies three-fourths of all the Nebraska oat fields, it is estimated, as well as being very largely grown in other States.

Mr. Taylor has written for Orchard and Farm the following account of the introduction of this valuable cereal, together with a description of its chief characteristics:

"It was during my second trip to Russia that I made arrangements with M. Rotmistrov, director of the Odessa Experiment Station, to send to the Nebraska Station a number of varieties of grains which looked promising, in exchange for several kinds of American corn. Other government agents had found it easy to obtain promises from foreign officials, but extremely difficult to secure seeds.

"M. Rotmistrov, however, kept his promise, sending me twenty parcels of seeds, each containing seven ounces. Of these importations only one kind of oats proved of outstanding value. It was named 'Kherson,' after the Black Sea province from which it came. After two or three years of testing, peck lots were sent to various Nebraska farmers.

"From the original seven ounces of seed considerably more than 500,000,000 bushels of Kherson oats has been grown in the United States, it is estimated. The particular good points of this variety are freedom from rust, stiff straw, large, plump kernels and heavy yield. In those States to which it is adapted it usually makes more bushels per acre than any other variety."

Canning Situation

(Continued from Page 3)

on a tree, but by heavy thinning it is known that all of our cling varieties can be made to "size," providing that trees are healthy and soil conditions favorable.

We must not lose sight of the fact that this season the peach crop again is very heavy and apricots and pears promise another good season. The same tactics that were used by canning concerns, cooperative and private, last season in buying nearly everything offered could only result in disaster. The fruit grower should therefore welcome these rules and resolve to deliver to the canner only the kind of fruit that is called for in the contract.

LESS RICE IN GLENN COUNTY

Less rice is being grown in Glenn County this year than last, although several fields which have been idle for two years have been planted to this crop. The total acreage is estimated at 20,000 acres.

What Readers Want to Know

VARIOUS THINGS ABOUT BEES.

1. Where are the best places in California to keep bees?
2. What are the best honey plants?
3. What is the best breed of bees?
4. Where can further information about bees be obtained?

C. PANTER, Santa Clara County.

1. Any citrus fruit section, the sage brush regions of Southern California, or any of the alfalfa growing districts.
2. Orange, sage, alfalfa, star thistle and wild buckwheat. There are many other good honey plants not so widely distributed. Alfalfa is one of the best.
3. Italian and its hybrids.
4. Secure a copy of some good bee journal. You will find many books on bee culture listed therein.—J. D. BIXBY, Senior.

CAUSE OF ROSE BUSH MILDEW

Replying to an inquiry from Mrs. L. W. Collins, Santa Cruz County, will state that the rose bushes in question are troubled with mildew. The fact that others do well in the same locality indicates that conditions are favorable for growing some varieties free from this disease, hence only such sorts should be planted in that particular place. Damp, foggy weather is congenial for mildew fungus.

Roses are heavy feeders, but may be overstimulated, especially on heavy poorly-drained soils. Keep the leaves a rich, healthy green, but don't apply water or fertilizer unnecessarily. Sprinkling rose bushes on a cool day, or on cool and foggy nights, will sometimes cause mildew to develop, especially if the bushes are weak and poorly nourished.

GRAFTING GRAPES AND WALNUTS.

Please give directions for grafting grapes and walnuts.—MRS. F. C. DE CHAINE, Siskiyou County.

Walnut trees and grape vines may be grafted in the spring, about the time growth begins. Neither of these is easily grafted and it would be best for you to get an experienced workman to do the job for you.

The wood used for grafting walnuts should be cut before growth begins and should be kept in a cool place so it will remain perfectly dormant. Well matured growth of the previous season should be used. A sharp knife for use in cutting the graft to fit the stock is essential.

If a fair-sized branch is to be grafted, several cions should be inserted into the stub after the branch has been cut off. A branch three inches in diameter should have at least four grafts. These may be inserted into two splits, made at right angles with each other.

The cion should consist of three buds and should be cut to the shape of a wedge at the base. The inner bark of the cion must be put in perfect contact with the inner bark of the branch to be grafted. The entire end of the stub containing the grafts should be covered with grafting wax, also the tips of the cions.

The grafting of the grape is somewhat similar, except that the main stem of the vine is cut off below the surface of the ground, and after the grafts are inserted the soil is banked over them to prevent drying out.—GEO. P. WELDON.

ALUMINUM BEE COMBS

Please give further facts regarding the use of aluminum bee combs.—J. A. DENNIS, Alabama.

Bees will use aluminum combs quite readily, if the nights are not too cold. They store honey in them freely, but are more backward about using them for brood rearing.

Aluminum combs are sold all ready for use. Many thousands are used in Texas for the storage of surplus honey. They can be used for brood rearing, but bees do not readily accept them for this purpose, probably because metal is a quicker conductor of heat than natural wax.

In case a colony of bees wants to supersede the queen, they will attach cells to the face of aluminum combs, as they often do with wax combs.

The writer has a number of sets of these combs, made at different periods and showing distinctly the improvements which have been made year by year. All have been in use this season and honey extracted from them. Aluminum combs are heat-proof and moth-proof, but California apiarists are not yet convinced that it is profitable to substitute them for wax combs. In a climate where the nights are only moderately cool they are more satisfactory. —J. D. BIXBY SR.

"Walnuts for Women" Proves Profitable Slogan

By O. H. BARNHILL

THE farm labor problem, always acute, is especially difficult where the employer is a woman and cannot work with the help in field, feed lot and fruit orchard. The trouble—as Mrs. Ada B. Colvin, Pomona walnut orchardist, learned soon after losing her husband eleven years ago—is not so much with workmen being indolent and inefficient as it is in getting them to adapt their methods to local conditions.

"Independence and self-reliance are fine traits of character," admits Mrs. Colvin, "but when it leads hired help to take their own head for things regardless of the employer's wishes it is unfair to the one who must bear the loss of mismanagement."

Mrs. Colvin's workmen were inclined to take advantage of the fact that she was a woman and knew little about the walnut business. Upon finding that her trees were being improperly pruned and irrigated, she decided the only way to succeed in nut growing was to learn the best methods of producing and harvesting the crop and then personally see that such methods were followed.

INVESTIGATES SOIL MOISTURE

Armed with a soil auger of great length and penetrating power, Mrs. Colvin began a searching soil investigation in order to learn if her trees were getting enough water. She found that the ground was thoroughly soaked on top, but that the soil was dry at a depth of three or four feet.

"Shallow irrigation may be all right for some crops," admits Mrs. Colvin, "but the walnut is a very deep-rooted tree and needs a moist subsoil. We have found feeder roots at a depth of eight to ten feet. In order to obtain best results the ground should be wet enough to cling to the soil auger twelve feet below the surface. Our soil is thirty feet deep."

Water had been run in shallow furrows and the surplus allowed to drain off the lower end of the orchard on to an adjoining field. This plan was changed by running a small head of water in deep furrows. In order to soak the subsoil thoroughly, the water is sometimes kept running for weeks at a time.

PRACTICES DEEP PLOWING

The neighbors were worried because Mrs. Colvin had her orchard plowed so deep, fearing the trees would be seriously injured by having large roots broken off. Surface roots, however, are not considered an advantage by this grower, who has her ground plowed as deeply as possible, sometimes ten to twelve inches.

Anxiety was also expressed by other orchardists when Mrs. Colvin began winter irrigation, saying she would drown her trees. The practice is now common among walnut growers. Late irrigation, however, is considered dangerous for young trees, owing to danger of frost injury. One acre which was watered the last of September was killed in this manner. Discontinuing watering the middle of August is advised. Pruning problems were next tackled and solved.

A careful watch of insect pests revealed the first red spiders found on walnut trees in Los Angeles County. They are controlled by dusting with sulphur, while aphis are destroyed with Nicodust. Black scale does little damage, but hot winds are sometimes quite destructive.

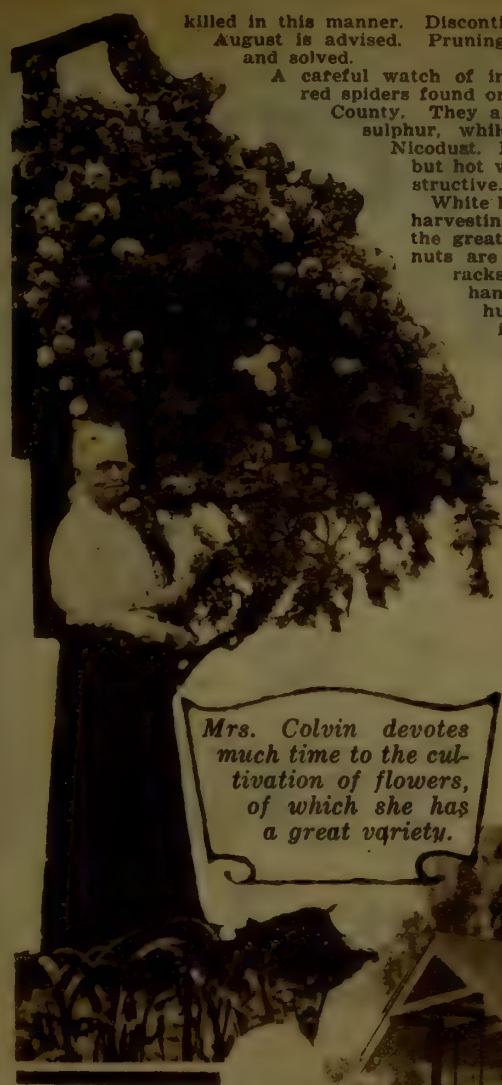
White help is employed exclusively in harvesting the crop in order to obtain the greatest degree of efficiency. The nuts are dried in the shade on large racks in an old barn, which saves handling. Mrs. Colvin has some husking pegs, such as were used in the Illinois corn belt, where she and her husband lived before coming to California in 1893. These handy little instruments are used to hull walnuts.

The oldest trees in the Colvin orchard are Santa Barbaras, planted thirty-four years ago. Later plantings were made twelve to twenty years ago. Some of the younger trees now produce as many dollars' worth of nuts as the older ones because they are of superior varieties. There is a large block of Placentia Perfection, also Eureka, Franquette and many other sorts.

The trees are set forty by forty-two feet, but experience indicates that fifty or even sixty feet would be a better distance between the trees. The walnuts replaced prune trees, which yielded a greater profit for firewood than for fruit.

Mrs. Colvin was one of the first growers to join the California Walnut Growers' Association and has received valuable assistance from the county farm adviser's office, of which she entertains a very high opinion.

Living in a commodious country home, surrounded by a profusion of roses and other flowers, Mrs. Colvin is a firm believer in "Walnuts for Women"—provided they learn the business and personally see that their instructions are carried out.



Mrs. Colvin devotes much time to the cultivation of flowers, of which she has a great variety.

This commodious farm home is entirely surrounded by giant walnut trees, which furnish both shade and nuts.

This photograph, taken the latter part of April, shows how much slower some varieties are about leafing out in the spring; also that Mrs. Colvin does not believe in high heads.

Woman Avocado Expert

HERSELF an authority on avocadoes and a plant propagator of more than local repute, Miss May Sexton of Goleta (Santa Barbara County) is carrying on the work begun by her father, Joseph Sexton. The latter was known as the originator of the walnut now generally described as the "Santa Barbara softshell," and brought to California many valuable plants.

Miss Sexton does much of the work about her orchards, flower and ornamental gardens and hot houses. Her collection of rare and semi-tropical fruits, shrubs and flowers is one of the most interesting in Southern California.

At one time more than 95 varieties of avocadoes were growing on the Sexton ranch. Now a large number of mature trees of various sorts produce unusually large crops, some of these bearing out the solution of certain avocado authorities that we have expected too much of young trees and that a great deal of the so-called "shy bearing" of apparently mature orchards has been due to the fact that they had not yet reached their really productive age.

If Miss Sexton has a favorite avocado it is the Blakeman, which in that locality seems to be a sure yielder and more profitable than other sorts.

Avocadoes of one variety or another are picked every month of the year by this energetic woman horticulturist. Some of the fruit is sold in Santa Barbara; much is disposed of in Los Angeles at attractive prices. One Blakeman tree this year bore a crop estimated at 400 pounds, worth more than $250.

Make Rural Art Modern

"ARTISTS the world over continue to make the farmer the man with the hoe," declares Dr. C. J. Galpin of the U. S. Department of Agriculture. "The hoe-age in agriculture is closed. The hoe farmer may still be found here and there, but his day is done. For the past fifty years there has been a titanic struggle in America to take the hoe out of farming, to take out the hoe manner of living, the hoe school, the hoe church. Machine farming has replaced hoe farming.

"Agricultural science has transformed farming from a traditional craft to a creative process. Artists have an opportunity to symbolize this new thing and express it in community houses, schools, churches and structures everywhere that farmers are now building.

"The demand for better rural art is in the rural schools. Educators are at their wits end to convey to farm boys and girls the miracle of the life in which they are immersed. They need the magic of art. One stroke from the artist's hand is worth at this point a hundred lectures from the educator."

Feeding your flock is certainly your business

Mixing your feed is certainly our business

The blending and mixing of feeds is no side-issue, no after-thought, with us. *It's our business!* It stands to reason that we, as manufacturers and millers, are in position to produce a uniform, balanced egg mash like Surelay better and cheaper than you can. We have the equipment. We have the facilities. We have the experience. Our operating costs per ton of feed are bound to be far below the mixing costs of the individual feeder. To say nothing of our daily laboratory tests—an advantage no individual feeder can possibly have.

If you have not yet convinced yourself that you are losing egg-money by using hand-mixed mashes, send for "Why Mixed Feeds?," a brass-tack Service Bulletin now on the press. It was written for Sperry by Dr. Kaupp—one of the greatest national authorities on feed investigation. The edition is limited—send for your advance copy today. Use the coupon below—its free!

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ORCHARD and FARM

REGULAR ISSUE OF THE SUNDAY EXAMINER

JULY 8, 1923

Allen Says "Nothing Is Too Good for Rabbits"

By O. H. BARNHILL

THERE is a prevalent opinion that Belgian hares and other breeds of tame rabbits thrive about as well in confinement as when given their liberty; that they are practically immune to disease and pests; need nothing much in the way of feed besides alfalfa hay and rolled barley; and that any old box will do for a rabbit hutch.

Are these ideas correct? Mrs. F. W. Allen, who—with her hard-working husband—has had unusual success in rabbit raising, stared in amazement when asked this question. "Land sakes—no!" she exclaimed. "Of course, rabbits will stand a lot of neglect and abuse—more than most any other animal, I guess—but they need care and attention, same as anything else.

"If you don't keep their quarters clean and give them the proper kind of food they will get sick and die on your hands—and that's no joke! But no other kind of livestock responds more generously to care and kindness. We believe nothing is too good for our rabbits and it seems they just strain a point in paying us back with the quickest possible growth and very highest quality."

This "rabbitry de luxe" is 60 feet long and 12 feet wide. No expense has been spared to provide the very best quarters obtainable, for Allen believes that rabbits respond as generously to good treatment as other kinds of livestock.

Mr. Allen and one of his prize bucks. Mrs. Allen takes capable care of the rabbits while her husband works for wages. At the rate their livestock business is growing soon it will require all of their time. They enjoy their work, making the rabbits personal pets.

PREFERS RABBITS TO POULTRY

The Allen rabbit ranch at Hawthorne (Los Angeles County) formerly was devoted to poultry, but the latter made so much trouble for the neighbors that they were supplanted by the more docile bunny. The Allens were raised in the open and didn't have the heart to confine their hens closely. They also give their rabbits as much freedom as possible, permitting the does to raise their young outdoors during the summer, contrary to the custom of most growers. When asked if the dogs didn't get after the rabbits, Mrs. Lewis replied:

"Yes, but something gets after the dogs—this old cat! She looks pretty sleepy, but let a dog—no matter how large and fierce—come onto the place and quicker than you can say 'scat' she is right on that dog's back, chewing his ears and clawing his eyes. No," with a reminiscent smile, "the dogs don't get any of our rabbits."

The does are fond of "digging in," but Allen digs them out just as fast as they excavate burrows. He believes that digging develops strong, heavy shoulders and healthy rabbits.

BUILD NEW RABBITRY

Allen's new rabbitry is considered by other growers one of the best and finest buildings of its kind ever erected. It is 60 feet long and 12 feet wide, with three foot overhanging eaves. The five-foot alley in the center is floored with concrete and the same substance used in building two-foot gutters on either side of the building to catch the refuse when the hutches are washed out with a hose.

This rabbit home has three floors; the first being used for young stock, the two upper ones for mature animals. Pens for the latter are four feet square and 30 inches high for Giants, and one foot narrower for the smaller breeds. Double pens are divided with poultry netting, which also forms the inner and outer sides.

V-shaped hay mangers, with wire netting sides, set between the double pens supply roughage to the rabbits. The grain box is a 12-inch wooden extension of the hay manger, next to the alley, with a three-fourths inch opening at the bottom, through which the contents drop into a shallow tray below. The latter is made of galvanized iron and has a half-inch lip bent inward, to prevent the rabbits from pawing their feed out on the floor. Underneath the manger is another shallow box of similar width—eight inches—for catching roughage litter.

PENS ARE WELL FLOORED

The pens or hutches are floored with 1¼ by ¾-inch strips three-fourths inch apart. First-grade $30 flooring was used, in line with the policy of providing the best of everything for the rabbits. Underneath the hutches are tight dropping-boards made of tongue-and-groove lumber. These platforms slope outward to facilitate cleaning.

Eight-inch boards 12 feet long close space between floors and dropping boards, being hung from hinges attached to the upper side, permitting them to be swung up and fastened out of the way while the dropping boards are being flushed out, the refuse dropping into the concrete gutter below.

The lower hutches for young rabbits are 18 inches high. Each one is furnished with a galvanized V-shaped feed bin attached to the inner side of the door. Pushing in a tin slide shuts off the supply of feed. Drinking water is supplied in shallow earthenware jars.

CURTAINS PROTECT RABBITS

Fogs and cold winds are kept out by heavy canvas curtains, which are quickly rolled up with ropes and pulleys. A large feed shed is to be built, permitting the storage room at one end of the rabbitry to be used for displaying animals and for various other purposes.

"Baby boxes" 10 by 14 by 36 inches are used for incubating the young rabbits until they are two weeks old. A removable partition near one end affords the doe a resting place away from the young.

Alfalfa hay and rolled barley of the highest quality are the standard feeds. Common barley, which in April, was selling at $1.85 per sack, often contains smut, which is bad for rabbits. Allen pays $3 a sack for the best grade and claims it is well worth the difference.

"It is poor policy to feed common baled alfalfa," declares Allen, "no matter how cheap it can be purchased. Such hay is apt to be full of weeds and trash and to contain a large percentage of large, woody stalks, which the rabbits will not eat. We pay $42.50 a ton for loose hay, which is cut when the alfalfa is only six to eight inches high and is guaranteed free of weeds. The rabbits consume practically every bit of the tender, leafy plants, so there is practically no waste."

Mr. Allen takes no stock in the belief that green feed gives rabbits the slobbers.

USES MUCH GREEN FEED

"For three years we have been feeding all kinds *(Continued on Page 10)*

View of small section of the new rabbitry. Slatted floors make the hutches self-cleaning. The dropping-board beneath is cleaned by raising the hinged door in front. A canvas curtain is lowered to shut out wind and fog.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JULY 8, 1923

Horses or Tractors for Orchard Cultivation?

Widely Known Authority and Clean Cultivation Advocate Discusses Old-New Problem to Detriment of Dobbin---Cash Prizes Offered

By W. S. KILLINGSWORTH

THE old theory that nothing but a horse or a mule could be used successfully in plowing and cultivating the orchard has exploded. Recent rapid strides in perfecting the tractor for economical and successful use in orchard work have challenged the attention of fruit growers throughout the State. The uncertainty and high cost of labor in connection with the care and handling of stock in the corral and orchard has been the cause, in many instances, of the change from animal to tractor power. There is, however, an advantage in the tractor over that of the horse or mule that may not have been given proper consideration from an economic standpoint — the cost of feed, when for days, and sometimes weeks of idleness, the horse or mule is "eating his head off."

W. S. KILLINGSWORTH

When the tractor is not in use it is resting peacefully in its garage at no expense whatever aside from overhead charges of interest and storage. Since orchard operations are confined to certain seasons of the year, this gives the tractor a decided advantage over the horse or mule, as they represent nearly as great an expense when idle as while at work.

IMPERFECTIONS OVERCOME

For a time the tractor labored under a disadvantage—its imperfections. Improvements of many kinds, however, have reduced its "awkwardness" and liability to breakage until now it is handled with ease, and with little danger of delays.

There is not much doubt in the minds of those who have given the tractor a thorough test that it is the ultimate in ranch power and in the future will make increasing records for economy and efficiency.

In most orchards and vineyards where horses are used the work is seasonal. While there may be a limited amount of manure and brush to be hauled, and the team may draw the spray outfit during certain seasons, as a rule this does not amount to many days annually, and the cultural operations are never continuous. Obviously, the fewer days horses or mules are employed in the orchard or vineyard the higher will be the cost per working hour and the greater the advantage of substituting the tractor.

But it is not alone in the matter of economy that the tractor is superior to the horse in most orchards and vineyards. Where horses or mules are used for cultivation it is the general practice to employ small teams, since large animals are "unhandy," at times damaging tree and vine.

The damaging effects of even the large tractor, however, long since have been overcome; in fact, less damage is done to the trunks of trees, the limbs heavily laden with fruit or the fruit itself, by the average tractor in the hands of an experienced driver, than is done by an oversize, awkward team of horses or mules!

ECONOMY OF TIME

Then there is the matter of economy of time. Admitting that splendid work can be done by the small team, more trips are required to accomplish a given amount of work, and more help is necessary. A suitable size tractor will pull an implement of greater width, making it unnecessary to pass through the tree rows as often as must be done with the horses. This greater capacity means faster work and a reduction in labor cost, both of which are highly important considerations in these times of short hours and high wages.

But granting for the sake of argument (as asserted by some growers who figure closely) that an acre of ground can be plowed as cheaply by horse or mule power as by means of the tractor, there is yet a greater consideration.

RESULTS THAT COUNT

In these progressive days we have come to look not so much upon the cost of a certain article, or any particular unit of work, as upon the ultimate result. Sometimes, by the use of extra equipment, a crop is harvested just on the eve of a spell of weather that would have meant ruin if the work had not been accomplished quickly. That in itself is a great advantage of the good tractor. The grower may take advantage of weather conditions that will enable him to finish a piece of plowing or planting one day sooner, which, in turn, may mean the difference between a good crop and a poor one.

Then there is the oft-repeated but by no means unimportant factor of appealing to the boys. What farm-raised youngster does not like to handle and "tinker" with machinery? It is safe to say that many a boy who would have rebelled at horse "chores" has been kept at home by his appointment as "navigating officer" of the tractor fleet or "dreadnaught."

Some orchardists have been rather doubtful as to the practicability of the tractor for orchard work, fearing it might be difficult to make the turns at the end of the rows. This idea probably has arisen from the fact that some of the early tractors required a considerable area in which to make the turn, but with most modern outfits of proper size there need be little concern as to turning. Most of the machines, if properly hitched to the implement, can make the turn into the next row of trees if desired. However, it is seldom, if ever, absolutely necessary that the turn be made into the adjoining row, since the work of cultivation nearly always can be carried on just as well by turning into the second or third row—the same method as is frequently used in cultivating corn in order to avoid short turns.

The question most vital to the orchardist is that of selecting a tractor best suited to his individual requirements. There need be no difficulty, however, in solving this apparently puzzling problem.

Years of experience have developed many well-defined types, and the prospective purchaser need only investigate the records of the various makes and models in doing work similar to his own. There was a time when standards of comparison were lacking. Now past performance records are available in nearly every part of California, where all sorts of conditions have had to be overcome.

THE ULTIMATE POWER

Inasmuch as the tractor is the ultimate orchard "horse," it would be wise for every fruit grower whose holdings are sufficiently large, to give the power question most serious consideration. We could not consistently advise every small orchardist to buy a tractor, as the purchase price and the necessary expenses, including the upkeep, might not justify him in making such an investment. Circumstances must govern this situation. There are, however, "baby" machines advocated for even the smallest acreage.

Undoubtedly the day of the horse and mule as orchard workers is passing rapidly. Custom work will solve the problem of those who are unable or unwilling to maintain their own power plants, so that eventually all orchards may be properly tilled and the land which is not kept clean will be held in contempt.

Write a Letter and Win a Prize!

THE editor of ORCHARD and FARM wants to hear from subscribers who have had experience in comparing horses with tractors for orchard cultivation. The following prizes are offered:

For the best letter	$10.00
For the letter adjudged second best	5.00
For the letter adjudged third in value and interest	2.50

This is the subject on which we ask you to write not more than 1000 words: "WHICH IS THE MORE ECONOMICAL FOR ORCHARD CULTIVATION—TRACTOR OR HORSEPOWER?"

The judges (whose names will be announced when the list of winners is published) no doubt will be impressed particularly by actual facts and figures taken from the records of experienced producers.

RULES OF CONTEST—In case of a tie for any prize, the full amount will be awarded each winning contestant. No letter must be accepted which is post-marked later than August 1. Each letter must be accompanied by author's full name and address, plainly written. SEND YOUR ENTRY TODAY. Address Contest Editor, ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

Farm Bureau Federation Solves Membership Problem

By JAMES C. KNOLLIN

Editor of ORCHARD and FARM

AN INCREASE of 20 per cent in Farm Bureau membership this year without the use of paid solicitors is predicted confidently by Harry H. Morrell, in charge of organization and membership work for the California Farm Bureau Federation.

"This gain," he points out, "will give us a total of 27,000 members, and we are now represented in 41 out of 58 counties. A number of mountain counties are not strictly agricultural. Other counties include many foreigners not available as members. The rule is that no county is organized except at its own request; our present showing, therefore, represents purely voluntary activity, making the Farm Bureau the most powerful, far-reaching and important rural factor in California. The problem of increasing local membership, however, is one requiring special attention. For this purpose the organization department was launched last September. Fundamentally we apply the same principles in all counties and under all conditions. But varying local problems necessitate different methods of applying these fundamentals.

H. H. MORRELL,
Organization Director Cal. Farm Bureau Fed'n.

"Therefore, we go into a county, study the local situation, confer with the various officers and directors, and with the aid of the county agents and local newspapers, put on special membership campaigns."

TACKLED BIG JOB

Mr. Morrell, upon assuming his duties last fall, soon found the task of securing new members involved much more than the subject implied. In many cases it was necessary to start with the smallest branch of farm bureau work—the community center—and work up, first perfecting the county organization so that all elements might pull together harmoniously in obtaining the desired quota of new members.

It is believed when every county is thus properly organized, and then reinforced by means of increased revenue from additional membership, the California Farm Bureau Federation will be one of the most substantial and smoothly-working State organizations in America.

"Just what becomes of my $5 dues?" a number of subscribers have asked. As a rule, the sum is divided as follows: One dollar remains for the use of the local center; $2.50 goes to the County Farm Bureau; $1 to the State Federation, and 50 cents to the National Federation.

The money is not used to pay salaries of farm advisers and their staffs. This item is met one-half by the United States Department of Agriculture and one-half by the State, their expenses being paid by the county.

The "teaching" or county agent branch of farm bureau work is entirely distinct from the organization itself, the latter being managed by the farmer-members, who also appoint their officers. (This distinction apparently has not been made clear to all ORCHARD and FARM readers.) The two branches, however, co-ordinate closely.

But even when all agencies work together to secure new members, success does not always follow unless some one especially trained and fitted is on hand to direct it. That is where Morrell comes in.

He is an enthusiastic worker, having been badly bitten by the co-operative "bug" while operating a ranch. Before the war he was engaged in commercial work as a statistical and efficiency expert. He has an analytical mind, which has made it possible for him to plan along positive, resultful lines.

A typical example of his activities is afforded by the recent campaign in San Luis Obispo County, where the aid of C. L. Day, publisher of the Daily Telegram, was enlisted by Mr. Morrell and County Agent Murphy.

Mr. Day, whose paper is the official organ of the County Farm Bureau, published a special 16-page edition of the Telegram in connection with the county drive. No less than 20 articles in this issue were devoted to agricultural and farm bureau topics while nearly every advertiser inserted some special farm bureau message in his announcement.

The county was divided into three districts, each of which comprised several centers. The centers, in turn, were divided into districts, each with a two-man team in charge of actual field work. Approximately 100 farmers, already members, took part in the drive, which lasted seven days and culminated in a very enjoyable and enthusiastic picnic. Up to June 15, 300 members had been secured and it was believed 500 were assured as a direct result of the campaign.

"By enlisting the aid of local members who work after a definite plan and who personally call upon prospective new members, we have solved the membership problem. And, best of all, we avoid the old system, with its many objectionable features, of employing paid solicitors. Moreover, we secure a class of members more likely to stick than those obtained by hammer-and-tongs methods," added Mr. Morrell.

LAUDS WORK OF PRESS

"The assistance of the local newspapers is most valuable. Mr. Day's special edition did much to put over the San Luis Obispo drive. We are grateful also to ORCHARD and FARM and other State agricultural journals which constantly bring before the farmers the importance of farm bureau work," Morrell concluded.

The editors of ORCHARD and FARM are closely in touch with A. C. Hardison, president; H. W. Winshison, vice president, V. C. Bryant, secretary; Mr. Morrell and other officials, local and State, of the Farm Bureau Federation. ORCHARD and FARM feels no agricultural movement is more worthy of its heartfelt support, and unqualifiedly urges every reader to identify himself in some way with farm bureau work. Don't be an idle critic. If you don't like the way your local farm bureau is run, become a member and have a say in its management. Watch for additional articles on the Farm Bureau and the State Federation in forthcoming issues of ORCHARD and FARM.

ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of the
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TO SERVE—All those who, for pleasure or profit engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

LUTHER BURBANK QUITS NURSERY.

It was with keen regret that Luther Burbank recently decided to discontinue his nursery business. "The change was made necessary on account of my health," explains the great plant breeder. "Nursery work requires much outdoor work in cold wet weather, which I no longer am able to endure.

"My seed business has grown to such proportions that it consumes all the time I can spare from my experimental work. I have been receiving 2000 letters a week and am literally swamped with business and personal communications."

FICKLE HUMAN NATURE AND THE FARMER—Although most communities throughout the Nation prefer white eggs, some cities, such as Boston, are willing to pay for the brown eggs a premium equal to that commanded by the white product elsewhere. Scientists assert there is no difference chemically or in flavor between eggs having differently colored shells. It's simply a matter of habit—and we are all creatures of habit. Fruit and produce shippers are wise enough not to work against public preference. Rather they cater to the idiosyncrasies of the ultimate consumer. If this important individual wants brown eggs, or red grapes, or yellow apples, why, bless his heart, he shall have them! There is sure to be another customer in another district who prefers the variety he spurns!

DRYING OUTFIT—CROP INSURANCE.

A fruit drying outfit should be regarded as one kind of crop insurance. Many apricot growers are realizing this fact, for they are in a position similar to that of the man whose uninsured house is burning down. They have a big crop of fruit to dry and insufficient drying apparatus. They expected to sell to canners, but neglected to prepare for drying, in case they could not market their fruit fresh.

For the first time in many years, both Northern and Southern California have a good crop of apricots. Canners have a large carry-over stock and, therefore, are unable to take care of all the small sizes, forcing a large quantity into dry yards or dehydraters which are inadequate to handle the business. This contingency might have been forseen and provided for in due season, just as insurance is taken out.

IMPROVE LOS ANGELES HOG MARKET.

The establishment of the Union Stock Yards at Los Angeles has made possible a decided improvement in the California hog market, according to the U. S. Department of Agriculture. In the past, prices have been based on the Wichita, Kan., market. Beginning May 1 the price paid at Los Angeles is $1.60 above the Kansas City price.

A plan of trading was worked out by C. H. Beauchamp, representing the Packers and Stock Yards Administration, assisted by representatives of the Stock Yards Company and commission men. Hog orders are placed one week in advance. If buyers are unable to obtain sufficient supplies from local territory, shipments are made from Eastern points.

The premium price mentioned is paid for top hogs weighing 160 to 190 pounds, this being considered the most desirable size.

PITY OR ENVY THE DAIRYMAN?

"Pity the poor cow slave," writes a Fresno County subscriber. "He is never free from the burden of work. He has no Sundays or holidays. His is a dog's life." But wait a minute. Let us examine the facts in the case.

According to A. W. Hendricks of the Bank of Italy's Joint Stock Land Bank, no class of farmers in California is in as good financial shape today as the dairymen. "Show me a progressive cow-owner, particularly one with alfalfa, and I will show you a man who is paying his interest and taxes regularly, working his way out of debt, and enjoying the confidence of the community."

"To be sure, the dairyman works hard," added the banker. "Perhaps that is why he's getting ahead. Too many farmers and fruit growers are going around in high priced cars trying to borrow more money instead of getting down to work and digging themselves out of the financial hole into which they have fallen."

NO DANGER OF OVEREXPANSION.

Mr. Hendricks' statement, quoted above, is confirmed by leading dairy authorities, who add the competition is more keen for California dairy products than for those of almost any other State. "We can support thousands more cows in California," asserted the president of a large creamery corporation recently. "The fact that butter has been bringing a higher market price in California than the East for some time is sufficient indication of a shortage in this section.

"It has been the history of agriculture in all States and all countries that permanent prosperity must be built upon dairying. With good dairy methods, we scarcely can have too many cows in California."

"What's New?"—Keeping Abreast of Agricultural Progress

Loganberry Prices Improve

THE Washington County (Oregon) crop of 300 tons of loganberries has been sold for 5 cents a pound. The cost of picking is two cents a pound. Growers say that 5 cents is the minimum price for which this fruit can be grown. Lower prices prevailed the past two years.

California Ram Goes East

PURDUE UNIVERSITY, Lafayette, Ind., recently imported a California ram to head the college flock of choice Rambouillete ewes. The animal was selected from the famous Bullard flock at Woodland, the final choice being made by Prof. R. F. Miller of the California College of Agriculture.

Wholesale Hopper Poisoning

IN order to protect their crops from grasshoppers, Modoc and Siskiyou ranchers in the Tule Lake section put out as much as five tons of poison bran per day. The U. S. Reclamation Service apportioned $5000 to assist in the work. Poison ingredients were shipped in by the carload.

San Diego Fair Building

THE San Diego Fair Board has decided to erect a new building in Balboa Park for housing poultry, rabbit and pet stock exhibits. The structure will be 76 by 110 feet, with 10-foot walls. The lower seven feet will be matched siding, while the remaining three feet will be fitted with muslin covered frames, which can be removed for ventilation purposes. The location chosen is immediately south of the livestock building.

Erect Monument for Cow

JERSEY breeders are contributing money with which to erect a monument to Vive La France, called the "Wonder Cow," which died recently on the Packard Farm in the Willamette Valley. In six years she gave thirty-nine tons of milk, containing sufficient fat to make more than three tons of butter.

In each of her third and fourth years she produced over 1000 pounds of butterfat. Five of her bull calves sold for $20,400. A rare bond of sympathy existed between Ovid Pickard and this remarkable cow.

Big Tehama Turkey Camps

FROM the Hudson Hill, near Corning, seven Turkey camps can be seen, each with 1000 to 5000 birds. Other large flocks are being raised in that section. Prospects are that the 1923 turkey crop at Corning will exceed that of last year, when $435,000 worth of birds were marketed.

Most of the work of turkey raising is done by women, who are said to be making dry, red hill land pay six per cent interest on a valuation of $100 per acre. An abundance of warm, dry weather, grass seed and grasshoppers are favorable factors in the Corning turkey industry. Small patches of alfalfa and grain are grown on summer fallowed ground.

Pick Gravensteins Prematurely

AS A result of investigations recently conducted in the Sebastopol apple growing district by E. L. Overholser of the California College of Agriculture, evidence has been obtained which indicates that Gravensteins are often picked prematurely. The result is that the fruit lacks quality and flavor and becomes badly affected with bitter rot. If permitted to remain on the trees until firm, ripe apples of this variety will keep well in storage until after Christmas, tests indicate.

Owing to car shortage and unfavorable market conditions, the advisability of storing a portion of the Gravenstein crop and shipping by water through the Panama Canal is being considered.—K. R.

Irrigation Project Launched

WITH the assistance of Dr. Elwood Mead and George Kreutzer of the State Land Settlement Board, an irrigation district has been formed in Happy Valley, Shasta County. Five hundred acres of land has been acquired from the Ehmann Olive Company. When this is taken 1200 acres of additional land will be available for settlement.

First class land is priced at $100 an acre; second grade $75. An initial cash payment of 15 per cent is required. Twenty acres is expected to be the most popular size of farm. Of this amount of land the purchaser is expected to clear five acres of brush the first year, ten acres the second year and the remaining five the third year.

A credit of $40 per acre is given for clearing, which entitles the purchaser to a deed for the land. The remaining amount due may be paid in five yearly installments, without interest.

Cotton in Kings County

MORE than three hundred acres of cotton is being raised this year by the Muir Agricultural Company, whose ranch is about two and one-half miles southwest of Corcoran (Kings County). It is of the Acala variety and will be treated at the Corcoran gin. The cotton was planted April 15 to 20, and despite unseasonable cold weather which necessitated some replanting is expected to produce an excellent crop.

The project is sponsored by Feodor Muhr of Oakland, who is widely known for his distinguished war record as an officer of the American Expeditionary Forces, and who is president of the corporation. Mr. Muhr turned to agriculture because of injured health resulting from his wartime experiences, and also because he believes there is a world shortage of cotton, which will be reflected in high prices for the California crop.

The site chosen for the cotton enterprise is the old Smith ranch, formerly devoted to the breeding of Holstein and Jersey cattle. Elmer Burt is resident manager of the company.

Big Deciduous Fruit Crops

PROSPECTS for the apricot and prune crops in Yuba and Sutter counties never looked brighter, according to Frank Berry, one of the leading prune growers of Sutter. Berry declares the prune crop in these counties is heavier than in other prune districts of the State.—M. L. W.

Packing Apples Too Tight

FRUIT dealers in London and other foreign markets claim that Oregon apples are seriously injured by being packed too tight, which results in bruising the fruit. Unless this defect is remedied, dealers say that better-packed apples from other districts will supersede the Oregon product.

Wheat Makes 100 Bushels

IN THE exhibit of Colusa County at the State Fair this year will be several sheaves of hybrid wheat from the ranch of R. Hurlburt, just north of Colusa (Colusa County). The wheat on three acres is said to have produced more than 100 bushels to the acre and is of extra fine quality. Hurlburt originally bought an ounce of the seed for $5.00. It took him three years to grow enough seed to plant the three acres.—M. L. W.

Watch for Alfalfa Eelworm

TWO years ago the alfalfa eelworm appeared in a Northwestern field, the first in the United States, according to the U. S. Department of Agriculture. From the fact that this new pest is being investigated by the Oregon Experiment Station it is inferred that the first infestation occurred in the Beaver State.

The eelworm causes the stem of the plant to swell and become brown and brittle at the crown, which is the seat of the attack. Affected plants sometimes die, while those which remain are dwarfed and sickly. Plowing up of the meadow and planting to some cultivated crop for two or three years is recommended.

Cows Wait for TB Testing

"WHILE Oregon—which has only one-fourth the population of California—has 5366 dairy cows officially accredited free from tuberculosis and 10,000 waiting to be tested, California has only 33 accredited animals and 263 waiting to be tested," according to a Beaver State booster, who obtained his figures from a recent report of the U. S. Bureau of Animal Industry.

California has 100,000 cows under supervision, contrasted to Oregon's 122,000. Arizona has no accredited cows, but 3000 are waiting to be tested in that State. Nevada has 1282 accredited cows, but none waiting to be tested. New York has 27,320 accredited, 395,000 under supervision and 200,000 on the waiting list.

San Joaquin Milk Leads

SAN JOAQUIN COUNTY is the first in California to receive State approval of its milk supply, according to J. J. Frey, superintendent of the State Dairy Inspection Service. For the past two years Stockton has conducted an approved inspecting department, which grades, classifies and labels according to a definite legal standard all milk offered for sale in San Joaquin County.

The grades of milk authorized by law are as follows: Certified, guaranteed; grade A, raw; grade A, pasteurized; grade B, pasteurized.

These grades are uniform and represent the same quality in all parts of the State. To secure approval of the State Department of Agriculture, an inspecting department is required to meet State standards of efficiency in conducting field inspection and laboratory examinations.

"Drys" Win Over Wet Dippers

EXTENSIVE experiments covering a period of two years have convinced Tulare County farm bureau officials that dusting is to be preferred to dipping in fighting wheat smut. Farm Adviser C. M. Conner has been in direct charge of the tests which were conducted on more than 3000 acres in the Ducor district.

It was ascertained, according to Conner, that bluestone dipping solutions, although they killed the smut, also killed a considerable portion of the seed, whereas the dusting of the grain with copper carbonate killed the smut without injuring the seed.

Conner also expressed the opinion that an increased yield of about 30 per cent was effected by treating seed with the dusting process, compared to the yield from seed treated with bluestone dipping.—F. B.

Agricultural Leaders of the Pacific West

MRS. FREDA EHMANN

"Olive Queen" of California

KNOWN throughout California as the woman who rescued the olive industry from ruin and placed it upon a safe and profitable foundation, Mrs. Freda Ehmann, 83 years old, is still living at Oroville, where until very recently she managed a large pickling plant. The latter is now very capably superintended by her son, E. W. Ehmann.

MRS. FREDA EHMANN

Mrs. Ehmann's identification with the olive industry came by chance, but her unparalleled success in the work is the result of years of hard, persistent effort, in the face of numerous difficulties and discouragements.

Upon the death of her husband, a practicing physician in Quincy, Ill., Mrs. Ehmann arrived in California thirty years ago. Due to the financial panic of 1893, she came near losing all her property and was advised to become bankrupt. This, however, did not fit in with her ideas of honesty and industry.

Taking over a young 20-acre olive orchard to satisfy a mortgage, Mrs. Ehmann decided she would, if possible, make the trees pay a profit. She found that olives were being sold for a song, which the buyers sang. Trees were being pulled out and the land planted to more profitable crops. Dealers were not making money, because of the unsatisfactory condition of the market.

MARKET IN BAD CONDITION

Olive oil and pickled green fruit of superior quality were being imported from Europe and sold at prices which left the market for the inferior domestic product in bad shape. Ripe olives as a commercial food product were unknown.

Mrs. Ehmann decided that the processing of ripe olives was the key that would unlock the profits which she felt were confined in the olive industry. The superiority of ripe over green fruit was unquestioned. How successfully to process the former was the problem. Italians for centuries had tried to accomplish this, but in vain.

Securing from the University of California olive pickling receipts, Mrs. Ehmann had a portion of her fruit shipped to Oakland, where she then lived, and turned her home into a pickle factory. Space forbids a detailed description of her experiments, which were encouragingly successful. Armed with a ten-barrel supply of delicious ripe olive pickles, the newcomer returned East, visiting large wholesale dealers and hotelkeepers in Chicago, Philadelphia and New York.

Sitting in her pleasant California home in Oroville one sunny February day, California's "olive queen" related to the writer some of her struggles in persuading the trade that ripe olives were superior to green and that the former would keep equally well. Persistence, coupled with a meritorious product, won the day, however, and she returned to California with orders for 800 barrels of olives. Before the next pickling season arrived Mrs. Ehmann had more orders for ripe olives than she could fill.

Establishing a pickling plant at Oroville and buying more olive orchards, this energetic woman enlarged her business until she now processes 5500 barrels of fruit a year—275,000 gallons. She has been the means of making the ripe olive a staple article of commerce and now ships this product to various world markets.

"Plant olives and become financially independent," Mrs. Ehmann advises the women of California. She paid $40,000 for a 160-acre orchard in Butte County and owns 1000 acres of olive trees in Shasta County, besides other groves.

And yet, some people say there's no money in olives.—O. H. BARNHILL.

How to Judge Cows

ONE of the most helpful dairy bulletins ever issued may be had upon application to the De Laval Pacific Company, 61 Beale street, San Francisco. It is an illustrated presentation of the famous "cow demonstration" of Prof. Hugh G. Van Pelt, formerly professor of dairying at Iowa Agricultural College. By studying pictures and text, one can tell how to choose a good producer. The editor of Orchard and Farm urges every farmer to take advantage of the constructive work of the De Laval people, by securing a copy of this book. In writing, please mention Orchard and Farm. The bulletin is sent free.

Recommends Cod Liver Oil for Chicks

THE discovery and increasing knowledge of vitamines has led to many interesting experiments in poultry feeding. Prof. James Dryden of Concord, Contra County, Cal., has secured good results with cod liver oil, said to be rich in the essential vitamine "A." Fed to growing chicks the oil seemed to increase vitality, stimulate growth and practically eliminate losses.

At the beginning the oil was added to the mash at the rate of one tablespoonful to 400 chicks. Gradually the quantity was increased, until after three weeks the youngsters were getting double this amount.

Of 420 chicks in one pen, only 11 were lost and these during the first seven days after hatching. It is said the more rapid growth and greater vigor of this lot was very apparent upon comparison with youngsters of similar age which received the same feed and treatment without the oil.

The cost of the cod liver oil at retail is from 75 cents to $1 a pint, but in quantities it may be had for less, or it may be possible to buy at wholesale. So pleased is Professor Dryden with the results secured that he plans to continue his experiments with birds of various ages.—J. C. K.

Secret of Poultry Success

"WHAT do you consider the one most important factor in establishing either a breeding or a laying flock?" a prominent poultryman was asked. "I do not think there is any one most important consideration," he answered. "But we must start with breeding. Without a good foundation of a laying strain, either the breeder or the egg farmer would have long years of work ahead of him. Why take the time to breed up a strain when others have accomplished this so successfully? Second, it is necessary to keep up the valuable qualities by trapnesting, intelligent feeding and proper management. Heredity, then, counts for a great deal; management to retain the inherent productiveness and vigor is almost as important."

Balanced Ration Not Costly

"MANY poultrymen," says James Dryden, "seem to feel that in order to supply their flocks with a properly-balanced ration it is necessary to use high-priced feeds. This, however, is not the case. Cheaper or more efficient materials, such as alfalfa, mill feeds, milk and its by-products, meat-scrap and ground bone, mixed with common sense and fed in the proper proportions, will take the place of much expensive grain. It takes planning to hold down the cost and at the same time hold up the efficiency."

MUSTARD AS POULTRY FOOD

That the wild mustard, which grows naturally in many sections of California, is relished by poultry is a fact unknown to many egg farmers who keep their flocks confined. They would be surprised, perhaps, to see the apparent joy with which their hens would attack a field of mustard were the biddies given the run of a pasture. Some farmers maintain the mustard is a good "conditioner" and natural tonic.

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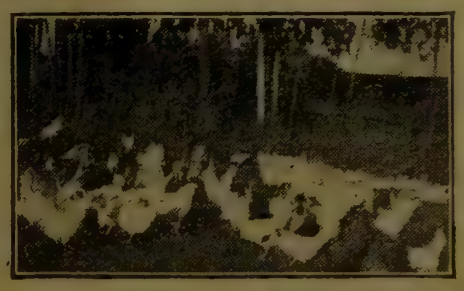
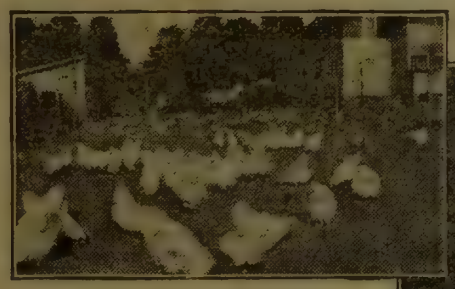


The pullets looked like little hens. Actual photograph of E. C. Morris's yeast-fed birds.

50% laying at four months of age on Fleischmann's Pure Dry Yeast. Fred H. Clark's ranch, Cotati, Calif.



No diarrhea—no leg weakness after using Fleischmann's Pure Dry Yeast. F. M. Crowe's flock, Owosso, Mich.

George Morrison raised these excellent young birds on feed containing Fleischmann's Pure Dry Yeast.

Leading poultrymen tell why they feed Fleischmann's Pure Dry Yeast

Poultrymen everywhere are making 1923 their most profitable year by feeding Fleischmann's Pure Dry Yeast.

"Let me thank you once more," writes Harvey C. Wood, of Bound Brook, New Jersey, "for introducing this life-saving element into our feeding program."

Fred H. Clark writes: "According to the accurate figures I have compiled from my books covering the test-period from July to November, if I had fed Fleischmann's Yeast to both flocks of 500 hens I would have increased my profits 50 per cent more. And that is on prices based upon what we were receiving from the Poultry Producers of Central California."

"I have never seen chicks feather so rapidly and develop such bone," writes E. C. Morris, of Petaluma, Calif.; "this we attribute entirely to the addition of Fleischmann's Pure Dry Yeast."

Fred M. Crowe's chicks, at the Crowe Poultry Farms, Owosso, Michigan, had leg weakness and diarrhea. He fed Fleischmann's Pure Dry Yeast. "A short time after," he writes, "they were all over it."

Use ½ lb. of Fleischmann's Pure Dry Yeast to every 100 lbs. of mash for dry or wet feeding. Fleischmann's Pure Dry Yeast can be profitably used for feeding all farm animals. Check on the coupon which booklet you want.

Fleischmann's Pure Dry Yeast comes in 2½ pound cans delivered. We pay postage or express. Mail the coupon today.

Caution: Do not be misled by imitations. Fleischmann's Pure Dry Yeast is *all* yeast—yeast in its most concentrated form. It contains no corn meal or other fillers. To be sure of results, order Fleischmann's Pure Dry Yeast—using coupon below.

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Enclosed find $.....Please send me.....2½ pound cans of Fleischmann's Pure Dry Yeast postage prepaid.

( ) Send me your book on raising pigs, cattle and horses on yeast-fermented feeds.

( ) Send me your book on raising poultry on yeast-fermented feeds.

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Stockton, Calif. *Peoria, Ill.*

Killed 200 Rats New, Easy Way

Dog, Ferret and Traps Failed. Amazing Virus Killed Them All. Not a Poison.

"I was overrun with rats," writes H. O. Stenfert of Redford, Mich. "Seemed to be several hundred of them. Dog, Ferret and Traps failed. Tried Imperial Virus and was rid of them all in a short time. Have found rat skeletons, large and small, all over the farm."

Killed Gophers Like Magic

"I killed every gopher on a 12-acre field of alfalfa last fall with two bottles of Imperial Virus," writes Chas. Scofield of Masachetah, Mont. "It is all you claim for it."

Rats, Mice, Gophers, in fact all Rodents, greedily eat Imperial Virus on bait. Sets up burning fever. Pests die outside, heating for water. Harmless to humans, poultry, pets, stock, etc. Endorsed by Farm Bureau Experts and large, nationally known institutions everywhere. Economical to use. Large size trial bottle of this true virus for 60c or

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SEND NO MONEY. Write today to Imperial Laboratories, Dept. 1667, Kansas City, Mo., and they will mail you two regular $1 bottles of Imperial Virus (double strength). Pay postman only $1 and a few cents postage when package containing regular $2 quantity arrives. Use one yourself and sell the other to a neighbor, thus getting yours free. Readers risk no money, as Imperial Laboratories are fully responsible and will refund the cost on request any time within 30 days.

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For red spider on all trees, berries, vines, vegetables, etc., use *Ortho Dusting Sulphur*. Flows like liquid through the duster, spreads evenly, and goes farthest.

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Pigs and Potatoes Diversify This Fruit Farm

By WILLIAM R. BUTLER

IN THE midst of an almost unbroken sea of orange groves, the Fairbanks ranch, near Redlands, stands out conspicuously on account of the diversity of crops grown. Of oranges there are 75 acres; peaches, 12; apricots, 3; pears, 2; spuds, 45; alfalfa, farm buildings and yards, 98.

Contrary to what one might expect on a large ranch owned by a man of means, the yards and buildings are not elaborate or costly, but simple and unpretentious. Aside from the usual structures one might expect to find on a ranch devoted mostly to fruit, guess what we found in sheds and corrals: Hampshire sows, with oodles of little white, belted pigs!

The ranch is now owned by Fred C. Fairbanks, a son of former Senator and Vice President Warren K. Fairbanks. It comprises 235 acres and for the past eight years has been under the efficient management of A. E. Harvey.

FRUIT PAYS FINE PROFIT

The orange groves and smaller plantings of deciduous fruits are well cared for. The Fairbanks ranch is listed among those present in the California Fruit Growers' Exchange and has proved a profit maker in fruit. "Cots" and peaches are either sold to canners or dried.

Potatoes have proved profitable and are grown in rotation with alfalfa. The latter is a profit maker, yielding seven cuttings a year—8½ tons per acre. In addition to hay, the alfalfa is used as a soiling crop for the purebred Hampshire hogs. The latter are confined in central yards on three sides of which stretch the alfalfa meadows. Never is it necessary to spend much time or labor in feeding green-cut alfalfa. Mr. Harvey considers the land too valuable to pasture even his prize-winning "Hamps."

The start with Hampshires dates back to 1918, when eight choice sows and a boar, a son of Gatton's Sioux Queen—grand champion of the Panama-Pacific show over all breeds—were purchased as a foundation herd. From this modest beginning Mr. Harvey has built up a splendid herd of some thirty sows, which raise two litters a year. The average number of pigs raised in each litter is seven. Only the very choicest gilts are kept as breeders to sell. Mr. Harvey does not sell boars.

MALE PIGS MAKE MEAT

The male pigs are fattened on dry, ground barley and alfalfa, supplemented with a mineral mixture. The fat hogs are sold at about 7½ months after farrowing, when they average around 230 pounds each. They are sold to a local butcher as he needs them for a cent a pound above the top Los Angeles market. Pigs are farrowed every month in the year except July and August.

Mr. Harvey believes that exhibiting animals at stock shows is the best way to check up on breeding and feeding and to advertise. The Fairbanks ranch Hampshire herd has been a big winner in Southern California fairs the past few years. It was the gold medal herd at the 1919 Los Angeles show and at the 1920 Riverside show.

In the 1921 and 1922 Southern California Fair the show herds comprised 22 hogs of which all but three were bred and raised on the ranch. In 1921 the herd won a total of 24 prizes, including grand champion boar. In 1922 a total of 17 prizes were won. At this same fair in 1920 the herd won both grand and reserve champion on boars.

GILT-EDGED PRICES FOR GILTS

Harvey says that the hog end of the ranch has consistently shown a profit and even during the past two years of depression he has sold gilts at prices ranging from $50 to $200 each. Recently he started three of his neighbors in the hog business by selling them their pioneer herds of Hampshires.

Photo by Blackmore.

These yearling Hampshire gilts comprised the "Best Pen" at the Southern California Fair, 1921. A product of the F. G. Fairbanks ranch, Redlands.

Harvey pointed with pride to the sow, Peggy, first prize junior sow at last year's Riverside show. She was running a self-serve lunch counter for nine uniform, lusty little pigs. Peggy and her litter have been nominated to win the State Swine Breeders' ton litter contest this season.

One might think that so many hogs confined to so restricted an area would not be conducive to porcine health. Mr. Harvey says he employs the competent local veterinarian and uses the best serum and virus obtainable, vaccinating all pigs when they weigh 50 pounds each. He has never lost a hog from cholera, nor had but one abscess from vaccination. He feeds on cement floors. Every effort toward sanitation in the quarters and corrals is made. Clean water and shade are provided at all times.

PERCHERON BREEDING PLANNED

Another enterprise noted was in the work stock department. At noon two of the men drove up with mowers, to which were hitched two drafty teams, three geldings and an excellent grade Percheron mare. One team weighed 3300 and the other 3400 pounds. Tractors are employed for the heavier work. Harvey plans to replace all his work horses with purebred Percheron mares. He says there is a choice stallion on a farm near by and soon he expects to make his purebred mares productive as well as work machines.

Mr. Harvey is a booster for co-operative marketing and an active Farm Bureau member. You find his kind identified with group effort.

Arizona's Local Market Attractive

"LOCAL and State markets for the products of the Salt River Valley never have been fully appreciated by producers," declares J. H. Collins, of the U. S. Department of Agriculture. "These markets at present are the most important outlet for valley products and in future years will continue to be profitable consuming centers of an increasing quantity of farm products from the irrigated districts of the State. They now use all the grain and grain products and most of the dairy products and hay of the State.

"The advantages of the local market should be obvious to the small producer in particular. These markets are not so insistent on fancy packs and perfect grading as are the larger markets farther East. The short haul and small express rates are two important advantages of local markets.

"As an illustration of the consuming power of the local market, ten small mining towns in one year consumed 445 cars of hay and 251 cars of flour and feed. Four towns used sixty cars of fruit, while 222 cars of fruits and vegetables were unloaded at Bisbee."

"Buyers take advantage of the small beef producer, who has from three to eight animals to sell," declares J. H. Collins, who was sent by the U. S. Department of Agriculture to make a survey of Arizona market conditions. "Being unable to ship to market in car lots, he is forced to take the low prices offered by local dealers, who make up car shipments and thus secure the full market value."

Arizona's most pretentious co-operative enterprise is the Salt River Valley Water Users' Association, which has 3500 members, a treasury fund of $100,000 and $18,000,000 capital stock. The stock is divided into 300,000 shares, the par value of which is $60 each. Two hundred thousand acres of land is irrigated with the water controlled by the association, which was formed to take over the gigantic irrigation works constructed by the Federal Government.

The average size of the farms in this district is 45 acres. Practically all the farmers in the Salt River Valley are Americans. Most of the Mexicans are employed as laborers. Although Arizona is not considered an agricultural State, the value of her farm crops last year amounted to $27,000,000.

Lime Nitrate for Alkali

NITRATE of lime, a product of the famous Norwegian hydro-electric plants, may prove to be the best alkali corrective for California soils, in the light of recent experiments.

This product, used as a fertilizer by many California farmers and fruit growers, especially in the citrus districts of the South, contains 13 per cent nitrogen, equivalent to 15.8 per cent ammonia, as well as 600 pounds of lime in every ton.

One of the nitrate plants in Norway develops 400,000 horsepower. The nitrogen is removed from the atmosphere by electrolysis.

MARKET FOR BROWN EGGS

A satisfactory market will open up in the East for all the brown eggs that can be produced on the coast, believes J. H. Barber of the Pacific Egg Producers.—W. J. D.

MOLASSES

PURE HAWAIIAN CAMO FEED MOLASSES

Sells for About Half the Price of Hay

Pure Hawaiian Feed Molasses is imported direct from the Islands and sold direct to you—for about half the price of hay.

When Pure Hawaiian Feed Molasses produces such wonderful and beneficial results for cattle, hogs, horses, sheep—even chickens—at such slight expense, who can really afford not to feed it?

Molasses means more milk from cows—more fat on hogs. Feed it and take the increased profits.

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613 First National Bank Bldg. **W. H. YOUNG COMPANY** San Francisco

23—68

China Makes Rapid Agricultural Progress

Significant Facts of Importance to American Farmers Brought Out in Official Report

REMARKABLE developments of intensive agriculture in China is shown by a special study just completed by the United States Department of Agriculture. China now has more than 59,000,000 farmers, who, with their families, must comprise 80 to 90 per cent of the total population, the department says. Of a total area of more than two billion acres of land, approximately 212 million acres are reported as under cultivation.

China ranks first among agricultural countries in the production of rice, tea, silk, soy beans and grain sorghums, and second only to the United States in tobacco, and possibly also in wheat production. On the average China produces more cotton for commercial use than does Egypt, and, including production for local use, nearly as much as British India.

CHINA EXPORTS WHEAT

The total wheat crop of all China, including Manchuria, is thought to be at least 300,000,000 bushels. In recent years China has become an exporter of wheat and flour. Exports jumped from 4,500,000 bushels in 1913 to 31,000,000 bushels in 1920 and 18,000,000 bushels in 1921, while imports of 8,000,000 bushels in 1913 decreased to 1,600,000 bushels in 1920 and 2,500,000 bushels in 1921.

[Editor's Note—This is especially significant, in view of the fact that the American wheat market is known to be controlled by world conditions and not by production in the United States.]

The total cotton production is estimated at the equivalent of 3,000,000 to 4,000,000 bales annually.

The Chinese Ministry of Agriculture and Commerce estimated the total tobacco yield in 1915 at 300,000,000 pounds, and in 1916 at 900,000,000 pounds. The use of tobacco, particularly in the form of cigarettes, is increasing rapidly in China.

BIG CORN YIELD

The annual production of corn in all China is not far from 75,000,000 bushels, the Department of Agriculture says. Sugar production is about 400,000 tons, much of which is consumed raw.

Chinese crop yields per acre probably average higher than those in the United States because of the highly intensive cultivative methods employed, it is pointed out. The multiple crop system is also followed over the greater part of the country, thus making the land produce from two to four crops a year.

Does Cultivation Conserve Moisture?

PROBABLY no announcement emanating from the State University in recent years has attracted more attention than the recent statement of Prof. F. J. Viehmeyer concerning soil moisture in its relation to cultivation.

According to the professor, extensive experiments by the College of Agriculture indicate that soil moisture cannot be conserved by cultivation; that irrigation water goes where it is put, and that cultivation is only of value as it affects other factors. It is of primary importance in keeping weeds down, and particularly in citrus orchards for preparing the soil so that it will readily take up irrigation water, the official statement continues.

FARMERS TAKE ISSUE

There are a number of practical farmers, however, who take issue with the professor, and who maintain that his laboratory experiments do not apply to field conditions.

On the other hand, a subscriber, C. A. Nidever of Paso Robles (San Luis Obispo County), points out the university theory is not new, citing the experience of his father, an "old-time" farmer, in the following communication to ORCHARD and FARM:

"I have made a study of dry farming, so know more about that than anything else. My father's people came across the plains from Texas with an ox team 72 years ago and settled in Santa Barbara. My father is 73 now, and is still showing me something new about farming now and then. He has farmed in Santa Barbara, Ventura, Los Angeles and Orange Counties since he was big enough to start an ox team off with a plow.

"I have read a lot of books on agriculture, but must say that I cannot improve much upon his method of tillage. For instance, in the case of cultivating every ten days through the summer, he told me many years ago that it was a waste of time to cultivate after the weeds were killed. The longer I live the more I respect some of the old-timers' experiences."

Salt Trough for Sheep

DURING the rainy season, one never knows whether the sheep have had enough salt unless one has provided a covered place for the salt.

We all like to put out salt where there is plenty of room, therefore, a trough like the one shown in the illustration will interest everyone with sheep to care for.

There should be just enough room

between the roof board and the upper edge of the trough to get the sheep's head in easily. The legs, or standards, should be wide enough to place the feet at least two feet apart. If it is not convenient to make them that wide, then a strip should be nailed across and extended, to prevent the trough from upsetting.

—HERBERT A. SHEARER.

Cheap Sanitary Troughs

HERE is the way I make cement troughs for goats and chickens: Use half-inch lumber for the forms. The inside ones are 8 by 16 inches at the bottom and 10 by 18 at the top. The outside form is four inches wider and longer, which makes the walls 2 inches thick.

Set the outside form upon a board and lay down cement—one part cement to two of sand—1 inch thick. Put in the inside form and fill in with well-dampened cement, tamped firm. Lift inside form one inch and let stand 24 hours, keeping cement covered with damp sacks.

Take out form and bore a hole in one bottom corner with brace and bit. Make a wooden plug to fit snug, not tight. Make a thick paste of pure cement and brush the trough all over. Let stand twelve hours, and it is ready to use.—O. M. DOWNING.

SPRINKLING FROSTED TREES

D. Roulin, who lives at Silver Bow, fifty miles from Tonopah, Nev., tells how, by sprinkling, he saved his apples from freezing May 29, when it was so cold there was ice three hours after sunup. Nearly all the fruit on the trees which were warmed with a smoke smudge were lost. The water was thrown over the trees with a dipper.

For Subbing the Soil Deep
Use a Best Tractor

Soil tillage which only scratches the surface does very little good. It takes a deep draft to effectively deepen the seed bed; to increase the storage qualities, and to thoroughly break up impervious substrata.

"Subbing the soil" ***deep*** takes ***power,*** lots of it. AND BEST TRACTORS HAVE IT. Both the "Sixty" and the "Thirty" have proved this fact for many owners whose names will be given gladly on request.

Write for copy of informative booklet, "Subbing the Soil," and for a copy of the 1923 catalog.

C. L. Best Tractor Co.

San Leandro, Calif.

SALES BRANCHES:

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A careful study of the built-in quality of "Caterpillar" Tractors discloses the reasons for the really amazing endurance of these tractors in field service. Made in four sizes. Write for catalog.

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Red Top Steel Fence Posts
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Advertisements must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

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PROFITABLE POULTRY and CO-OPERATIVE ELECTRIC HATCHERIES, capacity 250,000 chicks 180-290 egg Leghorns, Anconas, Reds, Rocks Minorcas, Wyandottes, Brahmas, Andalusians (ducks, turks). Off every week. Also chicks from large 2-year hens for rapid growth into broilers, fryers, roasters. Booking for July to October delivery. Reduced booked ahead. Early fall chicks profit most. "Never saw such vigor, rapid growth, in chicks." Write BOX O, 13 N. FAIR OAKS, PASADENA.

CERTIFIED WHITE LEGHORN QUALITY CHICKS for Summer and Fall months, from selected free-range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Send for catalog and attractive prices. Safe delivery and full count guaranteed. MUST HATCH INCUBATOR CO., INC., 432 Seventh St., Petaluma, Calif.

WHITE LEGHORN baby chix from flocks mated to males having sire's dam record of 240 to 297 eggs per year. Full particulars and interesting literature on request. We are accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, P. O. Box 476, Petaluma, Calif.

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BABY CHICKS — White Leghorns, Reds, Barred Rocks every week. White Leghorn pullets and breeding cockerels. Reasonable prices. The J. H. Stubbs Poultry Ranch and Hatchery. P. O. Box 67-C, Palo Alto, Calif.

BABY CHICKS—All kinds hatching each Monday. Ducklings, turkeys, hatching eggs. Pullets, pigeons, rabbits. FANCIERS EXCHANGE, 640 S. Main st., Los Angeles.

TURKEYS, DUCKS AND GEESE

WILD BLOODED TURKEYS Eggs and stock for sale. Prices right. Small and large orders promptly taken care of. Jenkins, the Veteran, R. 3, Box 148, Burbank.

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THE CHARLES WEEKS SYSTEM OF INTENSIVE POULTRY AND BERRY FARMS.
ONE ACRE AND INDEPENDENCE.

The Fine Art of Earning a Comfortable Living on One Acre in California. For those who desire to dwell in sunny California without living up hard-earned capital. For 18 years proprietor of the most intensive Egg Farm in the world and Founder of the Famous Charles Weeks Poultry Colony at Palo Alto, California. The Charles Weeks Poultry Colony No. 2 is now being established at Owensmouth, California, 26 miles from Los Angeles. Write for literature.
CHARLES WEEKS, Owensmouth, Calif.

BEAUTIFUL SUBURBAN 25-ACRE HOME, 10 min. walk cent. good town. Fronts Pac. Hwy., paved. Int. 3 flag blvd. Fine dairy, garden, fruit land. 2 a. large French prunes, ½ a. strawberries, lots logans, vine and tree fruits. 5-rm. house, 2 barns, elec. lights, phone, pure soft pressure water, tools, machinery, etc., $3750, on terms. Great fishing, hunting, timber. No irrigation, alkali, mosquitoes, wind, dust nor cold winters here. Cool summers, rivals Calif. climate. B. JOHNSTON, Saginaw, Lane Co., Oregon.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil, complete irrigation with cheap water, thorough drainage, fall, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

FARMS WANTED

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

TANKS, PIPE AND WINDMILLS

REBUILT WINDMILLS, tanks, pumps, cylinders, surface irrigat. Pipe, all sizes, used 8, 9 in., cheap. New galv. tanks, all sizes. Large used redwood tanks. DEMMITT CO., 320 N. Main. Yards, 816 Yale, Los Angeles.

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PAINT—BARN and ROOF—Highest quality, $1.00 per gal. Guaranteed 5 years. Milroy Works, 591 Palisade Ave., Jersey City, N. J.

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DIRECT FROM FACTORY—5-inch, Cuban Twisters, long filler. Sweet as a nut, $4 per 100. Cigar clippings, 60c per lb. FRANK MILLER, 1208 W. 8th st., Los Angeles.

PATENT ATTORNEYS

HAZARD & MILLER, Herman Miller, formerly eight years member examining corps, U. S. Patent Office. Hazard's Book on Patents free. Central Bldg., Sixth and Main, Los Angeles, Calif.

LIVESTOCK—Sheep, Milch Goats

PURE-BRED TOGGENBURGS from recently imported stock. Heavy milkers. Raised under ideal conditions. Sure to please. Canyon Goat Ranch, Redlands, Calif.

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PEONIES, ROSES and BULBS. Save money, order now, have choice collection, all color. Peonies, 50 cts. each, or 5 for $2. Also 3-year-old Everblooming Tea Roses, 50 cts., or 5 for $2. Also Hyacinth, Tulips and Narcissus. All prepaid. R. J. GIBBINS, Mt. Holly, N. J.

HELP WANTED—Male

EARN $110 to $250 monthly, expenses paid, as Railway Traffic Inspector. Position guaranteed after 3 months' spare time study, or money refunded. Excellent opportunities. Write for free booklet G-91. Standard Business Training Inst., Buffalo, N. Y.

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HEMSTITCHING, picoting attacht. Fits any sewg mach. Does beautiful wk. Attrac premiums free with orders. Write for illus descript. B. Krafft, Box 896-OF, San Francisco.

BEES AND HONEY

ITALIAN Bees—100 strong colonies, $7.50 ea. W. A. Tillinghast, Box 444, Santa Rosa, Cal.

Farm Flower Club

AT VENTURA recently a flower club was organized by Mrs. Helen Temple, whose interesting and informative notes on home flower gardening constitute one of the most popular features of ORCHARD and FARM.

Club fees are to be used to purchase seeds and bulbs in quantities, to be divided among members. After plants have been grown, the resultant seeds, seedlings and bulbs will be distributed among members, who will pass on surplus stock to other flower lovers.

Meetings are held the first Thursday of each month at the homes of members. At each meeting some plant or flower is studied thoroughly and flower garden work for the ensuing month discussed. Members agree to pool their floricultural experience, give advice and answer questions whenever requested to do so.

It is expected that this organized band of flower lovers materially will aid in beautifying the home grounds of Ventura. The Temples, by the way, recently received a handsome offer for their residence property, the buyer stating that he was attracted by the profusion of beautiful shrubs and flowers. This indicates that Mrs. Temple practices as well as preaches the gospel of good flowers and more of them.

Achievements in Dairying

ASKED what he considered the two greatest single improvements in dairy and creamery practice, B. H. Rawl, assistant general manager of the California Central Creameries, said: "The making of sweet cream butter is one. Because of its superior keeping qualities this kind of butter now is used extensively in the navy, and its production for the general market is increasing all the time. Its delicacy of flavor is another quality to recommend it to the housewife.

"Perhaps the invention of the Babcock tester and its general use have done more, however, to revolutionize dairy practice than any other one factor. The butterfat basis eliminated the guesswork attendant upon milk production and marketing, and removed the cause of much friction between producer and manufacturer."

The California Central Creameries, with plants extending from Humboldt County in the north to Imperial County in the south, now is said to be the largest enterprise of its kind in the West if not in America.

Poultrymen and Cows

CAN a poultryman afford to keep a cow in order to supply milk for his fowls? This was the question asked by the owner of a 2500-hen plant who attaches great importance to milk in the ration, especially of young chicks. After doing some figuring, he decided that he could not afford to take from his poultry enterprise the time necessary to care for a cow nor the investment necessary in order to buy her. But he also reached the conclusion that if his family had not had a reliable milk supply from a nearby dairy it would have paid to maintain a cow, or even two, for both family and chickens. Now he is buying the family milk and using semi-solid buttermilk for the fowls. He has invested the price of a cow in new poultry equipment, and feels that he has done the right thing by his pocketbook.

NEW YORK EATS MUCH FRUIT

It is estimated that New York City annually consumes 73,000 carloads of fruit. Oranges lead apples in quantity consumed. Ninety-eight per cent of the California oranges, lemons, cherries, peaches, apricots, pears, plums and prunes sold on this market are disposed of at auction, which is rapidly displacing the old form of commission selling.

Fruit Planting to Continue?

PROSPECTS of still lower fruit prices and certainty of increased production will not result in slackening of planting activity during the coming year, in the opinion of J. E. Bergtholdt, widely known nurseryman, fruit shipper and merchant of Newcastle, Cal.

J. E. BERGTHOLDT

"It is not the established fruit grower who is now planting trees," points out Mr. Bergtholdt. "A few are extending their acreage to a limited extent, but most of them have all the orchard property they can handle. Rather it is the grain growers, general farmers and large land owners who are setting out fruit. This means rapid extension of fruit acreage and we cannot get away from it.

"However," Bergtholdt adds, "this need not spell ruin for all of us. Rather, it indicates the necessity for some general, organized plan of increasing consumption of California food fruits. The field is almost unlimited but it must be cultivated, and the time is coming when the entire State will awaken to the importance of educating the consumers on a broad scale.

ASSOCIATIONS NOT ENOUGH

"The big co-operative marketing associations have done wonderful work, but even their individual efforts will not solve the problem. The producers of all California fruits must get together and carry on a gigantic, nation-wide campaign to reach the housewives of the Nation. Every American family must be taught to use more California fruits for health, economy and pleasure."

Mr. Bergtholdt is the creator of the so-called "Bergtholdt Plan," which includes the preparation of a super-book on California fruits, which shall be the last word in authoritative facts and figures, as well as a guide to the housewife in the most economical and advantageous use of California fruits.

He believes it is not only wrong, but also unnecessary to suggest limiting production and that it is possible to increase consumption that there never will be overproduction of fruits in this State.

Mr. Bergtholdt is active also in the California Nurserymen's Association, and is given much of the credit for adoption of the "caliper system" of marketing nursery stock, that is, by measurement of the diameter of the stems rather than the length of the trees.

"By the old system," he shows, "it was the practice among some nurserymen to force the growth of nursery trees in order to secure greater length and higher prices, frequently at the expense of the consumer. Now our trees are graded as follows:

11-16-in. and up—formerly designated as 6 to 8 feet.

½-in. to 11-16, formerly designated as 4 to 6 feet.

⅜-in. to ½, formerly designated as 3 to 4 feet.

¼-in. to ⅜, formerly designated as 2 to 3 feet.

3-16-in. to ¼, formerly 18 to 24 inches.

Figs, walnuts and shade trees, however, are graded by length as heretofore.

Asked to explain the apparent paradox of increased planting in the face of falling prices, Mr. Bergtholdt said:

"The grain grower has seen his neighbor who planted fruit a few years ago making more money from one crop than he has made from five. Even though the fruit grower has one or two bad years, the general farmer is impressed by the killing which the fruit grower invariably makes at one time or another. Also he finds the fruit producer can borrow on his orchard more money than the grain farm would sell for. A case like this—and there are hundreds in the State—almost invariably means another 40 or 50 acres of fruit for the grain and hay farmer is accustomed to doing things on a big scale."

Fight Walnut Aphis

EARLY June found many Southern California walnut growers adopting aphis control measures, the infestation being severe in some districts.

The Agricultural Extension Service recommends that growers begin dusting operations when the number of aphis per leaflet reaches twelve or fifteen, and especially if the number of young aphis is large, indicating rapid development and increase in numbers.

Earlier in the season, due to climatic conditions, it appeared the aphis would become serious some weeks ago. The few hot days more than a month ago materially decreased the number of aphis and has resulted in delaying the necessity of applying control measures.

Growers are advised to dust the trees with a preparation composed of kaolin, hydrated lime and nicotine sulfate. The killing agent is the nicotine sulfate. Most of the dusting will be done at night, when conditions are more favorable.

The principal damage done by the aphis is weakening of the fruit buds for next year's crop. Severe infestations of aphis have been shown to effect materially the amount of nuts produced the following season, and also their quality. Walnut growers are advised to examine their trees carefully and to make arrangements for dusting as soon as the danger point is reached.

Fighting Farm Fires

THE best way to combat country fires is to organize a fire district and levy a tax for the purchase of necessary equipment.

When districts have not been formed, other types of equipment often are utilized to advantage. One outfit includes trailers (2 or 4-wheeled) loaded with hand extinguishers, rakes, hoes, sacks, water cans, pails and shovels. As these must be drawn by an automobile, a universal connection is provided so that any type of car may be pressed into service. Many of the larger grain farmers have private trailers of this kind for their own protection.

Another important feature in rural fire protection is the equipment of every farm house, barn or shed with an extinguisher that will function when necessary. Not long ago a fire broke out in a home in a thickly settled rural section. It was most gratifying to see practically every one coming to the rescue with one or more extinguishers. The fire was controlled in this manner even before the community equipment could arrive.

Communities must realize that while most fires are of human origin and avoidable, yet not only must the individual farms be protected, but the districts as well. In this way much property loss can be avoided.—L. Y. LEONARD.

The Case Against Casein

SINCE casein spreader came into use the past three or four years, a report has gained circulation to the effect that the spreader dilutes the spray mixture so that a greater quantity of arsenate of lead must be employed where the spreader is used.

This report is not founded on fact. It probably originated on the assumption that, inasmuch as milk is sometimes recommended as an antidote for arsenic, casein spreader also would act in this manner. It only is necessary to point out that the albumin of the milk is the antidotal element, not the casein, from which the spreader is made. The white of eggs, which is almost pure albumin, is the best antidote for arsenate of lead.

As further authority on this point, we may quote from Prof. A. L. Lovett in the 1920-22 biennial report of the Oregon Experiment Station:

"In toxicity tests carried out with caterpillars, no evidence was found to substantiate the theory that the addition of caseinate spreader adversely affects the toxicity of arsenate spray."—R. H. Smith.

LEAFLESS PEACH TWIGS

The reason why many peach twigs remained bare of leaves last spring was because they had been exhausted by overbearing and had not shed their last year's leaves at the proper time, owing to unusual climatic conditions, according to R. W. Hodgson, Los Angeles County farm adviser. Stored-up plant food was exhausted and the trees did not possess enough vitality to put forth the usual amount of foliage.

SMALL AVOCADO GROVE BARGAIN

Owner must sell one or more acres at $3500 per acre. Terms. Five-year-old trees in fine shape. Fruit set. One tree now shows 2000 fruit. Count them!

$1.00 to $1.50 each is the standard market price of this King of Fruit—Avocadoes or Alligator Pear. An avocado grove insures life income.

Located in San Fernando Valley on paved boulevard to be, close to car line. This is a wonderful opportunity. Good reasons for selling. See J. A. Crozier, with
THE FRANK MELINE CO.
706 South Hill St., Los Angeles.

SPERRY
SURELAY
MEANS MORE EGGS
-ask your dealer

The Whys and Wherefores of Deep Tillage

Distinctly California Innovation Now Proclaimed Greatest Soil Management Achievement of the Age

—Courtesy C. L. Best Co.

The subsoiler with furrowing attachment is becoming increasingly popular among California orchardists, many of whom have abandoned their moldboard plows in favor of "subber" and disk-harrow.

FARMERS have turned soil miners. Deep tillage is unlocking great "veins" of stored plant food and boosting per-acre yields at an amazing rate. "Subbing," as this system has been named, unquestionably is the greatest soil-management discovery of the age.

Particularly does this apply to California, where irrigation, hardpan, adobe soils and other factors create peculiar problems.

Briefly, deep tillage is not deep plowing. It is simply penetrating and breaking the undercrust which forms in many soils. The surface is not turned, as in moldboard plowing, nor is the deeper soil brought to the surface.

Results that actually take place are these: The storage of water is facilitated; root growth is stimulated and allowed to continue unhindered; aeration favors the activity of soil bacteria; drainage is improved; development of alkali is checked.

The implement generally used for true deep tillage is called a "subsoil plow," which may be of single, treble or several standards for various kinds of work and power. The single standard ordinarily is used for orchard work; the larger implements for vineyard or field. Some farmers do no plowing in the usual sense of the word—using the subber, the chisel cultivator and the disc. A "furrower" or "crowder" sometimes is attached to the subsoiler for making deep, narrow irrigation furrows.

Ordinarily, subbing is performed in the late summer or early fall, when the soil is so dry that it will break readily. Some farmers and fruit growers, however, prefer to do the work in the spring, or even early in June, before irrigation and as a preventive of June drop.

Subsoiling has been tried with nearly all crops and under nearly all conditions in this State. With the exception of a few orchardists who believe injury to tree roots has resulted, practically every report is favorable. And fruit growers now believe quite generally that, even though some root injury may result from deep tillage, the temporary setback to the trees is more than offset by future improvement.

INCREASED GRAIN YIELD

A grain grower reports an increase of eight sacks per acre as the result of chiseling. Fruit producers speak of larger yields and better quality, as well as generally improved condition of the trees. A young vineyard, according to the owner, was so stimulated by subsoiling that every fourth row, where the implement had been used experimentally, made one-third more growth than the untreated rows.

A citrus grower reported the rejuvenation of a failing orange grove, with an increase in sugar content of the fruit that was amazing.

An alfalfa field, yielding 3½ tons per acre, was brought up to 10 tons by subbing, according to the owner. The yield of grain hay on one Southern California ranch has been increased from 4 to 19 tons by the use of deep tillage implements.

Other results claimed by some farmers from subsoiling are: Protection from pests, such as red spider; protection against frost by increasing the moisture-holding capacity of the soil; protection against summer heat by encouraging deep, vigorous root growth; improvement of conditions for irrigation on hillsides.

The cost of subsoiling, according to reports gathered from various sources, averages about $6 per acre, in many cases amounting to $4 or less.

Many interesting experiments in "subbing" are under way in various parts of California, and as more of the new improved tools are purchased by farmers results will become more and more apparent. The practice of "subbing" has stimulated interest in tractors, especially of the larger sizes. For, although deep-tillage implements for small tractors, and even for horses, have been devised, for heavy work on a large scale ample power is required.

California properly may claim full credit for this interesting and important development. "Subbing" in other States is either unknown or in the experimental stage. Here we have accepted the science "for all it is worth"—and that appears to be a good many millions of dollars!—J. C. K.

Molasses Minerals

THAT molasses, widely used for stock feeding, contains valuable mineral elements is disclosed by the W. H. Young Company of San Francisco, who recently had samples analyzed by the Curtis & Tompkins laboratory.

The properties of molasses already well known to stockmen are its palatability (which makes it valuable for addition to straw and other cheap roughage) and its fattening properties. It is interesting to note as well the following ingredients indicated by the analyses:

Analysis of ash—	% in ash.	In 1000 lbs molasses. lbs.	oz.
Silica (Si02)	3.08	2	8.8
Iron oxide and alumina (R203)	0.45	0	6.0
Lime (Cao)	19.08	15	11.2
Magnesia (Mg0)	11.35	9	6.4
Sodium oxide (Na20)	2.60	2	2.4
Potash (K20)	25.55	21	2.5
Sulphur Trioxide (S03)	20.70	17	2.2
Phosphoric Pentoxide (P205)	2.04	1	11.0
Chlorine (Cl)	1.27	1	0.8
Carbon Dioxide, etc. (By difference)	14.17	11	11.7
	100.29	82	15.0
Oxygen equiv. to Chlorine	0.29	0	2.3
Total	100.00	82	12.8

Double Brooder House

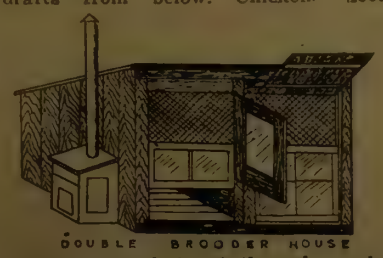
THIS is an outdoor brooder house for use in a mild climate, or for summer shelter farther north.

The heater is a stove that burns kerosene. It is placed in a sheet iron box set against the side of the brooder house. There is an opening to let the heat through, but it is screened by a wire screen, to keep the chicks from getting too close to the fire.

There is a wire screen partition through the house to divide the larger chicks from the smaller ones. As they grow older chicks require less artificial heat, so they are kept in the further compartment until old enough to run out.

The windows are at the floor, a low window in the warm section and a higher window to light the cooler room. For some unaccountable reason windows for chickens usually are placed high enough for horses.

The floor is made double, with building paper between to prevent cold drafts from below. Chickens need



DOUBLE BROODER HOUSE

plenty of air, but not through cracks in or near the floor. The upper floor should be made of tongue and groove boards and painted, to be safe and for easy cleaning.

Hovers are necessary in both compartments, but every poultryman has his own ideas in regard to keeping little orphan chicks warm. Heat confiners may be simple affairs, but they must hold heat as well as air, which is changed frequently.

—H. A. SHEARER.

TARIFF TAXES FARMERS

The new tariff will cost the farmers of the United States $300,000,000, that being the difference between the estimated income and outgo, according to the American Farm Bureau Federation.

Better Water Tanks

THE old idea that a water tank had to be an ugly eyesore has given way to the belief that it should be a thing of beauty. Many water towers and tanks of pleasing design now adorn California ranches. Frequently flowering vines or carefully planted shrubbery add to the decorative effect.

One improvement now quite generally adopted is proper ventilation of the tank-house. This factor has been given careful consideration in the construction of the attractive farm bungalow of W. H. Whitlow, near Exeter, (Tulare County), Calif. Mr. Whitlow, like many other farmers in the interior Valley, believed his domestic water supply should be cooled and protected, and has successfully combined utility with beauty in achieving this result.

The tank is supported upon four reinforced concrete pillars 18 inches square and the compartment containing it is open on all sides and screened.

Since the steel tank has no top, there is constant circulation of air through the screens and over the water, the top of the tank-house protecting the water from direct rays of the sun. The result is a constant supply of cool, fresh "aqua pura." The tank has a capacity of 2000 gallons, and is filled from a well, with an electrically driven pump.

MARIN BUYS GRADE JERSEYS

A carload of 61 grade Jersey heifers was recently shipped into Marin County from Oregon to use in improving the dairy herds of the California county.—KATHLEEN RODDI

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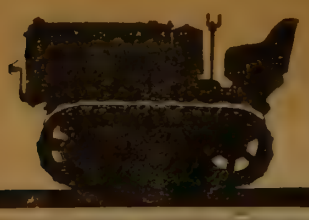

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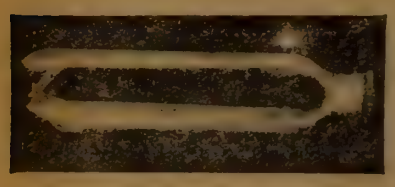

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Successful Pigeon Breeder Describes Methods

'Fancy' and 'Utility' Combination Proves Highly Profitable

By W. J. DRYDEN

SINCE 1886, F. M. Washburn of Sacramento, Cal., has bred pigeons. Today, although not the largest producer in California, he is recognized as one of America's foremost authorities, having been placed in charge of the pigeon department of the State Fair.

Not only has Washburn won considerable success in shows, but he has also developed valuable strains of breeding stock. These include Silver Kings, Blue and Silver "Plain Heads" and White Crested Mondaines. At present he is carrying on experiments in crossing Blue Kings and Silvers in order to keep the latter from becoming too light in color.

Unlike many pigeon breeders, Washburn has been able to develop a rather heavy bird which maintains good breeding qualities. He has made all strains as heavy as possible without sacrificing type qualifications.

OWNS CHAMPION HEN

This successful producer has at the head of his Silver King breeding flock the hen which won the first silver loving cup ever to be presented at any show for this breed. If this bird were to be put up for sale probably she would command as high a premium as "K-24" or "Lady Jewell," the champion laying hens of the world.

The Washburn exhibition homer is a new strain developed on the Sacramento farm. Representatives of this family have won leading awards, cups and specials at most of the shows in the West.

Except in feeding methods Washburn's plan of operations does not differ very materially from that of any other large commercial pigeon raiser. He feeds in hoppers twice a day, removing the hoppers before dark.

The pigeons are confined to small yards, in some cases being allowed to pair themselves; but very often their mates are selected for utility breeding purposes.

Mr. Washburn asserts it takes him about three hours a day to care for his pigeon business. The rest of the day he says he can attend the ball games or movies or do outside work, and he never misses a ball game.

At the Washburn lofts the pigeons are allowed to choose their own feed. Red or white milo, white Egyptian corn, whole yellow corn, wheat, peas, millet and hemp are the grains purchased. He uses from 20 to 25 per cent peas and about the same amount of yellow corn.

When the birds are in molt he increases the hemp and millet. The rest of the time he feeds only what the pigeons pick out. When he notices they are leaving the wheat, he takes it away for a few days, and if they leave the milo or corn he cuts down on these grains also.

PEAS FURNISH "GREENS"

Washburn keeps grit, oyster shell and charcoal before the birds at all times, as well as sand, into which is placed a piece of horse salt. The birds will eat the sand in order to get the salt, he says. Sometimes sulphur or Venetian red is mixed in the sand and rusty nails are put in the drinking water. No other "tonics" are used. He believes garden peas and Canadian peas will take care of the green feed requirements of pigeons and therefore provides no other greens.

Mr. Washburn now has about 2400 breeding pigeons which are divided equally among Silver Kings, White Kings, Red and Yellow Carneaux, working homers and Mondaines.

When he started in the squab business more than thirty years ago he received 20 cents a pair for them and now he is getting from 50 to 75 cents a squab live weight. The Sacramento market is considered better than San Francisco or Los Angeles at the present time.

From his 2400 breeding pigeons Mr. Washburn will raise about 9600 squabs, part of which he will sell as squabs at about four weeks and the rest as breeding stock. Only those which are not considered suitable for breeding purposes are sold as squabs. In this way, by having a squab market as well as a breeding business, the owner is able to keep up a high standard among his breeding stock.

Breeding birds from the Washburn lofts have been sent to nearly every State in the Union and to many foreign countries. According to Mr. Washburn it costs $3 a year to feed a pair of breeding pigeons and the young ones. Each breeding pair on this farm will bring in $6 in squabs or give a net profit of about $3 a year. Of course the profit will be considerably more when selling breeding stock instead of market squabs.

BIRDS BRING BIG PRICES

Most of the income is derived from the sale of breeding stock, which is sold at from $3 to $10 a pair, and show birds which are priced according to quality.

Not only has Washburn developed a good market for this class of fowls around Sacramento but he has been able also to dispose of all his squabs to local trade. Mr. Washburn says there is a big profit in raising squabs for the market and he cannot understand why more farmers do not go into this phase of work. He says any one who has a back yard can raise pigeons, and it is a better paying side line for a person who has some other occupation than the chicken business.

He sells young pigeons at six to eight weeks for $18 a dozen and the squabs are selling from 45 to 55 cents a pound at Sacramento. All breeding stock sold at the Washburn lofts carries the bands of the National Pigeon Association.

While Mr. Washburn is one of the pioneers in the fancy breeding business, he also was one of the first to realize the advantages of the utility field, and as a result is now devoting most of his time to utility improvement.

Here's Team Work

Mr. and Mrs. Washburn are good "pals," as well as business partners. They are in the pigeon business for two reasons—profit and pleasure—and appear to derive a large share of both from their operations. Above are shown the "lofts" with "flight" over the roof, protected by fine mesh wire netting.

Says Nothing Is Too Good for Rabbits

(Continued from Page 2)

of green plants," said he, "and never yet have had a case of slobbers—or any other disease, for that matter. We buy waste vegetables from Jap gardeners, who sell a gunnysackful of lettuce, butts for a dime and—believe me!—I see that the sack is full, packing in the plants with the weight of my 200 pounds.

"We also feed carrots, sugar beets and a great variety of other plants, including wild radishes, dandelion and milkweeds. These weeds are among the best rabbit feeds we have found. We are testing beet pulp and bran. A piece of stock salt is kept in each pen, but we have never needed any medicine.

"After a doe has raised a litter of rabbits, the floor of the pen is washed with creosote. One corner is left dry to induce the animals to deposit all the offal in that particular spot. Rabbits are very clean animals if given a chance to take care of themselves and their quarters."

SOME BREEDING PRACTICES

Another point upon which the Allens differ with many other rabbit breeders is in regard to line or inbreeding, which they never practice. Neither do they kill a portion of each litter in order to raise a great many litters from each doe, nor kill all the offspring of one doe and give her the raising of more valuable rabbits.

"Our Flemish Giant does raise three 10 or 12-rabbit litters in a year, which is certainly a plenty. The young ones are big enough to fry at the age of six weeks, each weighing three pounds, and certainly make delicious eating. Some of our mature animals weigh 20 pounds each."

"Aren't there a good many runts in such large litters?"

"None at all. We select a few of the largest rabbits from each litter and keep them in a nest by themselves in the house part of the time so they will skip some of their meals. This gives the weaker ones a chance to catch up and soon they are all of the same size."

FEED GOAT'S MILK

Goat's milk is mixed with the does' drinking water, a very little at first, then a larger quantity, until the beverage is half and half. The milk sometimes is also given to very young rabbits with an ink dropper. Mrs. Allen treats the rabbits just like pets and greatly enjoys caring for them.

Her American Blues and New Zealand Reds, valued especially for their fur, are the wonder and admiration of all visitors, especially women and children. These aristocrats of the rabbit kingdom are kept in a cool, dark place, to make their fur thick and fine and prevent it from fading.

The Allens now have five bucks and fifty does and find ready sale for young stock at prices ranging up to $25 to $50. Breeding rabbits that will bring such fancy prices is, of course, a fine art and one which requires much painstaking practice and a natural knack for the work.

Iron Mike Second and a blue-blooded American Blue doe both won first prizes at the Riverside Fair last autumn. Monarch Second and other rabbits carrying the blood of animals famous in rabbit annals are owned by the Hawthorne breeders. Mr. Allen works at the oil fields, while his capable wife takes care of the rabbits most of the time.

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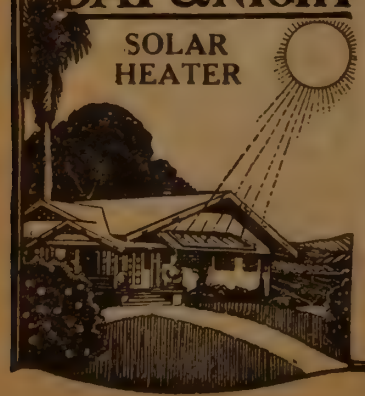

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POWER TOOLS
New & Old

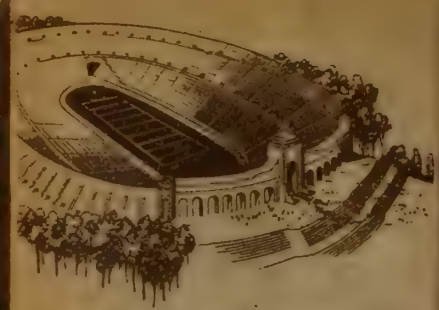
This great fleet of steam grain harvesters is being superseded by mule teams and track laying gas tractors. A new type of steam tractor lately has appeared, promising to give both mules and gas engines a run for their money.

The bulk of the commercial hay crop is now baled with gas engines and hauled to market on auto trucks. The feed supply is thus conserved, permitting a larger quantity to be used for the production of milk and meat. Modern agriculture is economic.

An even bet you can't guess what this tractor is pulling. It's a rotary plow. This new device consists of nine spiral blades sunk into the ground and turned with a self-contained motor, while a tractor pulls the whole mechanism. It is claimed that the rotary movement of these soil augers prepares a scientific seedbed, rendering obselete the operations of disking and harrowing.—W. H. G.

Farmers who are looking for a low-priced tractor are watching with interest the performance of the "Bearcat." This strange animal is composed of the motor and chassis of an old flivver fitted to a special truck frame of the tracklayer type. It is being thoroughly tested in the northern part of the State.—W. H. G.

Resourceful inventors are getting rid of one of the biggest bugaboos of the grain growers—how to get enough help at harvest time. These machines not only cut and bind the crop, but shock the sheaves, thus eliminating one of the hardest hand labor jobs connected with grain harvesting. Grain is also loaded into wagons by machinery.



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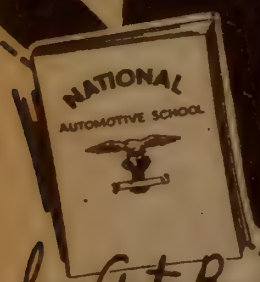

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He's Champion Long Distance Tenant Farmer

And Both Parties Are Pleased

THE test of a crop-share agreement between owner and tenant is the life of the contract. The subject of this article has set his goal at twenty years or longer, and after some thirteen years both renter and landlord seem pleased with the original arrangement. Much depends upon the character of the tenant, and this one keeps up the orchards as though they were his own. —*The Editor*

By ALBERT J. MASON

CHAMPION long-distance tenant farmer of California! Who can deny Ed Keeble's right to this title?

This Santa Clara Valley fruit grower has operated the same ranch for 13 years and expects to continue the agreement at least until 1931. He keeps up the property as though it were his own, and both owner and tenant appear to be well satisfied. When he first made the present crop-share agreement, Keeble owned and operated a 120-acre orchard not far from his present location. This was sold several years ago.

"There is considerable satisfaction in ownership of land," Keeble admits, "but unless one has plenty of capital, it may be better to rent than to buy similar acreage on a shoestring."

Perhaps the most remarkable feature of the rental deal is that Mr. Keeble has installed many permanent improvements at his own expense. A $4000 pumping plant, a $7000 dehydrator and 40 acres of 8-year-old prune trees are examples. The young orchard was set out on land rented for $500 a year, cash, and formerly in alfalfa.

Keeble planted and raised the orchard, paying cash rent at the same time, and expects to make money on the deal during the remainder of his lease period. His original intention was to leave alfalfa between the rows while the orchard was developing, but because of girdling by field mice, which necessitated replanting many trees, he decided to plow up the alfalfa.

Now that the trees have come into bearing, this part of the property is under the 40-60 crop share agreement which applies to the older orchards; that is, the owner gets 40 per cent of the fruit; the tenant 60 per cent. The tenant furnishes his own tractor, machinery and other equipment, and is responsible for all the necessary work.

LESSONS FROM EXPERIENCE

"What is the most important thing you have learned about prune growing?" Keeble was asked.

He smiled as he answered, "I've been raising prunes nearly 20 years and I must admit that I know less about the business now than I thought I knew when I began. However, there's one thing I would do if I were starting a new orchard: That is, to set out at least one-fourth and possibly one-third Imperials. In fact, I think a good arrangement is as follows: Two rows of Imperials, two of Sugars and four of French. The Sugars, though, are the heavy bearers—no question about that.

"Many growers are prejudiced against the Imperials because they are shy bearers and the fruit is harder to handle. But they cannot be surpassed for quality, and, if properly dried, always command a premium on the market. However, I believe it is necessary to roll the Imperials by hand; this is tedious and expensive, but still I think it pays.

"The rolling has prevented dehydration of the Imperials and I have continued to dry them in the sun. I believe it will be possible to handle them in the dehydrator, however, either by partial sun drying or by taking them out and rolling them.

"If one had a large enough quantity of the Imperials to fill the dehydrator, it would not be so difficult. In fact, it might be possible to build a circular track, by means of which they could be wheeled out and returned through the front of the plant after turning. As it is, when the trucks or trays are mixed, it would be almost impossible to take out prunes of any one variety without lowering the temperature and injuring or delaying the entire charge.

IMPERIALS MELT DOWN

"The great trouble with the Imperials is that in drying they flatten out or melt down and stick to the trays; these are reasons why they must be rolled. I have this done every morning before 8 o'clock for three or four days; then every other morning for a while. If it is done later in the day, the fruit is too soft to handle. I believe in dipping the Imperials, but use only one-fourth as much lye as for French prunes, and do not have the water so hot. I think dipping is necessary in order to obtain quality."

[Editor's Note: J. Charles Kircher of Mountain View successfully dehydrates Imperials as well as other sorts, without previous dipping, merely washing them in hot water after they are thoroughly dried.]

On the Keeble ranch, which includes 100 acres of prunes and 10 of apricots, the Imperials constitute comparatively a small percentage of the total production. The dehydrator, therefore, is regarded as a great asset. In fact—

"If my evaporator were to burn to the ground tonight," says Keeble, "I would place an order for another tomorrow morning.

"In 1918, when we were practicing sun drying, I lost $10,000 worth of fruit because of bad weather. Again in 1920 I lost one-third of my crop.

"In 1921, however, after I had installed the dehydrator, I not only saved every prune, but also did $2000 worth of drying for neighbors. The same story was repeated in 1922, and now I am a dehydrator enthusiast. In fact, I would not attempt to raise prunes without one."

Other advantages cited for dehydration are: (1) Saving of dry-yard space, which may be devoted to production; (2) more sanitary product, because of protection from dust and insects; (3) larger percentage of better grade fruit, with correspondingly higher net return; (4) saving in labor; (5) speed in handling crop.

Keeble and other Santa Clara County growers assert the cost of dehydration is less than that of sun drying, although the investment in equipment, of course, is greater. Actual cost of operating a dryer, including dipping, has been reported as low as $3.50 a ton, although a number of growers have paid $12 to $15 a ton, and even higher, to have their fruit dehydrated.

In fact, during a period of bad weather, growers have been known to bid up the price to $2 in order to engage the services of an overworked dehydrator installed by some progressive neighbor! Keeble's plant *(Continued on Page 9)*

Above — Interior of dehydrator, showing loaded truck at other end

Keeble's dehydrating plant, constructed at his own expense on rented land, is one of the most modern and complete in the Santa Clara Valley. It has a capacity of 12 to 15 tons of prunes per day.

—Illustration courtesy Progressive Dehydrator Co.

Mr. Keeble's son, Ed Jr., does most of the tractor work. Big implements make quick work

Ed Keeble knows prunes. He has raised them for nearly 20 years — most of the time on shares

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER

JULY 15, 1923

All Due Respect to Mr. Average Citrus Grower

Authorities Agree the Standard Practice in Any Community Is the Best Guide for the Newcomer—Important Survey Completed

By ROBERT W. HODGSON

Agricultural Extension Service, University of California

THE experienced producer must be pardoned for being inherently suspicious of the newcomer to his community who tells of the remarkable results he expects to secure through the introduction of new and superior methods. In 95 cases out of 100, if the novice "sticks" at all, he comes ultimately to the average practice of the most successful, experienced farmers of that section.

ROBERT W. HODGSON

Knowledge of this "average practice," therefore, is of paramount importance to the novice. This is particularly true of citrus growing, because the properties in most sections change hands so frequently the valuable experience of former operators may be lost to posterity.

Recognizing this situation, the Agricultural Extension Service and the Citrus Growers' Department of the Los Angeles County Farm Bureau took up with the State College of Agriculture the necessity for a survey. Recently such a report was completed by Professor R. S. Vaile of the Division of Orchard Management, Citrus Experiment Station, Riverside. The survey covers more than 600 citrus groves, most of which have been under the same management for a period of five years.

Care was taken to choose properties which in the opinion of local growers' committees were above the average with respect to care and management. The results of the survey, it is felt, furnish precisely the information that is likely to prove most helpful to the newcomer.

For purposes of comparison, the Southern California citrus area was divided into three dictricts: coastal, intermediate and interior. A general summary of the average yields per acre, amounts of manure and nitrogen used, and amounts of irrigation water applied in the three districts is shown in Table I.

The information given in Table I will be of great value to growers for purposes of comparing with their own practices. If a grower's general practice falls below the figures given in the table, it is quite probable he is failing to secure maximum results.

If the grower is exceeding the figures given in the table, unless he is securing markedly higher yields, it is probable a reduction in the particular factor concerned might result in a saving, still maintaining production at a satisfactory figure.

TABLE I—ORCHARD PRACTICES AND YIELDS

District—	Production per Acre. Oranges.	Production per Acre. Lemons.	Fertilizer Used. Nitrogen.	Fertilizer Used. Manure.	Water Applied. Per Season.	Water Applied. Interval.
Interior.....	15,400 lbs.	18,900 lbs.	122 lbs.	6.3 tons	28.6 acre inches	30 days
Intermediate....	18,500 lbs.	24,000 lbs.	160 lbs.	7.8 tons	24.8 acre inches	25 days
Coastal.....	19,500 lbs.	24,700 lbs.	123 lbs.	9.6 tons	20.2 acre inches	33 days

"Am I applying the average amount of fertilizer and irrigation water which produces the highest yields?" is a question which naturally interests every producer of citrus fruits—the experienced grower as well as the novice.

Another paramount question is: "What is the optimum (or best) soil and the optimum amount of fertilizer and water to apply for this soil?" In the past this query has not been answered satisfactorily, but data compiled by Professor Vaile are extremely valuable in arriving at definite conclusions.

The survey indicates maximum yields are secured on the sandy loams and fine sandy loams, with slightly lower yields for the gravelly sandy loams and the loams. The lowest production of all was found on the sands, with clay loams showing a production between sand and loam. *It would appear, therefore, that the ideal citrus soil is either a sandy loam or fine sandy loam.*

HOW MUCH FERTILIZER?

The correct amount of fertilizer to apply for maximum results for years has been a perplexing question. The survey has answered this question. It shows the maximum returns for the investment are secured from an application of from 250 to 300 pounds of available nitrogen per acre.

The highest yields recorded were from orchards where 350 pounds of nitrogen per acre had been applied. Above that figure, the yields actually decreased and the trees were noted to be increasingly affected with the mottled-leaf disease.

Valuable data relative to the proportion between the total amount of nitrogen and the amount of manure applied were brought out in this survey. The use of large quantities of barnyard manure, constituting more than 60 per cent of the total quantity of nitrogen, were shown to result in maximum yields. A marked decrease in yields was found in the orchards where the percentage of nitrogen, applied in bulky, organic materials, dropped below 40 per cent.

Converting the optimum amount of actual nitrogen into terms of the usual fertilizers applied: 10 tons of stable manure, 200 pounds of sulfate of ammonia, and 800 pounds of high-grade tankage per acre were found to give very satisfactory results.

The optimum amounts of water for maximum yields in the different districts, as brought out by the survey, are, for the coastal district, approximately two acre feet, and for the intermediate and interior districts from three to three and one-half acre feet per acre, exclusive of rainfall. The survey brought out very clearly the fact that in the interior sections the majority of the growers are not applying sufficient irrigation water to result in maximum yields.

AGE OF BEST YIELD

A study of the age of orchards as related to their production shows that, where good care has been given, the yield increases up to an age of 35 years. The period of maximum increase, however, occurs between the ages of 10 and 15 years, after which production increases rather slowly. The figures secured by Professor Vaile show that a 10-year-old orchard produces approximately 60 per cent of the maximum yields; at 15 years of age it is producing 89 per cent; at 20, 92 per cent; at 25, 94 per cent; at 30, 97 per cent, and at 35, 100 per cent.

Much other valuable information was brought out in the survey, which, it is hoped, will be presented to growers in the form of a bulletin. After all the various factors were analyzed with respect to yield, however, one of the remarkable findings is the wide variation in production between individual orchards.

Undoubtedly much of this is due to differences in the stocks on which the trees are propagated and to differences in the productiveness of the strains from which the trees were budded. By far the greater part of it, however, is believed to be due to environmental conditions. The importance of orchard analysis with respect to efficiency and the necessity of individual tree care and attention were strongly indicated by the survey.

Consumer Can Be "Educated" to Advantage of Poultryman

So Says Cornele G. Ross, President of Poultry Producers of Southern California

By O. H. BARNHILL

CAN people be persuaded to eat more eggs and pay higher prices for them? If so, how best can this be accomplished?"

"Most certainly the consumption of eggs can be increased to a substantial extent," replied Cornele G. Ross, president of the Poultry Producers of Southern California. "People have been taught to eat more raisins, prunes, corn flakes and various other food products—why not eggs?

CORNELE G. ROSS

"In all this modern food propaganda we are apt to overlook the commonest and best article of diet—the egg. It is a mistake, however, to compare various foods for the purpose of proving the superiority of one. Folks are getting tired of this sort of advertising which they are inclined to discredit and ignore.

"Egg producers should be content to show the many good qualities and advantages of their product, without making invidious comparisons. The first work of this kind needed is to overcome prejudice against storage eggs. By the use of improved methods of grading and packing, it is possible to keep eggs from spring until fall in practically perfect condition. For certain purposes, our storage eggs are just as good as fresh ones, although there is a little difference in the fluidity of the yolk.

SPRING VERSUS FALL EGGS

"Fall eggs may be fresh, but they are produced by hens whose vitality has been weakened by many months of hard work. Because of the warm fall weather eggs should be marketed oftener than in the spring, yet there are so few of them that our trucks pick them up but once a week, while two trips a week are made in the spring. Therefore, spring laid eggs held in storage may be superior, in some ways, to the fresh fall product.

"Under the old process of keeping uncoated eggs in storage, the sweating of the eggs moistened the pasteboard packing, the odor of which—together with other odors—was absorbed through the porous shell of the egg. Our storage eggs are dipped in hot oil, which drives the air out of them, after which they are coated with a thin film of cool oil.

"This oil is a secret compound, but the base is paraffin. We rent the dipping machines, paying royalty for their use. The cost of coating eggs in this manner amounts to two to three cents a dozen.

"A year ago the egg dealers of Los Angeles, with some assistance from San Francisco, conducted a campaign of education in favor of cold storage eggs. Egg producers each should pay a share of the expense of such campaigns, because they are all benefited by the results. It is difficult, however, to induce poultrymen to contribute for such purposes, because they dislike paying for something which is of equal benefit to the other fellow."

DANGER OF OVERPRODUCTION

"Is there danger of an overproduction of eggs?"

"Not at present. It is true there were 125,000 more cases in storage June 15 on the Pacific Coast than there were a year ago. Petaluma has more than double the amount held last year, while we have $325,000 worth which we are holding for the autumn market.

"There was, however, less holdover stock in the East June 1. This was due to the backwardness of the season, which in some districts was three weeks late. The hens, having a late start, probably will not be able to catch up with their production work this year."

"Many persons feel that eggs already are too high-priced, especially in Los Angeles. Is this true?"

"No; when the true and full value of eggs as food is considered. It is a fact, however, that when eggs sell for 40 to 45 cents a dozen many consumers say, 'No more eggs for me.' A peculiar feature of the situation is that when people quit eating eggs on account of the price, they will not begin again until values drop to bed-rock—20 to 30 cents.

"In keeping up prices, we have this difficulty to consider; also, the attracting to our market of large shipments from other sections. Last week 1100 cases arrived from distant shipping centers. By Friday all but 100 cases were sold. There are now 10,000 cases on the way here from Oregon. More than 200 carloads of eggs are imported into Los Angeles from other egg districts every year.

"The egg production of Los Angeles County is not increasing, while the population is going up by leaps and bounds."

SELLING OUTSIDE ASSOCIATION

"Some poultrymen say they can get better prices for their eggs by selling outside the association than by disposing of their product cooperatively. Is that true?"

"In some cases, yes. The high price which the outsider sometimes gets is made possible, however, by the activities of our association. Without intelligent cooperative marketing, which includes shipping surplus stock to outside markets and holding large quantities in storage for many months, the egg market would be demoralized and low prices rule.

"Our organization has been the means of maintaining egg prices at least three or four cents higher than what they otherwise would have been. This may seem like a little matter, but it amounts to a dollar a case—the difference between profit and loss in the egg business.

"If a poultryman is sufficiently selfish and shortsighted to refuse to cooperate with other producers, in the hope of some time taking a slight advantage of a situation which our organization has created—why, that is his privilege. He should not forget, however, that dealers sometimes pay outsiders slightly higher prices for the express purpose of discrediting cooperative marketing organizations."

Is TB Testing a Graft?

THOSE who believe that testing cows for tuberculosis and slaughtering animals found diseased entails needless public and private expense will be interested in the following case, recently reported by the American Vetinary Medical Association:

W. D. Odom of Columbus, Ga., was convinced that the work of the State milk inspector in eradicating bovine tuberculosis was a graft. In order to prove his contention he and his family used the milk of a cow which the tester suspected of being diseased.

"My son contracted tuberculosis the next year," states Odom. "The disease destroyed some of his bones, which were removed, one of them being replaced with the leg bone of a sheep. My wife next caught tuberculosis and died from the disease. My two daughters are now in a tubercular hospital."

Avocadoes in Tulare County

A NUMBER of growers have achieved success with avocadoes on a small scale in the Lemoncove district of Tulare County. C. Ed Meyers of Visalia has a ranch in this locality, where ten trees about 12 years old have made splendid development. In the matter of bearing, however, as in many other sections, the trees have not been so profitable. Harmon and Ganter trees have produced some profitable crops, but the Tafts have proved practically a failure on the place.

COVERS CALIFORNIA COMPLETELY
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ORCHARD and FARM

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

IS HOG CHOLERA CONQUERED?

Many swine breeders have contended serum treatment is failure, pointing to frequent outbreaks of cholera as evidence that the standard method is far from being infallible. That we are making progress, however, is indicated by a recent report of the United States Department of Agriculture, in which it is shown that by the widespread use of anti hog cholera serum average losses have been reduced about 60 per cent as compared with the most disastrous years.

It is contended by some authorities this most dreaded swine plague could be eliminated if every farmer and breeder would vaccinate all his pigs, irregardless of exposure to infection.

Whether this plan could be put into effect is another question. The average farmer will not incur the expense and loss involved unless disease threatens. Consequently serum continues to be regarded more as a cure than a preventive, although prevention is its true province.

MISTAKEN BELIEF CONCERNING FOREIGN TRADE.

That low prices for farm products during the past three years have not been due to reduction in exports is disclosed in a recent statement by Secretary of Agriculture Wallace.

"Under a misconception," says the Secretary, "many persons have urged the adoption of political and economic measures which they thought might increase agricultural export trade."

As a matter of fact it is shown the average annual exports of our eight principal food crops during the year 1920 to 1923, inclusive, were 142 per cent greater than the average annual imports of the same products for the years 1905 to 1914, inclusive.

Mr. Wallace explains the situation by saying we have been producing more than in pre-war years; in fact, the production of the principal grain crops was more than 2 per cent greater during the post-war years than during the war years 1915 to 1919, he asserts.

PRODUCTION FACTS REFUTE THEORIES.

The one product most affected by European demand, it is shown in Wallace's statement, is cotton, and the price for cotton has not been depressed.

"Unless production is fairly well adjusted to demand future prices will be disappointing," concludes the Secretary. "In considering the matter of future exports of our agricultural products it must be remembered that the probable tendency will be downward. European agriculture is becoming more productive and no doubt economic conditions are becoming more stable. As normal conditions in Europe are re-established their purchases of our surplus will become more normal."

The above statements are very significant and rather disquieting. We hear much talk about the population deserting the farms and rushing to the cities, yet it seems apparent in the case of certain staple crops that America is facing, if not already feeling, overproduction.

Some of the growers of California fruits and other specialties have some cause for uneasiness, but on the face of the Secretary's statement, it would seem they are infinitely better off than the corn and wheat-belt farmers.

We always have one consolation, however: Early estimates frequently prove inaccurate, and pessimistic predictions often fail to materialize.

NEW DAIRY LAWS IMPORTANT

Of the several important agricultural laws enacted by the 1923 session of the California Legislature, the dairy measures are among the most significant. All the regulations governing the production, care, manufacture and sale of milk now are assembled in these three acts. One, known as the "General Dairy Law," among other provisions, raises the quality of milk to be used in the manufacture of cheese, prohibits the use of oleomargarine in any of the charitable and penal institutions maintained by the State, and requires the licensing of every dairy product plant.

Another measure, the "Pure Milk Law," among other provisions, makes it unlawful to sell raw market milk until all requirements for tuberculin testing of cows have been complied with, and requires that milk shall be served in the original bottle, the cap of which shall be removed only in the presence of the patron, in hotels, restaurants, lunch counters, etc. Such an ordinance in Sacramento is said to have resulted in an increase of approximately 20 per cent in the sale of milk in hotels and restaurants of that city.

The third bill, known as the "Filled Milk Law," prohibits the sale and manufacture of evaporated combinations of skimmed milk and vegetable oils. In a word, all this legislation has but four major purposes—improvement in quality of products, the safe-guarding of the welfare of the industry through prevention of adulterations and the regulation of substitutes, protection of the public in the matter of health and fraud, and punishment of those who persistently refuse to comply with the law's requirements.

"What's New?"—Keeping Abreast of Agricultural Progress

No Losses From Culling

A SOUTHERN CALIFORNIA novice in poultry raising who had never culled his flock, last summer removed 26 per cent of his fowls, according to the plan recommended by the State University, with no decrease in production. This reduced the feed cost one-fourth with no diminution of returns.

Producing Cleaner Potatoes

MANY California "spud" producers are "roguing" their fields before digging the main spring crop; that is, removing hills which, from the tops, appear to be diseased. So-called "running out" of seed is said to be due largely to failure to keep seed plots free from diseased plants, which progressively deteriorate the quality of the strain. It is especially important that weak and infected hills be removed if seed production is contemplated.

Farm Bureau Movies Shown

THE use of motion pictures to "put over" the better farming idea is not new. The plan of mixing education and entertainment, however, is an interesting recent development. Large attendance featured the showing at various Los Angeles County high schools in agricultural districts, of a "big, free show" arranged by the Extension Service. This included a travel reel in colors, a film from the U. S. Department of Agriculture, a number of features on California agricultural developments and a six-reel "thriller," which included famous stars.

Turning to Septic Tanks

UPON learning that the cost of an efficient septic tank for sewage disposal is less than that of many cesspools, increasing numbers of suburban and rural residents are installing this valuable utility. Septic tanks, properly constructed, need not be pumped out. The top is sealed down to stay, bacterial activity serving to dispose of the sewage. The agricultural engineering department of the University of California, or any county agent, will furnish plans for a concrete septic tank of the correct capacity for given conditions.

Heavy Breeds Big Layers

RECENT egg records support the contention of many breeders that production is a matter of strain rather than breed; that is, egg capacity depends upon selection of individuals no matter what the breed.

A recent bulletin on the Pomona egg laying contest stated a Single Comb Rhode Island hen won first place for individual production during May, and a Rose Comb R. I. Red won second. Leghorns won the pen records for the month, but the bird-leading the contest at the end of May was a Barred Plymouth Rock, which at that time had laid 11 more eggs than the highest bird at this time last year, and 12 more to date than any single fowl entered in the present contest.

Aphycus Disappoints Growers

THAT the much-heralded Aphycus Lounsburyi has failed to produce the cleanup of black scale that was hoped for at one time, was the frank admission of speakers at a recent Pest Control School meeting in Southern California. This conclusion, however, was anticipated by members of the State Insectary organization, who have warned citrus growers not to expect too much of this friendly "bug."

At best, its work is expected to result in cutting down the infestation somewhat in order that the hatches will become more even and thus more readily controlled by other methods. It was brought out at the same meeting that while fumigation is giving satisfactory control in the Coastal districts, results have been unsatisfactory in the interior.

Certain oil sprays now under test gave promise of more efficient control, either alone or in conjunction with fumigation. Preliminary experiments at the Citrus Experiment Station (Riverside) indicate some success may result from the use of cyanide dust. Citrus groves are said to show 15 per cent greater infestation this year than last year, even though fumigated.

To Improve Farm Kitchens

A CALIFORNIA farm housewife recently made an interesting "kitchen analysis" which revealed she was doing a veritable "marathon" in connection with her daily duties.

She made a rough plan of the kitchen on a large sheet of paper, showing the location of doors, windows and equipment. Then with her small son's colored crayons, she drew lines to show the routes of travel she covered in doing her work. A green line, for example, showed the path between kitchen and dining room, a red line between sink and stove, a black line between table and sink.

She then estimated the number of times each route was traveled daily and was astonished to find she had walked several miles, a good portion of which represented unnecessary effort.

As a result of this test, she moved the kitchen table and cabinet and had the stove turned half way around. Then because she could not afford a tea wagon she persuaded her oldest son to make her a service wagon, equipped with old baby carriage wheels, for transporting food and dishes between kitchen and dining room.

The latter, nicely painted and decorated, proved an ornamental piece of furniture, as well as a great labor saver. Altogether her "kitchen analysis" showed how to conserve a great deal of previously wasted energy.

Co-op. Creamery Pays Bonus

THE auditor's report, received at the last meeting of the directors of the Petaluma Co-operative Creamery shows undistributed accumulations sufficient to pay a 2-cent bonus for the first six months of 1923. The total amount of butterfat delivered for this period will amount to approximately 1,600,000 pounds. The 2-cent bonus on this will be $32,000, and adding the $10,000 distributed in January will make $42,000 for the year closing June 30, 1923. In addition there will be sufficient accumulations to add a considerable amount to the "contingency reserve."—K. R.

Accredited Hatcheries Reject

THE accredited hatcheries in Sonoma County now are making arrangements with breeders for the 1923-24 season. As a result of inspection two breeding flocks have been rejected because of the presence of tuberculosis. Of approximately 4000 pedigreed cockerels which were shipped into Sonoma County during a recent 30-day period, more than 600 were rejected by the inspector. Sonoma County breeders also have delivered approximately 1000 double pedigreed cockerels to be used in accredited hatchery flocks and approximately 20 per cent of these were discarded as unfit for breeders.—K. R.

Eliminating Crop Guesswork

THAT the time is not far distant when scientists will eliminate guesswork in the selection of varieties for planting under various conditions is the prediction of the State Department of Agriculture.

In Washington a recent survey resulted in a tabulation covering all fruits produced commercially in that State. Other States have adopted similar measures. It is pointed out that by the combined aid of horticulturists, entomologists, plant pathologists, soil chemists and other scientific agencies, it will be possible to choose crops and varieties that are most likely to succeed under given conditions. A good example of such service is afforded by the crop plan of the California State Land Settlements, where every precaution has been taken to insure the success of the colonists by proceeding upon a known basis.

Children War on Gophers

"GOPHER Week," participated in by the children of the Goldridge district (Sonoma County), resulted in the destruction of hundreds of the troublesome rodents. The Sebastopol Chamber of Commerce offered one cent for every tail of the first 1000 turned in.

The first prize was a $10 gold piece, to the boy or girl who turned in the most gophers during the week. It was presented by S. A. Meeker. The grammar school boy who got the most was awarded a $10 fishing outfit by the Weeks Hardware Company. E. F. Jewell, Mayor of Sebastopol, offered $2.50 to the boy or girl who succeeded in capturing the most gophers in one day during the big week. A special prize to the girls, of $5, was awarded to the girl who turned in the most tails. Five dollars' worth of playground equipment was presented by the Sebastopol Berry Growers' Association to the school which showed the highest total number of gophers killed during the week. Those who acted as judges in the essay contest conducted in connection with the drive were O. E. Bremner, Perry T. Allison and Rev. M. B. Young.

Lynn Mullaly won the contest, with 126 gophers to his credit, and Henry Martin came next with 116 gophers. Both boys are students of Analy Union High School.

This was the second annual affair of this character staged in this district, and, due to its great success, undoubtedly there will be one next year.—STANLEY SWAIN.

Ben Gonnadowit Says

I put a lot of fertilizer on my garden this year an' th' weeds grew so tall I c'd pull 'em without stoopin'. Quite a labor saver!

Guess I'll have to start growin' an' stackin' my own hay. Th' place is gettin' so littered up with balin' wire f'm th' alfalfa I've bought, that it's ruinin' all th' machinery.

I was readin' how an Imperial Valley farmer keeps a few sheep to clean up th' ditch banks and fence corners, and says they ain't no expense or trouble. I had jest about decided to get some myself, when I happened t' think I'd have to shear 'em every year! I knowed they was a ketch in it somewheres!

I hate this hot summer weather. Th' flies seem to bother me worse'n anybody. The screens on my house is all goin' to pieces, too, and I ben gonna fix 'em, but I figger th' winter rains 'll only rust 'em out again, so I thought I'd let 'em go until next spring.

My wife complains it's a'wearin' her out t' carry so much water, so I bought her two small buckets t' replace th' big one she's be'n usin' th' past four years. It pays t' humor th' wimmin folks a little.

We read a lot about th' advantages o' keepin' books. I ben keepin' books all my life, an I've built up quite a library; but it's gettin' so I kaint hardly borrow one any more.

HOME FARM HAPPENINGS

By ONE OF US

FOXTAILS AND "BY PRODUCTS."

Foxtails in the lamb's eyes and an occasional "fly blow" continue to keep us busy with the sheep. Eternal vigilance is the price of keeping the animals free from these pests.

JOHN IS VINDICATED.

There has been considerable argument about the weight of a big 4-year-old Belgian gelding of ours.

John has stoutly maintained that he would weigh 1800. Because of this statement he has been the subject of much mild ridicule.

Some said the horse would not weigh over 1650 pounds; asserted there wasn't a horse in these parts that would weigh over 1700. So we weighed him Sunday morning.

On scales tested by the State deputy sealer of weights and measures only a few days before, he tipped the beam at 1865 pounds strong!

MORE WATER—MORE PRUNES.

We are more and more convinced each season that an open river bottom land like ours, where the trees are big and making rapid growth, the biggest trees and the heaviest crop of the largest sized fruit are produced where the trees get the most irrigation water.

In an orchard about a mile from our place there is a ditch leading to an alfalfa field. They irrigate the trees once or twice during the season; the alfalfa six or eight times.

For a while they were very much concerned about a part of the ditch that leaked; were afraid the trees would get too much water. Now these trees that got the most water are by far the best in the orchard.

"I am going to try to drown the next trees I plant," says the owner, in discussing it. Of course, this sort of thing would not do on heavy or hard or poorly drained land.

BARLEY CROP IS EXCELLENT.

Big barley crops all through our section this year. Harvesting is on in full blast and will be for some time. Good land, without irrigation, but with favorable rains, makes big crops.

There are fields that will make 30 to 40 sacks per acre, 110 to 115 pounds to the sack. The grains are full and plump this year, and the quality the best. One of our neighbors says the seed has not been changed on his place since 1849. "Standard California Barley," he calls the variety. His fields have been cropped continuously and one of the largest yields ever produced is being grown this year.

Some day, when we have thousands more people in California, these good lands all will be in orchards and alfalfa. Every section, instead of supporting three or four families, will be providing labor and sustenance for 15 or 20 families.

ECONOMICAL OILING OF HOGS.

Crude oil poured on a water hole in a field or lot where hogs are running is a cheap and effective way to get rid of lice and ticks. We have a hog-dipping vat, but we also have some hogs across the river, where it is unhandy to drive them to the vat, and, like all hogs, they get lousy if they are not treated in some way every three or four weeks.

There is a little water hole in the lot where these hogs are kept—the overflow from the water trough makes it. A barrel of crude oil—fuel oil that costs about [illegible] cents a gallon—poured on this water hole made an effective oil wallow.

Within an hour every hog in the lot is covered with oil, and every tick, louse, nit and egg killed.

Sheds, fences and bedding places also are well smeared before night, so that the entire lot is pretty well cleaned up—and by hog labor, the cheapest power on the ranch.

Hogs do not wallow in cold weather, so this is only a summer remedy.

TYING DOWN PEAR TREES.

Had the very great pleasure this week of visiting W. A. Caldwell of Camino, in Eldorado County, and of inspecting carefully his wonderful pear orchard.

Caldwell ties down the limbs of his pear trees with twine, so as to encourage the growth of fruit wood and make a stronger scaffold frame work for the tree, thereby bringing it into bearing earlier and increasing the crop.

In this writer's judgment he has done one of the most remarkable things that has ever been accomplished in agriculture. It is worth going around the world to see his orchard, and you must see it to appreciate it.

Hearing about it for several years has created only a mild interest on our part, but now we shall begin tying down the limbs on our big, rank-growing pear trees at once.

A remarkable man is W. A. Caldwell—a man of strikingly strong character and a most delightful personality. He has carried out his convictions regarding this tree-training system with practically no pruning, in spite of the discouraging remarks of neighbors and alleged experts from close at home and farther away.

Now he has a bumper crop—ten-year-old Bartlett and Nellis trees loaded with fruit—big fruit. And the trees are full of wood and leaves—big, capable pear-manufacturing plants.

Caldwell probably is better known today than any other man in the pear industry, and the value of the practices he is demonstrating will be worth untold thousands of dollars to the growers of pears all over the world. An odd situation—but it is quite human—that some of his neighbors have been his most severe critics. They simply would not acknowledge that his system was right, in spite of his larger crops and his very greatly increased yields and more vigorous trees. Every year calamity has been predicted, and every year the trees are better.

The pleasure and satisfaction in seeing this orchard was all the greater because his trees look very much like our prunes—they are sort of big brush piles, but full of fruit. And we have had much criticism, the same as he has. The one great consoling thing about it is that we have the fruit—lots of it.

Caldwell's place should be made an integral part of the College of Agriculture of the University of California. Work like his should be recognized, and there should be delegations of fruit growers visiting it whenever they can get there, but particularly during the growing season.

Whenever any one does what Caldwell has, both the man and his accomplishment become of immense value to agriculture and they should be accorded recognition accordingly.

Machines Increase Butterfat?

Interesting Tests Concluded by Southern California Dairyman Who Uses Mechanical Milkers

IN THE face of many contradictory theories concerning milking machines and their effect upon cows, the following statement from Paul Chadwick of Glenwood Stock Farm, Riverside, Cal., is of particular interest:

"We are milking 80 cows with six units, 42 of them three times daily. We are making over 100,000 pounds of milk and about 3700 pounds of butterfat monthly and showed a gradual increase of from 29 pounds average butterfat per cow in December to 56.2 pounds average butterfat in May.

"Recently we were visited by the inspector from the Health Department. We received a score of 91 per cent out of a possible 100 per cent. This score included every possible point for equipment, care and methods of milking.

REDUCE LABOR ONE-HALF

"We are conservative when we estimate the machines reduce the labor cost one-half and the releaser one-third more; that is, two men do the work of six when cows are milked by hand.

"One of the first questions asked by dairymen who come here to see this model establishment is: 'What is the effect on the cows; does it ruin them?' We can safely say that it is impossible to harm a cow's udder with this machine when it is permitted to remain on the teats until milking is finished with the full vacuum. There is more likely to be trouble when the machine is removed too quickly and the job is not properly finished by hand. One man has operated these six units alone and has done the stripping many times for an extra milking with no detrimental result."

Mr. Chadwick adds that the 80 cows are milked by two men, and since nearly 50 of the cows are milked three times daily the labor requirements equal or exceed those of 110 cows milked twice daily.

A record of milk and butterfat production for six months, according to Chadwick, showed a phenomenal increase. The average yield rose by degrees from 910 pounds of milk and 29.4 average butterfat to 1545 pounds of milk and 56.2 pounds of butterfat.

Mr. Chadwick explains the remarkable butterfat increase in part as follows: "As you know, the last milk from the cow is extremely rich in butterfat. The obvious reason for the higher test is, therefore, that the cow gives down these strippings more completely and in greater volume in response to this more regular, more gentle and more scientific method of extraction than is the case with the more harsh and irregular method of squeezing the milk out by hand.

"The combined strippings constitute less than one per cent of the milk, and would be inconsequential if the cows had been milked by machine from the first," concludes this practical dairyman. "Heifers respond the most readily when never milked by hand except during the colostrum period."

Find Oldest Shingle

The oldest sawn shingle in California has been found. It was 74 years old and came from an adobe dwelling erected by the Arrellanes family in 1849 on the Guadaloupe Rancho, near Santa Maria, in Santa Barbara County. The building originally had a thatched roof of tule, but this was burned by General Fremont's soldiers and then replaced by redwood sawn shingles.

BREED ASSOCIATION ADVERTISES MILK

"Holstein Milk" is the subject of a comprehensive advertising campaign being conducted through National women's magazines by the Extension Service of the Holstein Fresian Association of America. Individuals and companies specializing on Holstein milk are "tying up" their local advertising with the "copy" prepared by the association.

WIRE GINS TO PREVENT FIRES

That many disastrous cotton gin fires have been due to static electricity which collects in certain parts of the machinery as a result of friction is disclosed by the U. S. Department of Agriculture, which states proper grounding of conduits and wires has reduced such losses.

DAIRYMEN RETAIN SCRUB BULLS

Despite the many "Better Sire" campaigns and the constant efforts of agricultural leaders to improve the situation, 75 per cent of the dairy bulls used in the United States are "scrubs," according to a recent statement by the U. S. Department of Agriculture.

QUAIL IMPORTS SHOW INCREASE

The total number of quail imported this year from Mexico was 9123, the smallest number imported in any season since 1918, states the United States Department of Agriculture.

EASY NOW TO RID YOUR PLACE OF FLIES

Widely Known Scientist Discovers Wonderful Chemical That Is Fatal to Flies. Not a Poison—Harmless to Stock.

Flies are one of the most dangerous and annoying things with which the farmer has to contend. Now, through the discovery of E. R. Alexander, widely known scientist, you can rid your house and barns and livestock of these pests almost instantly, and with no trouble at all. This discovery is in the form of an organic chemical that is fatal to flies, and similar pests, such as chiggers, mosquitoes and moths.

This new discovery, which is called Alexander's Rid-O-Fly, is not a poison. Though it kills flies like magic, farm animals and human beings are not affected by it at all. Rid-O-Fly is also a strong repellent. Flies will not come near stock or buildings where Rid-O-Fly has been used. Rid-O-Fly is particularly valuable for cows and horses, as it is a known fact that flies do untold harm to these animals.

So confident is Dr. Alexander that his discovery will rid your house, barns and live stock of these pests that he offers to send a $3.00 supply for only $1.25 and a few cents extra postage collected on delivery, on the guarantee that if Rid-O-Fly does not work it will cost you nothing. Two big Kansas City Banks guarantee the reliability of this offer.

SEND NO MONEY—Just your name and address to the Alexander Laboratories, 1549 Gateway Station, Kansas City, Mo., and this introductory offer will be mailed at once.

SAW 15 Cords a day, EASY!

—with the wonderful OTTAWA Log Saw. Saw more than 10 men—Save your back! Write for special offer, easy terms and new Free Book. Send postcard today.

OTTAWA MFG. CO., 2351-R Wood St. Ottawa, Kan.

Room 2351-R Magee Bldg., Pittsburgh, Pa.

Another Proof of Progressive Merit

Showing construction of two 11-truck Progressive Evaporators now being erected at Morgan Hill for the Dee-Hi Food Products Co.

The Dee-Hi Food Products Co. of San Jose, a corporation organized and financed for **Commercial Dehydrating, Processing and Selling** of California Fruits and Vegetables, after a thorough investigation of dehydrating plants, have placed their order with us for 5 eleven-truck Progressive Evaporators, each unit with a capacity of from 25 to 30 tons per day. Two of these are now being installed at their first big plant at Morgan Hill, Calif.

It is the intention of this company to install several more plants in other parts of the Santa Clara Valley, these also to be **Progressive Evaporators.**

A duplicate of the above plant is **now being installed on the famous prune orchard of the Swall Land Company at Tulare, after a thorough investigation of dehydration,**

NOTHING SUCCEEDS like SUCCESS

Place your order now for the most **Successful** Dehydrater.

48 plants satisfactorily operated last season by satisfied owners.

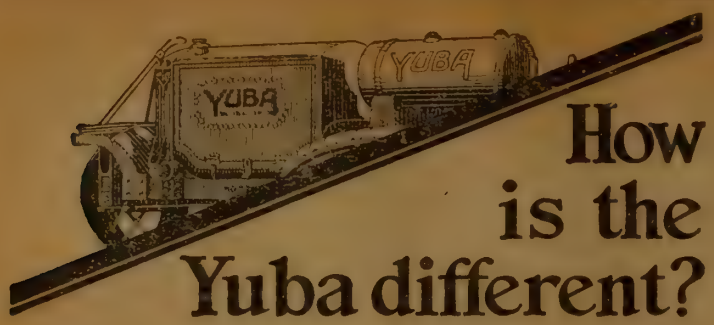
Uses Standard Field Trays.

Consider the merits of the Progressive Automatic Tray Stacker for economy and efficiency. Will stack three trays of each grade fruit per minute on separate trucks.

Write for details.

Progressive Dehydrater Co.

512 LOEW BUILDING SAN FRANCISCO



How is the Yuba different?

You can name a score of tractors that were here yesterday and are gone today. Only the fittest have survived.

The YUBA is one of a handful of good tractors. Why is it high in favor?

The BALL TREAD for one thing—nearly friction-free. Honest steel throughout. A flexible control. Comfort for the driver. A front wheel that means straight furrows.

And the YUBA is demanded by men who favor a lubricated track and the rudder-like effect of the front wheel!

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Write for our new book "Making Silage" and learn the truth about silos and silage
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HARRY BAYLIES, The Fence Man
432 Pacific Finance Bldg., Los Angeles, Cal.

Mallard Ducks for Meat, Eggs

Successful Growers Claim Many Advantages for Wild Fowl—Pointers on Raising Them

By O. H. BARNHILL

AMONG all the members of the Baldwin Park colony of "littlelanders" who left the city to live and work among growing things, none is more hopeful and happy than J. M. Campbell, who for sixteen years was a soldier in the United States Army and for five years a motion picture director. He is pinning his faith to Mallard ducks, which he considers vastly superior to chickens for both eggs and meat.

"Some farmers like to dig in the ground, but I don't," explained Campbell. "Raising animals is the kind of work I enjoy. We began with chickens. A year ago last fall a friend sent us two ducks to roast. We thought we'd first see how they'd lay and were so well pleased with their performance in this line that we kept them for breeding purposes.

"Each of those two ducks laid 216 eggs in one year. We now have 100 layers, all of them making a better record than the original pair. By the middle of June we were getting 70 per cent production while the ducks were at the molting stage. In March we got 90 per cent production."

DUCK EGGS ARE VALUABLE

Mallard eggs weigh 10 pounds per case more than hen's eggs and have slightly thicker shells, which lessens the loss from breakage. They are said to be a little richer than hen's eggs and to be preferred by bakers. They also make better mayonnaise and meringue, it is asserted. The difference in taste is scarcely distinguishable, as the writer can testify.

"Dealers pay us for our surplus eggs the market price for extra select hen's eggs," stated Campbell. "Last year the price averaged 40 cents. Our first two ducks netted us better than $5 each."

The drakes are sold when a little less than four months old, at which age they weigh 3½ pounds, dress 2¼ pounds and bring $1.50 each. At about this time the plumage of the males takes on the brilliant colorings so much admired by sportsmen, and the birds begin to test their wings. They sometimes fly a mile or more, but always return home. As they rise and alight, airplane fashion, they have difficulty in negotiating the fences, invariably alighting on the wrong side.

DUCKS, CHICKENS COMPARED

"Ducks are easier to feed, shelter and care for than chickens," declared Campbell. "In fact, they are so superior in every way, from the commercial poultryman's standpoint, that we have sold all our chickens and are raising ducks exclusively. We have about 800 now and expect to have 2000 by next spring and ultimately 10,000.

"In this climate ducks need practically no shelter, which means a substantial saving in building costs compared to chickens. We have only some small, open sheds for the laying stock and 'cross-covered' shelters for the young drakes; the latter like everything as natural and wild-looking as possible. We are planning a cement duck pond 30 by 200 feet."

The pioneer in any new industry generally makes many costly mistakes, lacking the experience of others for guidance. A poor incubator here caused the loss of several thousand duck eggs, but was supplanted by one which hatches 85 per cent of fertile eggs. Successful hatches are made almost every month in the year.

BOX HOVERS FOR DUCKLINGS

The incubator house is a small but substantial cement structure. The ducklings are "wad" the first two days. When taken from the incubator they are placed in small hovers. These are boxes made of rough boards, about two feet square and seven inches deep, with hinged end and top. Attached to the latter are cotton-filled pads the size of a man's two hands. The little ducklings snuggle in between these tiny pillows.

The first three days the ducklings are fed on bread crumbs, hard-boiled eggs and sand, after which they are placed on a diet of bran and cornmeal. A good many ducklings were lost by feeding coarse bran which pricked in their crews and could not be eliminated.

"A mature duck weighs only three pounds and needs but one-fourth as much grain as a hen," stated Campbell. "We are feeding five quarts of grain per day to 140 ducks. We also give them a mash composed of five parts of bran—bulk measure—one part of feed meal and 10 per cent beef scrap. To this mixture is added half as much finely chopped alfalfa."

DUCKS ARE VERY HEALTHY

Ducks are not troubled by lice, mites or disease. The layers are seldom broody and remain in this condition only two or three days, if no eggs are left lying around, according to Campbell.

"Indian Runner and Pekin ducks originated from the Mallards," he pointed out. "The white feathers of some birds indicate the tendency to change in this direction. Careful breeding is necessary in order to keep the stock pure."

There may be no connection between Mallard ducks and Dachshund dogs, but Campbell thinks about as much of one as the other. He has a highly prized specimen of this canine breed, which was almost wiped out during the war, due to prejudice against its German origin. The first litter of pups brought $100 and the second family is expected to make an even better record.

When the United States declared war against Germany, Mr. Campbell was placed in command of the German Federal prison at Atlanta. Later he was transferred to the general staff of the army, with headquarters at Washington, where he sreved with the rank of major.

Chafing at being tied to a desk while real fighting was going on, Campbell did not succeed in "crossing the pond" until he accompanied the Presidential party to Europe. He does not regret leaving the interesting life of a soldier and moving picture director, being perfectly happy and contented on his little duck farm, which promises soon to become an important institution.

This Hen Holds Long Distance Record

MADAM MARATHON, a White Leghorn maintained at the University Farm, Davis, is believed to have made the highest official long-distance record ever achieved by a hen. She is now in her tenth laying year and has produced 1365 eggs in nine years and six months.

Poultrymen who are beginning to question the necessity of incurring the expense and worry of replacing the entire laying flock every year or two will be interested in this performance.

This hen laid 186 eggs in her pullet year, 188 in her second laying year, 167 eggs the third year, and 139, 144, 136, 104, 116 and 133 eggs, respectively, in the six succeeding years. At last report her health was excellent.

The Poultry Division for years has been breeding for long-distance profitable production rather than exceptionally high pullet records, believing that a strain of fowls that can continue to lay 140 eggs or better for four to six years is more profitable than one which produces heavily as pullets and then "peters out" through lack of stamina. Madam Marathon is a large, robust hen.

VIGOR IS NECESSARY

In breeding for long-distance production, one automatically breeds for vigor, because long-distance layers must have this quality in order to lay well year after year. Such breeding should result in less mortality from sickness and more robust progeny.

Also, the cost of raising a pullet is greater than the cost of maintaining a laying hen which lays as well as the average of the pullet flock, and the profit from the hen, therefore, is greater.

Examination of the four-year records of 224 hens in the Station flock showed that over 95 per cent of these hens yielded a profitable production every year, and the entire lot averaged 146.4 eggs per hen per year for the four-year period.

Careful breeding and good management should result in the development of a flock possessing, to a high degree, those characteristics which will enable a flock to lay well for several years. Of course, skillful culling, based on scientific methods, must be practiced each year. These methods of breeding, management and selection will be discussed in detail during the Poultry Show course, which will be given at Davis for six weeks beginning October 1, 1923. This course is open to any one interested in poultry keeping. The enrollment fee is $2.00.

S. S. GOSSMAN.

POULTRYMEN TRY RICE HULLS

Petaluma poultrymen are experimenting with two car loads of rice hulls, using the material for nests and litter. Rice hulls are considered a waste product and can be obtained for the cost of sacking and shipping.—K. R.

Your Garden of Flowers

By HELEN TEMPLE

IRRIGATION AND CULTIVATION IN JULY—In most parts of California seed sowing and "planting out" now are almost at a standstill, but irrigation and cultivation must be practiced more thoroughly than ever during July and August. Quite often we are "vacationing" during a part of these months and trusting to Sammy Jones to "water everything good," but, unfortunately, our gardens usually suffer.

HELEN TEMPLE

Sammy Jones turns the water on full force and sprinkles the garden until it fairly drips, but he seldom really irrigates, and it is safe to say he never cultivates. After Sammy Jones "waters everything good," the top soil bakes and cracks the next day, and the moisture soon evaporates through the tiny pipes formed by the "watering."

We have found deep trenches between the rows of plants are much more satisfactory for thorough irrigation of a garden of any size. One sometimes feels small gardens are too small to bother about the trenches; then wonders why the little garden is not a success. We have found the soil about the roots of plants irrigated with trenches damp after two weeks of warm weather, with no attention whatever.

In order to make a success of trench irrigation, the soil must be thoroughly saturated and then broken up and packed down as soon afterwards as it can be worked. The garden will need no more irrigation for two or three weeks after this.

IRRIGATION AND CULTIVATION OF VIOLET BEDS—Violet and pansy beds will not allow thorough cultivation or the mulching of the top soil; therefore we must provide a mulch of old leaves, lawn clippings or decomposed straw. Before irrigating the bed, pick all flowers and half-opened buds, and clean out the "scraggly" leaves. After a thorough irrigation the bed soon will show a surprising number of weeds, which should be pulled before the soil begins to dry under the mulch.

Speaking of violets and pansies, we must remember that July is their month to rest. Of course, water must be withheld during this time. Then, the beds are cleaned up and given a thorough soaking in August.

THE SEMI-TROPICAL AND COAST REGIONS—Along the southern coast and as far north as San Francisco, as well as in the semi-tropical regions of California, a number of flower varieties may be sown this month. Bare grounds soon will become gardens of flowers, even though our seed sowing is delayed. When it is possible to obtain seedlings ready to be transplanted, much time is saved for quick effects, but seeds may be sown in the open at this time with good results. Seed sown in the open necessitates thinning, which must not be neglected if successful blooming is to result.

The antirrhinum, pansy, stock, lobelia, centaurea, cosmos and portulaca will thrive when started in July. In a small yard, where there is room and where only a few varieties may be planted, a border of pansies is always effective. In the background plant a few varieties of centaurea. One of the most effective background borders may be attained with the imperialis (giant sweet sultan), centaureas of blue and yellow, which usually grow about three feet in height. If left alone, the centaurea will re-seed itself.

Lobelia will do well in a shady situation; therefore we do not hesitate to plant a row along the shadowy walk for an edging. They are most effective when two rows are planted together, as the plants are only six or eight inches high. Plant the same color in the rows for best effects. The mixed colors are not pleasing.

CARE OF ROSES THIS MONTH.—Roses will have two springtimes here in California if we force them to rest this month. Withhold all water, allowing the soil to become dry, thus forcing a rest. After a month of rest, or during August, cut back the roses giving them a moderate pruning, then dig up the soil about the roots, and spade under a quantity of decomposed cow manure. Add a little soot and ground bone for good luck.

Then we are ready for the water, which must be used in quantities; in fact, give the rose "the soaking of its life," after which cultivation is necessary. And that starts the rose on its second season of blooming. Roses that bloom only once a year will respond to this treatment and reward us with a second season of loveliness.

A NEW DAHLIA DESCRIBED—This is the "dahlia age." There are dahlia societies, dahlia clubs, dahlia gardens; in fact, we have become dahlia mad. Gardeners think nothing of paying $5 for a single bulb. Many of the newest bulbs sell for $10 each. Five and ten dollars for a single bulb may seem a great deal, but one bulb, properly planted and protected, will pay for itself many times over in a single season. One of the newest bulbs among the dahlias is a wonderful pink creation originated by a Los Angeles grower. It was pronounced the best pink cut flower at the Los Angeles Dahlia Show last September. It is predicted that, owing to its beauty and keeping qualities after cutting, it will displace eventually all pink dahlias on the market. This new dahlia is called the Pink Triumphant, being rose pink at the base and shading to light pink at the tips of the petals.

SWEET PEAS FOR DECEMBER—Sweet peas may be sown this month for late blossoms in all sections where the weather is not extremely hot at this time. If planted now, the tender young plants may be caught in a "hot spell." For this contingency, stretch a few opened barley sacks or some muslin over them until the heat abates. When sowing sweet peas at this time, plant the Christmas blooming varieties, and be sure the seed is fresh. We have found the use of old sweet pea seed to be a waste of time and money. Our best success has been attained when we used seed purchased from the California growers who advertise in ORCHARD and FARM.

BOYS BUSY BOTTLING BUGS

As an incentive to the study of entomology Kern County boys are engaged in a great "bug" catching contest, some of the high school students having collected more than 150 varieties of insects. As first prize the Braun Corporation of Los Angeles has donated a Tami field microscope, and the agricultural faculty is giving a hand lens as second award.

New Uses for Dates

NEW uses for the date, one of the oldest of human foods, have been developed by H. O. Todd, Coachella Valley date grower. Spiced dates and other date delicacies are being manufactured and marketed at attractive prices. This new industry is helping take care of the cull fruit, which is increasing in quantity as new plantings come into bearing and old trees yield larger crops.

It is a mistake, believes Mr. Todd, to insist that only the finest variety of dates shall be planted. Seedlings have served as the bulwark of the date industry, he declares, and will continue to be the mainstay of growers until the choice varieties can be had at reasonable prices and in sufficient quantities to supply the rapidly increasing demand. A single company is planning to plant 1000 acres.

Chicago and New York dealers bought the entire crop of one growers' association the past season. One orchardist sells all his dates by mail, having 200 customers, some living as far east as Boston.

CALIFORNIA WOMEN FARMERS

There are 3519 women farmers in California and 2462 farm forewomen and farm laborers, according to Walter C. Mathewson, State labor commissioner.

Actual photograph of yeast-fed birds on Fred H. Clark's California Ranch

Arthur Morrison of Arlington, N. Y., is raising these fine young birds on Fleischmann's Pure Dry Yeast

Letters tell what FLEISCHMANN'S PURE DRY YEAST is doing

for poultrymen everywhere

Letters are pouring in from all over America, telling of astounding results with Fleischmann's Pure Dry Yeast for poultry.

"Let me thank you once more," writes Harvey C. Wood of Bound Brook, N. J., "for introducing this life-saving element into our feeding program."

"I have never seen chicks feather so rapidly or develop such bone," writes E. C. Morris of Petaluma, Calif.; "this we attribute entirely to the addition of Fleischmann's Pure Dry Yeast."

"Have a hundred baby Reds two weeks old, fed yeast in the dry mash, and haven't seen a sign of white diarrhea," writes B. F. Bowman of Maryville, Kan. "All are very husky and active. Matured fowls look the best I've ever seen them."

"The results my figures show are phenomenal," writes Fred Clark of Cotati, California; "$184.55 net profit from 500 yeast-fed hens, getting one pound daily in the dry feed, as against $80.44 profit from the same number without yeast."

Use ½ lb. of Fleischmann's Pure Dry Yeast to every 100 lbs. of feed, in dry or wet mash.

Fleischmann's Pure Dry Yeast comes in 2½-pound cans, delivered. We pay postage or express. Mail the coupon today.

Fleischmann's Pure Dry Yeast can be profitably fed to all farm animals. Check on the coupon which booklet you want.

Caution: Don't be misled by imitations. Fleischmann's Pure Dry Yeast is *all* yeast—yeast in its most concentrated form. It contains no cornmeal or other fillers. To be sure of results, order Fleischmann's Pure Dry Yeast from any of our branch offices listed below.

FLEISCHMANN'S
Pure Dry Yeast

Order direct from the Fleischmann Company's Branch Office in any of the following cities:
New York, Chicago, San Francisco, Seattle, Hartford, Conn., Portland, Me.; Buffalo, Brooklyn, Albany, Philadelphia, Pittsburg, Baltimore, Boston, Birmingham, Cincinnati, Cleveland, Columbus, O.; Dallas, St. Louis, Detroit, St. Paul, Newark, N. J.; Toronto and Montreal.

PRICES

1 to 10 cans $2.00 per can
10 to 20 cans 1.95 per can
20 to 40 cans 1.90 per can
Over 40 cans 1.80 per can

(Add 50c per can if in Canada)

Any number of cans delivered direct to you, transportation charges prepaid.

THE FLEISCHMANN COMPANY, Dept. D-275, 941 Mission St., San Francisco, Cal., or 311 Bell St., Seattle, Wash., or 947 Maple Ave., Los Angeles, Cal.

Enclosed find $ Please send me.....2½ pound cans of Fleischmann's Pure Dry Yeast postage prepaid.

( ) Send me your book on raising pigs, cattle and horses on yeast-fermented feeds.

( ) Send me your book on raising poultry on yeast-fermented feeds.

Name .....

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60 cents a line (average 7 words). For white space, cuts or display type, most is computed according to total space occupied by advertisements.

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PROFITABLE POULTRY and COOPERATIVE ELECTRIC HATCHERIES, capacity 750,000 chicks. 180-290 egg Leghorns, Anconas, Reds, Rocks Minorcas Wyandottes, Brahmas, Andalusians ducks, turkeys. Of every week. Also chicks from large 2-year hens for rapid growth into broilers, fryers, roasters. Booking for July to October delivery. Reduced booked ahead. Early fall chicks profit most. "Never saw such vigor, rapid growth, in chicks." Write BOX O, 13 N. FAIR OAKS, PASADENA.

CERTIFIED WHITE LEGHORN QUALITY CHICKS for Summer and Fall months, from selected free-range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Send for catalog and attractive prices. Safe delivery and full count guaranteed. MUST HATCH INCUBATOR CO., INC., 432 Seventh St., Petaluma, Calif.

CERTIFIED BABY CHICKS from inspected flocks. All pens have undergone rigid inspection; mated with males having authentic trapnest records of at least 200 eggs on the sides of both parents. Certified by Alameda County Poultry Breeders' Assn. Now booking orders for fall and spring delivery. Utility prices. Chanticleer Elec. Hatchery, Inc., Hayward, Cal.

WHITE LEGHORN baby chix from flocks mated to males having sire's dam record of 240 to 297 eggs per year. Full particulars and interesting literature on request. We are accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, P. O. Box 476, Petaluma, Calif.

HANSON'S Pedigree S. C. White Leghorns. Over 240-egg flock average for 6 years. Over 221-egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalog. J. A. Hanson, Corvallis, Ore.

BABY CHICKS White Leghorns, Reds, Barred Rocks every week. White Leghorn pullets and breeding cockerels. Reasonable prices. The J. H. Stubbe Poultry Ranch and Hatchery. P. O. Box 67-C, Palo Alto, Calif.

BABY CHICKS—All kinds hatching each Monday. Ducklings, turkeys, hatching eggs. Pullets, pigeons, rabbits. FANCIERS' EXCHANGE, 640 S. Main st., Los Angeles.

THE WORLD'S four newest fowls—Spencer Javanese, Russian Orloffs, Jersey Black Giants and Australian Kiwis. Photo booklet free. Z. T. SPENCER, Rt. 1, Santa Cruz, Cal.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

TURKEYS, DUCKS AND GEESE

WILD BLOODED TURKEYS—Eggs and stock for sale. Prices right. Small and large orders promptly taken care of. Jenkins, the Veteran, R. 3, Box 148, Burbank.

RABBITS AND PIGEONS

ARMSTRONG'S New Zealand Rabbit Farm, Petaluma, Cal. Improve your stock with a purebred buck. Prices reas. Write your wants.

KODAKS, CAMERAS, SUPPLIES

FREE
EASTMAN CAMERA
Here's our kind—cash or exchange
Winstead Photo Finishing Co.
Box 116, Los Angeles, Cal.
"We put the snap in snapshots."
Write for our new price list and how to get the free camera.

BUSINESS OPPORTUNITIES

HOT SEA BATHS HOUSE, 2-story 52x80, basement, 12 tubs, complete, room lot more, 16 rooms light housekeeping, office, doctor's treating room, furnace, laundry room. Large lot, garden, flowers. Popular resort, growing town, safest beach on coast. Best fishing, hunting. $5000 and $5000 cash gives possession. Great possibilities for live man. Owner aged and alone, unable to properly tend. No trades. B. Johnson, Agent, Saginaw, Oregon.

FARM LAND FOR SALE

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land, deep, rich, tried soil, complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and berry farming in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land; near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

REAL ESTATE FOR EXCHANGE

FOR SALE or Exchange. Improved ranch, 90 miles north San Francisco. Spring water piped to house. Owner, 1721 ARLINGTON, Los Angeles, Calif.

FARMS WANTED

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

BEES AND HONEY

ITALIAN Bees—100 strong colonies, $7.50 ea. W. A. Tillinghast, Box 441, Santa Rosa, Cal.

"Trapnested" Rabbits Making More Meat

Two Army Captains Lead Rabbit Drive for Pleasure and Profit in Southern California—Their Methods Explained

By O. H. BARNHILL

"HOW many rabbits have you?" The question seemed a simple one, yet neither L. B. Chapman nor W. R. Stewart, leading rabbit raisers of the Pacific Coast, could give an accurate answer.

"We had a birthday party last night," explained Chapman, resident manager of the rabbit ranch, "which probably increased the population of our community by 200 or more, but we haven't yet had time today to count noses. We have 70 bucks, 400 does and approximately 2000 young rabbits.

The rate at which the rabbits are increasing—1000 a month—strongly suggests Ellis Parker Butler's well-known story, "Pigs Is Pigs." Unlike the distracted express agent, however, Messrs. Chapman and Stewart appear not at all worried by the rapid multiplication of their little animals.

"A market for our surplus stock is what we are worried about everything else but as the darkey would say," explained Stewart, who is a captain in the United States Army, stationed at Fort MacArthur. "We are just getting to the point where we can take care of some really big meat contracts, such as 500 rabbits a week.

DRESSED RABBITS SELL WELL

The price received for young rabbits varies from 18 to 25 cents a pound, live weight. At 10 weeks they weigh three to four pounds each. Dressed stock brings about 45 cents. Half the weight is lost in dressing.

In order to handle a big c ontract it will be necessary to dress the rabbits on the farm, which is located on the Hurstbourne ranch, between Burbank and Lankershim. The skins will be dried and sold to furriers, while the refuse will be used for chicken feed or fertilizer. The manure is now employed in enriching the soil of citrus groves, being highly valued for that purpose. If a sufficiently large quantity could be produced, it could be sold to fertilizer manufacturers, who use hundreds of carloads of sheep manure, in combination with various other substances. The chemical analysis is very similar to that of rabbit manure.

Mr. Chapman and one assistant takes care of the 2500 rabbits. If all goes well, the number of does is to be increased from 400 to 1000, when another helper will be needed. This will bring the monthly production up to 2500 rabbits, or 30,000 a year, weighing 100,000 pounds—50 tons—and worth $20,000 at producer's prices.

How is it possible successfully to raise and care for such a multitude of little animals? To the visitor it appears at first very simple, but the longer one looks into the business, the more complicated and difficult it appears. The rabbit industry is now where the chicken business was a few years ago, when many felt the call to engage in egg production, but few were chosen to succeed. The latter, however, now has been reduced to almost an exact science, while raising rabbits is still in the formative stage, so far as being adapted to the average individual as a commercial pursuit is concerned.

A cheaply constructed shed 44 by 108 feet shelters the Hurstbourne bunnies, whose hutches are arranged in units of 12. Each unit is three stories high and has four apartments on each floor, the lower one being a foot above the ground. The material costs $15 to $20 and it takes a carpenter and helper two days to build one.

The doors are made of rabbit wire and each one has an opening through which the water jar projects, for convenience in filling. This is accomplished by means of a hose fitted with a shutoff. The barley boxes have wires tacked across the top, to keep the rabbits from pawing out the grain. The hay is fed in V-shaped wire mangers running between the hutches and having open ends, for convenience in refilling.

REDUCING LABOR COSTS

"Everything has been arranged to reduce labor costs," explained Chapman. "Work and feed are the two big items of expense in making rabbit meat."

A shelf underneath the hay manger and about six inches from the floor catches the alfalfa leaves and keeps the hay out of reach of the young animals until they are big enough to digest roughage.

The floors are made of lath, which are placed about three-quarters of an inch apart. This permits the manure to drop through onto a false floor, three inches below the lath floor. Rabbits like to gnaw lath, some of which are thereby weakened as they have to be renewed. The false floors are made of matched flooring, moisture-proofed with tar. They are cleaned with a curved iron hook.

Two days before the does are due to "kindle" they are furnished with a box about the size of an apple box, with a little straw in the bottom. The does are bred Wednesdays and Saturdays and give birth to young one month later.

Each doe raises from four to six litters a year, averaging five, with five to nineteen rabbits to the litter. Seven is the average number.

"We do not find that heavy production weakens vitality," asserted Chapman. "On the contrary, when does are not bred regularly they get lazy and fall off in production."

Loose alfalfa hay is obtained from nearby fields at $16 a ton. Barley costs $40 a ton. Three hundred pounds of the former and 100 pounds of the latter are fed daily. Nothing else is given the rabbits, except a few carrots occasionally.

A supply of medicine is kept on hand, but sick rabbits are very rare. "They sometimes have slobbers, which is a form of indigestion," explained Chapman. "We find they require about the same treatment as human beings. Zinc sulphate is good for sore eyes, eucalyptus oil and aconite for colds, while six drops of turpentine in four ounces of cottonseed oil destroys ear mites."

The roof of the shed is built high above the hutches, to provide for ventilation. Large trapdoors in the roof are used for the same purpose in hot weather and for admitting sunlight in cold weather. The shed has no walls, but it may be necessary to put up curtains to keep out cold winds and fog.

Young does are raised in a yard 20 by 60 feet, which holds 40 animals. Woven wire extends a foot or two down into the ground to keep the rabbits from burrowing out. The does spend most of their time underground coming up for feed and water. This "back to nature" method is said to develop great strength, vigor and hardiness.

Flemish Giant and Australian Red are the two standard varieties grown. Small numbers of several other sorts also are kept, including the American Blue, Checkered Giant, Gonna—large, brown, marked with blue; White Angora, New Zealand—fine for pets; Himalaya—white, with brownish-black nose, ears and feet and Champagne d' Argente—a new French breed of a peculiar gray color.

There are 16 pedigreed bucks, including Pancho Villa and Dynamite, each weighing over 16 pounds.

"We are improving the quality of our stock by using the best bucks obtainable," Captain Stewart explained. "Rabbit breeders, like old-time chicken fanciers, have been working to produce animals to conform to certain arbitrary standards of perfection, regardless of their commercial value.

"Just as the chicken men learned to breed for egg production, using the trapnest to identify superior individuals, so we are breeding for meat production, keeping accurate records of both bucks and does. We regard our does as meat machines and value them according to the number and size of young which they produce in a year.

QUICK IMPROVEMENT POSSIBLE

"The work of improving rabbit stock can be done much quicker than that of producing a superior strain of other domestic animals," Mr. Chapman pointed out, "because of the shortness of the period of gestation and growth. With new litters coming on every 10 weeks and does reaching the age of productivity at eight months, inferior animals can be discarded quickly and replaced with better stock. This enables us to improve our strain rapidly."

A good doe is considered worth $4 to $5, but common ones can be bought at $1.50 to $2 each. This shows the possibilities of intelligent breeding and selection, aided by accurate records.

"A rabbit council is needed to educate the public to the value of rabbit meat as a delicious and nutritious food," asserted Captain Stewart. "The average individual knows little or nothing of this very desirable food, which connoisseurs pronounce equal if not superior to chicken. In some ways it is vastly superior, for the rabbit is one of the cleanest of animals, consuming only the purest plant food."

Neither of the Hurstbourne "rabbiteers" regard their work in the light of cold commercialism. Both of them enjoy the bunny business and make pets of many individual animals. Whenever Captain Stewart gets a leave of absence he comes straight to the rabbit ranch and makes a capable "hand," caring for the interesting little animals.

Left, L. B. Chapman; Right, W. R. Stewart, "holding their own in the rabbit game."

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Champion Tenant Farmer

(Continued from Page 2)

is of hollow tile construction, with oil-burning furnace and electric motor for operating the machinery. It has a capacity of seven trucks, each of which carries forty-four trays, bearing a total of about 3500 pounds of prunes, making a total capacity per day of twelve to fifteen tons. A "truck" is a small hand-car, on which the trays are stacked for pushing into the dehydrator. These trucks enter with the green fruit at one end and are taken out at the other end after 24 hours with the cured product. Mr. Keeble's dehydrator may be entered at any time during the drying period and the fruit in the various compartments examined. The same trays formerly employed for sun drying may be used in the dehydrator.

Next to dehydration, Mr. Keeble emphasizes the importance of keeping the orchard clean. He has had best results with a light, miscible oil spray, and says the time is at hand when the heavier crude oil mixtures will be abandoned. (Formerly he mixed his own spray, using crude oil, soap and lye.)

A cover crop is an important item in Keeble's plan of orchard management. Horse beans are preferred. "The beans should be planted immediately after the crop is harvested, and before any other work is done," he insists. In fact, he believes in sowing all seed before irrigating, harrowing it in and avoiding further cultivation; this allows weeds and all vegetation to grow unchecked.

"Sometimes," says Keeble, "the horse-beans grow seven feet tall, with a mat of weeds, alfilaria and other volunteer stuff beneath, but it is all plowed under readily in the spring and soon rots."

Keeble is inclined, however, to abandon plowing in favor of deep tillage. His plan is to run a single-standard subsoiler about 20 inches deep twice down each row, following with a heavy tractor disc which cuts up and partially buries the plant growth. Some temporary injury to tree roots probably results from the "subbing," but he believes this is more than offset later by increased vigor and production. Disc-harrow and chisel cultivators are used extensively.

After irrigation, the ridges are broken down with a middle breaker and horses. Keeble considers this work too rough for the tractor.

Then the tractor, with spring-tooth harrow, is used once over, followed by discing each way. Finally, a good, smooth "floor" for picking is made with a heavy drag, followed by a well-weighted roller, both operated with the tractor.

Keeble believes lime is very valuable for irrigated soils which have become "tight" and hard to work.

DECRIES CLOSE PLANTING

Another conclusion based upon his experience is that prunes of any variety should be set not less than 28 feet and preferably 30 feet apart. Up to 15 years, the trees do well at 24 feet, he points out, but thereafter the limbs are apt to interlace, shading the ground.

In harvesting, Keeble's preference is to pick at least four times.

Mr. Keeble, his son, Ed Junior, and one extra man do all of the orchard work except pruning. A ball-tread tracklaying tractor has much to do with making this feat possible.

Keeble is not a member of the Prune and Apricot Association, in the management of which he expresses little faith. The recent upheaval within the organization he attributes to conditions which he says have maintained for several years and because of which he has never joined.

Concluding his discussion of the prune business, Mr. Keeble emphasized the fact that no definite rules can be laid down which will apply to all sections and all seasons. "I am beginning to believe," he said, "that this game is little but a gamble, and always will be. All we can do is to reduce the risk by such methods as dehydration. This I consider the greatest single advance we have made."

Care of Oils Saves Tractor

ONE of the California tractor user's big problems is how to keep sand and dust out of the grease and lubricating oil supply in the field. A small handful of gritty dust mixed with the lubricants can easily do more damage to the tractor in a few days than a whole year's normal wear.

Lubricants not covered securely are sure to become fouled by a great deal of dust. The dirt may be scraped off the surface of the grease in an open vessel, but generally it is too much trouble for the average man to do it thoroughly. The dusty oil measure and funnel could be washed with distillate, but as a rule all the cleaning they get before being used is accomplished by rapping them against the side of the oil barrel. The new oil washes them quite effectively, but the washings go into the crank case and the grit keeps cutting away, to the detriment of the machine.

The service wagon shown in the upper illustration paid for itself several times over in the five years of its use on the University Farm at Davis. The main fuel tank is 3½ feet in diameter and 4½ feet long and holds about 325 gallons. The forward space accommodates a 50-gallon barrel of oil and a 15-gallon drum.

The tight box on the rear of the wagon, shown below, keeps the oil measures and funnel and the grease supply clean. It keeps the dust out of funnels, measures and grease cans. It is handy for carrying tools and spare parts. A hasp and staple for a padlock on the door give reasonable assurance that wrenches and extra spark plugs left after the day's work will still be there next morning—A. H. HOFFMAN, Agricultural Engineering Division, University of California.

The New BULLETINS

THE bulletins issued by the United State Department of Agriculture always contain a vast amount of helpful information. Any one of the following may be obtained free of charge by writing the Division of Publications, U. S. Department of Agriculture, Washington, D. C. Order by number:

How to Get Rid of Rats.....1302
Grounding Cotton Gins to Prevent Fires. 271
The Effect of Borax on the Growth and Yield of Crops 1126
Insect Enemies of Chrysanthemums.....1306
The Striped Cucumber Beetle and How to Control It 1322
The Status and Results of Boys and Girls' Club Work 255
The Muskrat as a Fur Bearer, with Notes on Its Use as Food..... 869
Farm Slaughtering and Use of Lamb and Mutton 1172

A professional paper—"Self-Fertilization and Cross Fertilization of Pima Cotton," Bulletin No. 1134,, may be obtained from the U. S. Department. Price 10 cents.

CALIFORNIA CIRCULARS

The California Agricultural College at Berkeley has issued the following technical papers. These have been prepared by agricultural authorities and are full of valuable agricultural suggestions and data. They will be sent free upon request:

The Removal of Sodium Carbonate from Soils .....No. 1
The Citrus Nematode, Tylenchulus, Semipenetrans .....No. 2
The Formation of Sodium Carbonate in Soils .....No. 3

The university has issued also a bulletin on "Fruit Beverage Investigations" (No. 359), which is offered to the public free of charge.

SPECIAL PUBLICATIONS

A valuable bulletin by Hugh E. Van Pelt, noted dairy authority, is being distributed by the De Laval Separator Company. A copy of "Van Pelt's Cow Demonstration" may be obtained by writing the De Laval Pacific Company, 61 Beale street, San Francisco, Cal. (Mention ORCHARD and FARM.)

The Portland Cement Association offers a special publication, "Concrete in Home Sanitation," which describes a number of special farm uses for concrete. Free copies may be obtained by applying to the Los Angeles office of the Portland Cement Association, located in the Merchants National Bank Building. (Mention ORCHARD and FARM.)

A bulletin being distributed free of charge by the Sperry Flour Company, San Francisco, is of particular interest to commercial poultrymen. It is entitled, "Why Mixed Feeds?" and includes a discussion by Dr. B. F. Kaupp, famous North Carolina authority, on the effects of single feeds as compared with mixed feeds upon poultry, especially growing chicks and laying hens. Interesting information on the digestive processes of chickens and the value of vitamines as compared with other nutrients is included in the bulletin.

Control Puncture Vine

SOUTH of Tehachapi the puncture vine is found from the Mexican border through the Imperial and Coachella Valleys to the coastward valleys of Riverside, San Bernardino, Los Angeles and Orange Counties. From the rapidity of the spread in the upper San Joaquin Valley in the last ten years, it is to be expected that the pest will continue to extend its limits from these newer centers of infestation until something is done to check it.

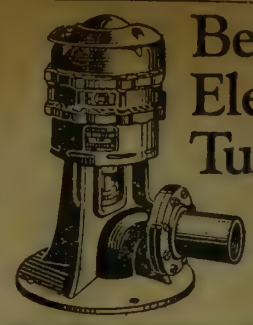
The plant produces numerous prostrate stems, which frequently grow to a length of eight feet. At every joint are produced a number of burrs, usually five, which separate as soon as they mature. Each burr possesses two or more sharp spines about the size of carpet tacks, so disposed that however the burr may fall one spine will always point upward.

These spines will pierce an automobile tire, the tread of which is somewhat worn, and will readily puncture a bicycle tire.

This weed threatens not only the motorist, but the farmer as well, since it invades pastures, hay fields and cultivated crops, and is capable of inflicting severe injuries upon all classes of stock, especially horses, by piercing the frog of the foot.

Intensive farming will keep cultivated lands free from this pest, but the real problem of the puncture vine is its control in waste land, along roadsides and railroad rights of way.

It is important that the people of the State be alive to the urgent necessity of curbing the spread of this vicious pest to the end that they may demand that adequate measures be taken to check it.



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Making the Most of a Small Lot

Well-Known Authority Offers Valuable Suggestions on Treatment of Home Grounds

By RALPH D. CORNELL

Master in Landscape Architecture

[Editor's Note ORCHARD and FARM has arranged to publish a series of articles by Mr. Cornell, who has designed and executed some of the most pleasing landscape plans to be found in California.]

THE laying out and planting of the small lot, to get the best results, is something of a problem that is made the more complicated because of the limited space within which one must work. Because it is a small lot, however, is no excuse for neglect in the proper consideration of the objects which are to be placed upon it.

RALPH D. CORNELL

Ordinarily, such a piece of property is rectangular, lies on level ground and is hemmed in on all sides by other houses and artificialities, from which it is impossible to escape. These inevitable and inescapable facts and obstacles must be frankly admitted and the treatment of the area made to recognize and conform with them if a satisfactory result is to be obtained.

In this brief discussion of problems and their solution we will first consider the factor of utilities and of environmental influences over which the lot owner has no control; and then will be considered the elements of beautification.

ALLEY IS DISCARDED

The average city lot of today presupposes a house that will occupy the major portion of its width, and a garage that must be tucked away somewhere within the remaining space. The modern California residential subdivision rarely includes alleys, so that the day of rear alleys and woodsheds is passing rapidly and will not be considered a factor in the planning of the small lot.

The custom of placing the garage at the extreme rear of the lot and connecting it to the front street with an attenuated ribbon of concrete that serves as a driveway, however, is a surviving relic of the days and habits of the past when a rear alley and its rubbish collection was a part of every town block. It is a habit which we are outgrowing as we adapt ourselves to modern changes.

The custom of establishing building and "set-back" restrictions is an excellent one, but it has sometimes worked a hardship on the owner and lessened his opportunities for home gardening by the fact that his house must be placed 30 or 40 feet behind the property line. It probably also has created a certain habit of house location and planting which we have grown to accept without particular question or consideration.

THE EUROPEAN PLAN

In contrast to this is the European habit of placing the house on the street line, with the garden at the rear, an arrangement that permits excellent results in planning the private garden for family use. A compromise of this old country custom might very often be worked out here to great advantage for our small lots.

If the house might be placed relatively close to the street, with the garage either on the street line or at the same distance back, as is the house, its appearance might be made very attractive, at the same time that a considerable area was made available for a garden at the rear. Such an arrangement is about the only one that will permit of any privacy on the small lot.

With neatness of arrangement and our modern facilities for sanitation, it is not at all out of keeping to design a house on such a small lot, so that its kitchen and service quarters are on the street side, while the living room opens onto the rear with its garden. With thought and artistry in the design and plan, this type of arrangement may be made even more attractive from the street than is the customary small front yard.

The garden at the rear would take any form that its owner and designer preferred. For reasons of seclusion and privacy it would generally be enclosed by a wall. It would have flowers and lawn, trees and shrubs, vegetables and fruits, as the taste might dictate; and where the depth of the lot was ample, might be divided into units that would include all of these different things.

The planting on a small lot, both in the rear and in front, should serve as a decoration to the house—not as the predominating and overwhelming factor in the development. Too often we overplant. The lot boundaries are definite and very limited. There is not room for large trees nor many trees. The house, of necessity, is the dominant motif of the picture. It should be so recognized.

A COMMON MISTAKE

A common error in judgment is the planting of two trees or palms squarely in the center of the very small open space in front of a tiny house. Space composition and design demand that there be open foreground to the picture, that trees be kept at the sides or rear of the house (if there be room for them at all), that flowers and shrubbery be planted at the sides of the lot and against the house foundation. If you were painting a picture you would not hide it all by two great manses of foliage directly in the center of the canvas. Why do that same thing when you create a picture of which your house and yard are the chief elements?

To a limited extent, which increases in scope as the size of the property increases, objectionable objects which are not on the property may be screened from the view from windows of the house and from the garden. Shrubbery, trees, fences, lattices, walls, all may serve such function to a degree that varies with each problem. Intelligent consideration will tell one the extent of such possibilities.

The placing of the different units which compose the development of a small lot might be likened to placing together the blocks of a picture puzzle. By thoughtful consideration and knowing arrangement, much more can be evolved from the home garden than is ordinarily the case. It is in such problems that the landscape architect is trained, but the home owner, even though unable to afford such services, still can increase the beauty and efficiency of his home grounds by thoughtful consideration for their use and arrangement.

How to Make a Simple Septic Tank

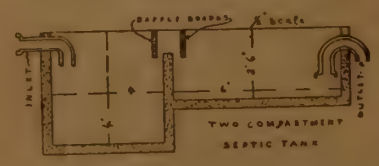
A PROPERLY constructed septic tank is a permanent home for two forms of destructive bacteria.

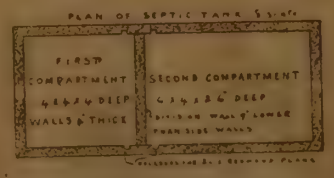
Aerobic bacteria live and work in the first compartment and enaerobic bacteria in the second comportment. We do not know whether these two near relatives keep strictly to their own sides of the partition or whether they "visit" back and forth. But experiments show that two compartment tanks work better than those with a single compartment.

The first compartment receives a little air, along with the house sewage, and for this reason there should be a small vent through a half inch gas pipe set in the tank cover.

The second compartment needs no ventilation except the little cracks and openings in the tank cover.

The cover should be of two-inch redwood plank, joints being covered with redwood battons or boards, or the planks may be plastered over with a layer of concrete mortar. It is seldom necessary to open a septic tank. When they are rightly proportioned and the joints tight enough to keep out dirt,





the bacteria will take the poisons out of the sewerage for many years without attention.

There should be enough earth over the top of the tank to protect it. The position and surroundings will require more cover in some places than others. The tank should be several feet from the house; twenty feet might be taken as a general rule, but there must be sufficient fall to insure good drainage. Four-inch vitrified sewer pipe connects the house plumbing with the tank. It should have a fall of not less than one inch in eight feet. The joints must be cemented water tight. There must be a length or two of vitrified pipe to discharge from the tank. Further discharge pipe may be common drain tile. The water that runs away is harmless, but it is better to not let it run on the surface of the ground. It makes good subirrigation water for the garden.—H. A. SHEAR R.

Fall Calving Desirable

UNDER most conditions on the dairy farm fall calving is desirable. The calf receives milk for the first few months of its life, and when it is ready to be weaned from this food, good, succulent pasture is available. During the winter it has learned to eat grain and roughage, while it has been getting whole milk, skim milk or milk substitutes, and when grass comes it can make the change without getting a setback.

There is another advantage in fall calving, as the cow gives the largest flow of milk at the season when prices are usually the highest. Also calves are at the right age so that if well developed they may be bred to calve in the fall. From the standpoint of profits on milk, local conditions, such as cost of feed and price of milk in different seasons, should have consideration.

Poison for Tomato Worms

TWO of the principal pests in Los Angeles County are the big tomato worm and the corn ear worm. The Farm Adviser's office reports good control of these worms by dusting at intervals with a mixture of one part finely powdered lead arsenate to four parts of hydrated lime. The same formula is effective against flea beetles and certain other insects which attack the young plants, and some growers of quality shipping tomatoes are commencing to dust shortly after "setting," in order to keep ahead of the succession of pests damaging both foliage and fruit.

BILLIONS OF INDIAN GOATS

There are billions of milk goats in India, according to C. M. Flanders, superintendent of markets at Bombay. Most of the animals are of the Surti breed, a large, white goat. Some strains are hornless. Large quantities of goat's milk are used in making candy, which high-caste natives use for food while taking long journeys, when it is difficult to obtain food cooked by a member of the same caste.

SPRAY RESULTS SATISFACTORY

A noticeable decrease in prevalence of peach twig borer is noted in orchards in the Burbank and Lankershim districts of Southern California as a result of spray applications made last fall for this pest, according to J. B. Madeira, Los Angeles County Horticultural Inspector. Orchards which were badly infested last season show from 60 to 70 per cent decrease in infestation as compared with the previous year.

BEES GET "CRYING MAD"

Uncle Levi, colored and nearly 90, was employed to mow the grass in the apiary. He refused to use any protection, asserting that bees would never sting him. However, he was soon glad to don a bee veil, on which several angry bees soon gathered. After listening for a few minutes to their war-cry, Uncle Levi remarked:

"Dem little bees is so mad dey's just a-cryin' 'cause dey cain't get at me."
—J. D. B.

TURKEYS IN GLENN COUNTY

The turkey industry is becoming increasingly important in Glenn County. All over the foothill district turkey coops and young turkeys are in evidence. Quite a few growers have had success with incubator hatching.

ENORMOUS GRAPE CROP

According to an estimate of R. L. Nongaret, at least 60,000 cars will be needed to handle the 1932 California grape crop.

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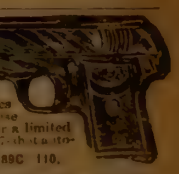

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Oak Glen's Top Notch Apples Grow Mile High

By WILLIAM REYNOLDS BUTLER

OAK GLEN CANYON, San Bernardino County, has an altitude ranging up to 5000 feet. It is reached by a good steep road, the grade in many places being 16 per cent. The surrounding mountains attracted a hardy race of pioneers, who hewed homes out of virgin forests and planted apple trees which have borne heavy crops of fine fruit for nearly 50 years.

The first orchardist interviewed was Frank M. Parrish. His parents, in 1853, homesteaded the place where he now lives. For years this section was known as "Potato Canyon," for at first potatoes were the main crop. Mother Parrish, who is 85, tells of those early days, when for three years she was the only white woman in the Canyon.

Mr. Parrish was found plowing with one horse a narrow apple orchard between the road and a towering mountain. The deep, rich, black loamy soil is watered from mountain springs. Thriftier trees, white with bloom, it would be difficult to find. Parrish is a quiet, stalwart man radiating energy—such men the mountain country breeds. He has 20 acres in apples, his brother John 15.

MODERN METHODS FOLLOWED

Modern methods of long pruning and thorough spraying are followed. As we stood under a fine old Winesap, Parrish said:

"My father planted this tree 40 years ago. Notice how sound and vigorous it is. It bears full crops every year and requires many props to keep the limbs from breaking down. Last fall we picked 50 boxes of apples from this tree. The average yield of our 40-year-old Winesaps last year was approximately 40 boxes."

Thirty acres of such heavy yielding apples would seem enough for one man to look after, but we found Frank Parrish, with the spirit and faith of his father, clearing more land for additional plantings. Apple trees at Oak Glen begin bearing in their eighth year. Parrish is now in his prime and hopes to live to see the fruits of his labor and to pass the apple business on to his children.

The Parrishes have their own packing plant. The wholesale dealer buys the harvested crop, packs it and hauls it to market. The elevation of the Parrish orchard is 4367 feet. Mr. Parrish brought out some Rome Beauties from the packing house, in the same box in which they were picked last fall. They were then—May 1—apparently as sound as when picked. Score one for high altitude apples. No cold storage required.

Our next stop was at the Lukens ranch at the top of the grade. Elevation, 5000 feet. The farm comprises 75 acres, 16 of which are in 23-year-old apple trees. H. C. Hannah, the present owner, recently purchased this ranch. He and his wife and son left Los Angeles and are finding health, contentment and a competency in Oak Glen.

This orchard produced 13,000 boxes of apples last fall. Eighty-five per cent of the trees are Romes; the rest are Winesaps, Winter Pearmains, Delicious, Hoover, Maidens Blush, Wealthy, Ben Davis and Mammoth Black Twig. Next to the Hannah ranch is the 75-acre apple orchard of Isaac Ford. This is one of the older plantings. Mr. Ford has a modern packing house and markets his own crop.

Farther along the road, still at the 5000-foot level, we came to the most extensive of all the Oak Glen orchards, H. L. Rivers', which comprises 140 acres of Romes, Winesaps, Pearmains, Delicious and Arkansas Blacks. The manager, H. B. Saunderson, told us that the aim in Oak Glen was to plant the later blooming varieties in order to lessen the hazard of April frosts. Last fall, in the midst of the apple harvest, they had five inches of snow. It did not remain long, however. It is this sort of "crimpy" weather that puts the twang and flavor in Oak Glen apples.

The Rivers packing plant is modern in every particular. The grader has a daily capacity of 1000 boxes. The apples from this big orchard are packed here and in addition the crops from some smaller orchards. Another grader, which will double the present capacity of the plant, is being installed. The apple harvest and packing follows the citrus season, therefore the Rivers plant gets the cream of the workers from the orange and lemon groves. Saunderson claims that good lemon packers are best "hands" with apples.

As we left Oak Glen, going toward Beaumont, we passed the place of another pioneer, Joe Wilshire, who was not at home. Oak Glen folks revere this and other pioneers, who blazed the way for the contentment and prosperity which is the present happy portion of this mountain orchard district.

In this fine farm home H. C. Hannah and family live contentedly amid the apple trees of Oak Glen

This sturdy pine is a landmark of the Lukens ranch, a mile above the sea

A modern packing house is part of the equipment of the H. L. Rivers place, which comprises more than 140 acres of apples

Growing Good Globe Artichokes

THE globe artichoke will thrive on any well-prepared garden soil. It responds well to heavy manuring and is thereby benefited, both in the tenderness of buds and the multiplication of bearing stems. Barnyard manure may be applied broadcast at the rate of ten or twelve tons to the acre early in the rainy season or in late summer.

Artichokes grow readily from seed, which may be planted either in boxes or the open ground in September, if irrigation is available; if not, sow as soon thereafter as the ground is deeply moistened by rain. The seedlings may be transplanted when six or eight inches high, to a permanent place whenever the ground is suitable, the same season.

Transplanted seedlings usually bear within a year. But there is so much variation in plants grown from seed that this method is not advocated. Plants grown from parts of old plants of good type are preferred. Artichokes grow readily from suckers detached from the root crown. The latter furnish an excellent means of multiplication and should be secured by first uncovering the stool, as soon as there is a good growth of new shoots with well developed leaves. Remove the shoots carefully with a knife or sharp gouge, so as to take a small part of the parent root at base of the shoot.

Many plants can thus be taken from a single root-crown and a few of the best shoots left for growth. Shorten the leaves on these suckers somewhat, to reduce evaporation until the new roots are formed. These sprouts can be planted at once in a permanent place whenever the ground is moist. The old stool will continue bearing for many years. In the milder portions of California artichoke suckers can be transplanted best during the winter, from December to February.

ALLOW PLENTY OF ROOM

So free is the growth of the plant in California it is better to give it plenty of distance; three feet apart in rows which are four or five feet apart is not too much room. As the plant is high and rather dense, the rows should be placed in the background of the small garden. Its use as an ornamental hedge or screen is recommended, providing the ground is kept rich and well cultivated. A row of the plants along an irrigation ditch is usually very desirable, both for use and beauty.

The flower buds should be removed as soon as they are well formed and before the scales open. In this condition they are more tender and a larger portion of the scale is edible. As soon as the flowers are allowed to open the growth of the shoots from below is checked or stopped. Hence, prompt cutting insures a larger bearing season.

As other vegetables become available artichokes should be allowed to make free top growth for the reinforcement of the roots for the next season. About the middle of May the plants should be cut back to the level of the ground and allowed to dry up for a few weeks. During July, start irrigating and cultivating to force good growth through the fall.

The variety chiefly grown in California is the Large Green Paris, a vigorous grower, yielding buds of large size with scales very fleshy at the base and set in a broad, fleshy receptable. It is necessary to discriminate against poor seedlings.

Philippine Cattle Pay Well

CATTLE raising in the Philippines is very profitable, according to Frank C. Gearhart, former Iowa Agricultural College graduate, who Frank Carpenter says is getting rich raising cattle, horses and hogs in that tropical country.

Cattle grow and fatten every month of the year on the broad plains of public land, which can be leased for a nominal sum. Zebus are imported from India to reduce the danger of rinderpest, a common bovine disease.

Radio Helps Farmers

THE various ways in which radio might be used to help farmers may be summed up as follows:

By enabling him to keep in touch with the market, the radio receiving set may be to the farmer what the stock "ticker" is to the speculator in agricultural products.

During the harvest season radio might serve to keep the farmer in touch with the available labor supply.

In case of a serious epidemic among livestock, which calls for prompt action on the part of the farmer, radio could be very effective in transmitting directions for the control of the disease, when it is impracticable to consult a remote authority or digest printed pamphlets.

Radio provides the cheapest form of community entertainment. The Washington State Grange is planning to install radio receiving sets in each of their 220 grange buildings.

Radio might be used to spread among farmers the technical instruction offered by agricultural colleges. The short course student might thereby be enabled to continue his studies at home.

Sermons and church music are being broadcasted among many farmers, who find this a convenient way of profiting by religious services. The latter may thus be brought to small communities which are unable to support a resident minister.

Desert Yields Good Crops

THREE tons of alfalfa hay at the first cutting was secured by A. W. Cole on his ranch near Hesperia, in the desert district of Riverside County.

Mr. Cole also grows Sudan grass seven feet high; feterita, nine feet; durum wheat, six feet; watermelons weighing up to 40 pounds; tomatoes worth $600 per acre, at two cents a pound; beans, onions, carrots and other vegetables of the highest quality.

Water for irrigation is pumped from wells at a temperature of 50 degrees and is sufficiently pure to use in electric storage batteries.

HEAVIEST WHEAT YIELD

The heaviest yield of wheat ever recorded by a U. S. Federal or State Experiment Station was grown at Davis, Cal., in 1917. It was of the Chul variety, unirrigated, and yielded 92.5 bushels per acre. The second largest crop was also raised at Davis, being Mexican wheat, 91.2 bushels per acre

Pistachio Nuts, Limes and Water for Oranges

New California Nut

THE pistachio is one of the finest flavored nuts. Those imported from Europe retail for more than a dollar a pound. There is no good reason why California should not produce all the pistachios consumed in the United States.

The required climatic conditions are about the same as for the olive and pomegranate. Being a native of dry interior regions, the pistachio does not require irrigation, provided the soil is deep enough to store up a winter rainfall of 12 or more inches and it is cultivated during the summer to conserve soil moisture.

There is a great deal of good land along the foothills which can never be supplied with water. At present this land is for the most part used to grow barley hay, which yields a very small profit. Such lands, where the soil is two or three feet deep and level enough to cultivate with a tractor, are well suited to pistachio culture on a dry farm basis.

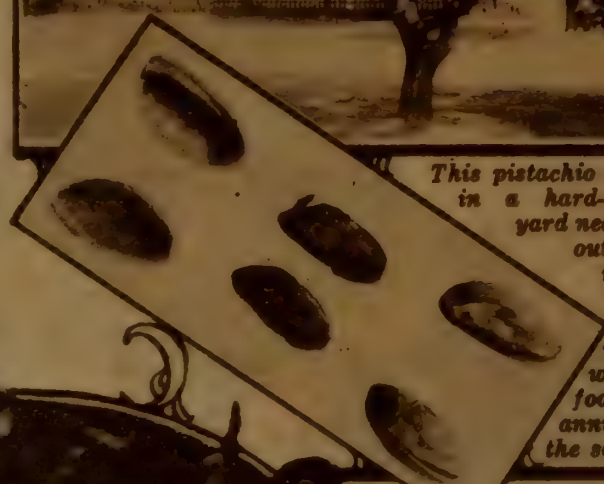
SMALL PLANTINGS IN CALIFORNIA

There are a few small plantings of pistachios already in bearing in Stanislaus and Sacramento Counties. Occasional trees, usually seedlings, are grown in various parts of the State. When budded, the tree does not grow very large and is well suited to planting in yards.

The only difficulty in the way of a commercial planting of pistachios is the fact that there is no adequate supply of budded trees in California. The nurserymen will not bother to grow a supply of these trees until there is a strong demand for them, and no demand can be expected as long as there are so few pistachio trees in the State that the general public knows little about them.

What is needed in order to get pistachio culture started is for some broad-minded person to have some trees grown on contract and make a small commercial planting in some fairly conspicuous place, where many would take an interest in watching development of the grove.

The United States Department of Agriculture is propagating a few trees of the choicest European varieties. These are distributed each year to selected individuals, who will give them proper care and furnish budding wood when desired. This is a slow process, but will in time result in enough bearing trees scattered through the State to develop a commercial interest in the growing of this fine nut crop.—J. E. COIT.



This pistachio tree is growing in a hard-trodden school yard near Fresno, without irrigation. It is a native of dry interior regions and will do well where there is a foot or more of annual rainfall and the soil is cultivated.

Half-grown pistachio nuts at Elk Grove. The mature nuts retail for more than a dollar a pound and the flavor is considered the finest.

Likes Lime Growing

SPECIALIZING in the production of limes—one of California's least generally grown citrus crops—Marks Brothers of Lemoncove, Cal., have achieved signal success.

Five acres of this fruit produces annually about 700 "Los Angeles lug boxes" of marketable product, selling at from $2.50 to $4 a box, depending upon quality and price fluctuations. There is comparatively a limited demand for limes, the Haiti variety being perhaps the best seller on local markets. Marks Brothers' "Ak-Sar-Ben" ranch has established a special trade through a San Francisco commission firm, and finds no difficulty in disposing of the annual product of the lime orchard. These producers believe it would be unwise to contemplate extensive commercial planting without making sure of profitable distribution.

The trees, which are seven to eight years old, are rather small as compared with oranges and lemons of the same age, but are vigorous and well-formed. They commenced to bear the third year, according to the owners, and since have been as profitable as Valencia oranges.

The orchard never has been fumigated or sprayed, asserts Mr. William Marks, and the trees seem to be hardier than lemons or oranges. This grower emphasizes, however, the necessity for planting in frostless areas. "The lime is more susceptible to frost injury than either the lemon or orange," he asserts, "and must be planted in thermal belts in the foothills. Valley plantings may be doomed to failure."

The limes ripen with the navel oranges in the fall and are picked in November or December. The fruit must ripen on the tree, Mr. Marks points out. Limes should not be picked until mature or they will shrivel and turn black, he says. It is not necessary to put the limes through a curing process.

Another market factor, also, must be considered: Since small lemons, of which large numbers are marketed later in the season, affect the price for limes, it is desirable, points out this successful grower, to reach the market between November 1 and December 15.

The lime orchard has received the same cultural treatment as the orange grove which it adjoins. Mr. Marks believes the lime trees will have longer productive life than the oranges.

PERSIMMONS ALSO PROFITABLE

In addition to this specialty, Marks Brothers have a few persimmon trees which have been very profitable. Two acres yield an average of 1000 small boxes (the 4 by 8 by 12 size), and bring $1.75 to $3 a box. Shipped from the first to the fifteenth of September, these persimmons are said to come in earlier than any others grown for the San Francisco market. A few consignments have been sent to Los Angeles, while 50 boxes sent by express to Denver as an experiment brought $1.50 net last year.

About 75 acres of foothill land is included in the two ranches controlled by this company. Oranges constitute the principal crop.

By reversing the order of letters in the name of the ranch (Ak-Sar-Ben) we learn where the owners made their home before coming to California 18 years ago. They have found fruit growing profitable in this comparatively frost-free district of Tulare County.—J. C. K.

Mutual Irrigation

THE Azusa Irrigation Company, a co-operative concern controlling 4000 acres—mostly orange orchards—in Los Angeles County, is one of the most successful mutual water companies in the State. Water is furnished at a cost of only $10 per acre per year. This sum pays for the use of the irrigating works owned by the company, the water itself being appurtenant to the land and free to the owners thereof.

Like most farmers' co-operative organizations, this one had to conduct a long, hard campaign to convince landowners of the advantage of becoming members. Practically all—about 250—now belong to the company.

Twelve years ago the original bonded indebtedness of $150,000 had been reduced to $60,000. The liabilities of the company now amount to only $40,000, with twelve years to pay.

The property of the company consists of water taken from the San Gabriel River, eight miles from the irrigation district; four wells, with a pumping capacity of 1200 miner's inches; concrete pipe lines and two concrete reservoirs, one 18 feet deep and 260 feet in diameter.

The latter is located three miles southeast of Azusa and holds more than a million barrels of water, enough to cover twenty-nine acres a foot deep. It can be filled in two days. An inclined driveway leads to the bottom of the reservoir for use in removing the silt, a kind of talc, which is deposited on the floor of the reservoir to a depth of one to two inches per year.

FILL NATURAL RESERVOIR

After the water clears in the spring it is turned onto a tract of gravelly, brushy land near the mouth of the canyon, filling the interstices of the rocks. From this natural reservoir the water is pumped out as needed.

Early in the spring, when only part of the water is needed by the district, owners of outside land lower down use the waste water. Permission to use this water is never granted because of the danger of the users thereby acquiring riparian rights. Head-shaking, however, is always accompanied by eye-winking, which results in mutual understanding of the situation.

Four other companies use San Gabriel River water—Azusa Agricultural Company, Covina District and Azusa City and Slauson Estate. In early days there were many bitter water fights between Covina and Azusa people. At one time the leaders of both districts were arrested and locked in the Azusa jail.

The Azusa gang succeeded in breaking jail and immediately went to the headgate, where with shotguns they defied the Covina bunch after the latter were released and had followed their competitors to the canyon. The disputed water rights have long since been legally adjudicated and the orange orchardists of today enjoy recalling the struggles of olden times.—O. H. BARNHILL.

Although this cement reservoir holds more than a million barrels of water, it can be filled in three days. The driveway is to facilitate the removal of sediment.

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

JULY 22, 1923

Transmitted press - gravure for publication
/23

Hill Top Fruit Growing Without Irrigation

Profits in a Nutshell

IN describing the methods and theories of a conservative, practical almond grower, perhaps we shall explode some of the bubbles blown by real estate promoters. But every fruit producer will find much of value and interest in the experiences of this San Luis Obispo County rancher, who is achieving big things in a district where many popular theories have been scrapped.
—*The Editor.*

By ALBERT J. MASON

THE Paso Robles district of San Luis Obispo County is fairly littered with shattered theories. They have been dropped by University professors, dirt farmers, soil "experts," nurserymen and various types of "authorities."

For here, in one of California's most beautiful agricultural districts, soils which competent chemists analyzed as practically worthless for almond production are yielding tremendous crops of nuts; valleys have been shunned and the very tops of the hills planted to fruit; "dry" farming has succeeded where irrigation was deemed essential. In fact, many perfectly good rules and regulations have been cast into the community junk pile.

Paso Robles is by no means the only almond section of California. San Luis Obispo, it is true, has a larger acreage of bearing and non-bearing almond trees than any other county, but the production is said to be less than 5 per cent of the total for the State. Sacramento is the site of the main packing plant of the Associated Almond Growers and much of the production is concentrated in the Sacramento Valley.

But Paso Robles does claim the largest individual planting of almonds in California, that of G. N. Talbot. This grower has some 650 acres in orchards, 3 to 9 years old, and his crop this year is expected to bring more than $40,000.

FACTORS OF SUCCESS

Talbot's success is based upon three main factors: Low priced land, freedom from frost, no irrigation expense. Add to these, intelligent interplanting of varieties, businesslike management, and co-operative marketing, and you will have a formula that seems to yield real results.

Formerly a lumber dealer in Nebraska Talbot came to California more than fifteen years ago and tried numerous enterprises, none of which promised success. Land values, he felt, were too high. He traveled about the State looking for a suitable location for almond production, in which he had been interested for years.

Finally he was attracted to Paso Robles and found he could buy timbered land for as little as $30 an acre. (This was some ten years ago.) Courage and vision were required to clear the rolling hills of their oaks and brush, but after months of the hardest kind of work Talbot and his crew finally prepared and planted to almonds some 200 acres. The owner spent hours in the rain that first winter directing his men and even swinging an ax himself. The young orchards were started at less than the cost of raw, uncleared land in other districts.

He had selected his site against the advice of soil experts and even after he had planted his orchards, and had the soil analyzed, was told he could not possibly succeed with almonds. But he sent in another soil sample taken from beneath an enormous old shade tree which he found loaded with the nuts and received the same negative report. Thereafter he felt more encouraged.

LAY OF LAND IMPORTANT

"I selected my land only after careful study of the topography of the country," said Talbot. "Cold air flows downward into the valleys which have no drainage. I came west towards the ocean where I would have both elevation and drainage, making sure there was no pocket to catch the cold drafts from the higher points. I had a theory also that the occasional ocean fogs would be beneficial to the trees. At any rate, we have not had to spray so far and our orchards seem to be unusually hardy."

The average rainfall on the ranch is about 25 inches. The soil has a peculiar sponge-like property, particularly on the hills, and seems to soak up and hold the moisture. The soil appears to be a mixture of limestone and feldspar, with clay, forming a rich loam.

The annual cost of upkeep of the Talbot orchards is only about $15 an acre. This includes annual cultivation and general pruning of all trees over four years old, every third year. Severe cutting back is taboo; in fact, only "thinning" is practiced. "I could spend a good deal more money on upkeep," the owner admits, "but I am running this property as a business proposition and much as I would like to have every tree perfectly shaped and every weed eradicated, I do not feel that I would be justified in carrying cultural practices beyond the necessary limit."

One of the most important precautions in almond planting is to mix varieties which are inter-fertile. Talbot has Nonpareils, I. X. L.'s, Ne Plus Ultras and Drakes. The University of California during recent years has done valuable work in establishing facts about sterility and interpollination of almonds, and has issued a bulletin on the subject which is available for free distribution. One fact learned by costly experience is that varieties planted for pollinization must cover the full blooming period of the trees.

"The almond, I believe, is the touchiest crop grown in California," asserts the Paso Robles planter. "By this I mean every condition must be right or it is impossible. (Continued on Page 9)

G. N. Talbot examining one of his heavily laden almond trees.

At harvest time the nuts are knocked from the trees with poles.

Falling upon a sheet, the nuts are poured into bags. The Talbot crop this year is expected to break all records.

An almond orchard in bloom is a bower of beauty.
—Gabriel Moulin photo.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
JULY 22, 1923

Red Spider Injury a Factor to Be Reckoned With

Damage by Pest Will Reduce Size of Fruit This Season as Well as Volume of Next Year's Crop—Summer Control Important

By GEORGE P. WELDON
Pomologist, Chaffey Junior College of Agriculture, Contributing Editor of ORCHARD and FARM

THE necessity for producing fruit of better size and quality should be apparent to every grower. We are being reminded constantly of this situation.

It is particularly necessary in the case of fruits that are canned or dried to recognize or eliminate whenever possible, factors tending to reduce size. During the past season, tons and tons of small fruit went into cans and on the drying trays, as a result of which the industry now is suffering from an oversupply. This low grade fruit proved not worth its cost, and there is little demand for it at any price.

PROFESSOR WELDON

Of various factors affecting the crop, the foliage of the tree plays a very important part. Since practically all of the plant food must be elaborated in the leaves, anything which interferes with leaf growth is detrimental to the development of both tree and fruit.

SEVERAL SPECIES INJURIOUS

One of the most common pests that feeds upon the leaves during the active growing season, is red spider. While we are in the habit of using this term without any thought of the different species, it is true that several species are responsible for injury both to citrus and deciduous fruits.

Two in particular damage the deciduous trees; these are known commonly, as the Brown Mite and the Two-Spotted Mite. On citrus trees a third species, which usually is described as the Citrus Mite, may be present.

The occurrence of red spider of any species in the orchard during the summer time may not be easily detected when the pest first appears. After it has been feeding for some time, however, the leaves will show a characteristic yellowish mottled appearance. Usually the first signs of damage are noticeable on the inside of the tree and low down. There may or may not be a fine web spun over the surface of the affected leaves—depending upon which species is present.

The Brown Mite does not spin any web while the Two-Spotted Mite does. The former species is very apt to appear early in the season, shortly after growth starts, while the latter usually begins its work late in June or early in July and may not become abundant until August or September.

The injury caused by the two species is almost identical, and control measures are desirable whenever there is a serious infestation of either.

In order to see these little mites on the foliage, it is necessary to use a small hand lens. Every fruit grower would do well to purchase a suitable magnifying glass which often will reveal the presence of insects or mites that could not possibly be detected with the naked eye.

It is a well known fact that the worst red spider infestations occur in orchards which have become very dry. Irrigation, therefore, is one of the best remedies for these pests. Orchards which have received an ample supply of water throughout the season are not apt to be seriously troubled. This is due not to any special liking on the part of the spiders for unirrigated trees, but rather to the fact that an adequately irrigated tree grows fairly well in spite of their attack.

It is a common sight in the early fall every year to witness orchards from which most of the foliage has dropped prematurely. Especially is this true of almond and prune trees. Such a condition is anything but favorable, and results not only in the size of the fruit for the season, but is very apt also to result in a light crop the next season because of weakened fruit buds.

What is true of the almond and prune applies to a certain extent to many others of our fruits. Peaches in some sections of Southern California suffer annually from the attack of red spider, and frequently the injury is so severe there is little chance for the buds to mature properly. Weak, sickly trees are the result and what should be a profitable orchard may become of little value.

In cases of severe infestation such as described it is possible to treat the trees successfully by means of a spray, using some form of sulphur, which is the standard remedy for red spiders. Since the Brown Mite spends the winter on our fruit trees in the egg stage, it is possible often to control this species with a dormant spray of lime sulphur at the time when the buds are swelling in the spring. In fact, it is seldom that an orchard which has had the lime sulphur treatment develops a severe infestation of the Brown Mite.

SULPHUR PASTE RECOMMENDED

No matter what species is present during the summer or fall months, the treatment is the same. According to the experience of the writer there is nothing better to use than one of the forms of sulphur paste that are sold by insecticide dealers everywhere. Ordinarily, two kinds are available: Atomic Sulphur and Milled Sulphur.

These are similar products and owe their principal value to the fact that the sulphur is in a very finely ground form and readily breaks down when applied to the trees giving off a gas which kills the spiders. Last summer a number of orchards in the vicinity of Ontario were sprayed with Atomic sulphur, at the strength of 10 pounds to 100 gallons of water. Perfect success was attained in killing both species of mites, although the weather was very warm at the time of application, absolutely no injury was done to trees or fruit.

Some growers practice dusting trees with flowers of sulphur. Sometimes very good success is attained, but results have not been uniformly as good as with the sulphur pastes. As a matter of fact, almost any form of sulphur can be used successfully in red spider control.

Methods of Detection and Control

HIGH LIGHTS IN PROFESSOR WELDON'S IMPORTANT AND HELPFUL ARTICLE:

(1) Any species of red spider may be controlled during the summer by means of sulphur sprays. Detailed explanation of methods is given.

(2) Small fruit and weak buds result from red spider attack. Early "symptoms" are described.

(3) Any pest which interferes with the functions of the foilage is dangerous. Red spider hinders elaboration of plant food.

(4) The two species which commonly attack deciduous fruits are Brown Mite and Two-Spotted Mite.

(5) Adequate irrigation is an important factor in preventing mite injury.

Typical appearance of adult female and egg of the three species of red spiders. Left to right: Common red spider or two-spotted mite; brown mite; citrus mite. (After De Ong's Bulletin 347, University of California.)

The Future of Flower Bulb Growing in California

Quarantine Regulations Create Great Home Market, Which Is Capitalized by Local Producers

By HENRY L. WASHBURN
Agricultural Extension Service, University of California

COMMERCIAL flower bulb growing in the United States was given a wonderful impetus by Quarantine 37, an order issued by the Secretary of Agriculture in 1919. This provides for the absolute quarantine of all bulbs as soon as a sufficient propagating stock of each variety is built up in this country. In other words, no bulbs can be shipped into this country at all without special permit, and this permit is given only for small quantities of certain varieties of which there is not a sufficient supply on hand here for propagation purposes.

There is more or less criticism of the quarantine law, but much of it comes from persons who have made their livelihood handling foreign bulbs and naturally resent the dying out of their business as our growers supply the trade.

The first plant quarantine act by Congress became effective in 1912. For seven years thereafter plants were allowed entry into this country only after careful inspection. In spite of all the precautions that could be taken during this period, there were 3161 infected shipments, all of which had been certified as clean. The different kinds of insect pests from each country ranged from twelve from Germany to 148 from Holland.

The quarantine law was not passed to subsidize an American industry, but to protect all of our farmers from the danger of importing new and deadly pests and diseases. The effect, however, has been to stimulate planting in America—particularly in California.

The acreage of bulbs being grown in Santa Cruz County is as follows:

Freesias	50
Yellow Callas	10
Gladioli	35
Iris	15
Ixias	1
Narcissi	20
Dahlias	1
Miscellaneous	30
Total	151

Of this acreage 100 is planted by eight large growers, the remaining by 200 others on small individual plots of an acre or less. The freesias are practically all produced by small growers. The buying is done at Santa Cruz by resident brokers, of whom there are five. The ultimate markets are greenhouses, the principal points of distribution being New York, Philadelphia and Chicago.

In addition to this Santa Cruz County acreage, eighty acres of summer gladioli are grown or contracted for at Monterey; about twenty acres of freesias in Southern California, and five near Salinas. Mrs. Elizabeth W. Lynberry, one of the principal originators of new dahlia varieties in this country, grows and contracts large numbers of this tuber in San Mateo County. There is also some acreage around Eureka.

Here in Santa Cruz County, aside from the 200 small individual growers working their own plots, there are about 200 people employed during the summer months by the large growers and between 50 and 75 during the rest of the year. For picking and grading, women are paid about $2 a day; for digging, men are paid about $3 a day.

In addition to planting stock and land, the investment per acre for tools, equipment—such as sprinkling systems, etc.,—runs from $50 to $300.

Our oldest and most experienced growers classify the bulbs which will likely pay best, as follows: Narcissus, freesia, white calla, gladiolus and tulip. Why does the narcissus lead the list? Because three years from now the narcissus, together with seven other bulb varieties, will be absolutely excluded from this country. The others are: Glory of the snow, snowdrop, scilla, crown imperial, ixia, eranthus and winter aconite.

The narcissus commands our chief attention because there are more of them sold in the United States than of all the other seven put together. While there is no doubt that we can grow satisfactorily all the varieties of narcissus in this country, there is but little probability of our supplying the demand in the next twenty years.

Daffodils and paper whites are the narcissi most grown. Probably the golden spur daffodil leads. The true jonquils are not used to any extent in this country, but daffodils often go under the name of jonquils in the East.

The growing of narcissi is often compared to onion production, because the same general cost is entailed. The narcissus is a true bulb and when it is three years old the mother bulb divides into slabs or splits, very much like the division of garlic.

A beginning is generally made with these splits, which are planted at the rate of about 200,000 to the acre. At the end of the first growing season, round bulbs may be dug with no increase or division.

These round bulbs are sold to the trade for forcing and will produce one flower each. They are sold according to size, varying from 1¼ inches in diameter to 1¾ inches. The price varies from $20 to $30 a thousand, while four years ago imported bulbs brought about $8 per thousand.

If the bulbs are left in the ground another year "double-nosed" or "mother bulbs" are formed, with still no increase, unless intensified methods are used, and then only part of the bulbs will "split." For propagation purposes these mother bulbs are left in the ground a third season, during which time they split or divide. Each bulb generally makes four to twenty "slabs" or "splits."

On a commercial scale, therefore, it takes three years to produce increase from a narcissus bulb. Hence the appropriateness of dating the absolute quarantine three years in advance. I wonder how many growers are alive to the situation and now are planting splits, on which they will capitalize in about 1927, or a year after they secure their increase in planting stock.

Mr. Sutton, one of our growers who is specializing in the narcissus, gives the cost of setting out an acre of 200,000 splits—including planting stock, labor of planting and digging salable bulbs—at $3000. Approximately 175,000 of these plants will make salable bulbs. At an average of $20 per thousand they will bring $3500 leaving a net profit of $500 per acre—provided everything goes all right.

Some growers expect that after 1926 the price will *(Continued on Page 10)*

COVERS CALIFORNIA COMPLETELY
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Pithy Paragraphs

WALLACE WANTS TO KNOW.

"I want to find out all about the "bureaucratic red tape' of which we have heard so much," declares Secretary Wallace, referring to the complaint that the Department of Agriculture is throttling Alaska and retarding its proper development. "If there is anywhere one man who can show me how the Department is doing injustice to Alaska, he is the man I want to see."

Secretary Wallace estimates Alaska can be made to supply one-third of all the pulp wood used in the United States. A recent sale of 100,000,000 feet of timber was made to a paper company. Instead of importing 86 per cent of all her lumber—which was the case seventeen years ago, when the Department of Agriculture took over the Alaskan forests—Alaska now imports but 14 per cent. The Government railway has just been completed and a period of expansion in the territory is predicted.

CAR WRECKED BY CARBON BISULPHIDE

Serious and unexpected results were brought about from the use of carbon bisulphide by an employee of a milling company in the vicinity of Rivera for the purpose of fumigating a car of wheat for grain weevil. As the car was being nailed up, subsequent to introducing the fumigant, a violent explosion occurred, severely injuring the operator and completely demolishing the car. The Los Angeles County Horticultural Commissioner's Office, to whom the matter was referred, states the carbon bisulphide probably was exploded by a mechanical spark from the hammer. According to the Horticultural Department, extreme caution should be used in handling this material, as sparks from tools, or even static electricity, will be likely to cause an explosion. Smokers, also, should bear in mind that glowing tobacco ash, a cigaret stub or a spark from a cigar may ignite the chemical. Squirrel hunters, take warning!

CHILD LABOR ON THE FARM.

It is said that one result of the Federal Child Labor Law, passed in 1919, was the moving of many families from city to country, in order to work their children at an earlier age than the legal limit in city industries.

According to the National Child Labor Committee, children four and five years of age—too young to go to school work regularly in cotton and tobacco fields, while older children are kept out of school to work in the fields from sunup to sundown.

A similar condition is said to exist in the sugar beet fields of Michigan and Colorado, where conditions are as reprehensible as any to be found in city factories. In one district 681 families were employing 1358 children between the ages of five and sixteen, an average of two children per family.

What about California?

FARMERS "ARRIVE" AT SACRAMENTO

Agriculture may have been far behind other interests in entering American politics in the right way, but at last it has arrived and is there to stay—with both feet. Long recognized as the most numerous and powerful class in the United States, farmers previously have permitted better organized bodies to lap up the lion's share of legislative cream. But that time, happily, is past or passing.

Not only is the farmers' "bloc" in Congress forcing favorable agricultural action, but in State Legislatures the soil tiller is making his influence felt. At Sacramento not a single bill adverse to farming interests was permitted to pass at the last session of the Legislature, while practically all the purely agricultural legislation proposed was placed on the statute books. This splendid achievement was the result of farmers being well informed, alive to their interests and working harmoniously through their Farm Bureau and thirty-five commodity organizations, according to R. N. Wilson, who represented agriculture at the State capital.

FARM BIRDS—FRIENDS OR FOES?

The disputed question as to whether robins and other fruit eating birds do the farmer more harm than good is brought up by Dell A. Lobingier of Napa County, who takes the position that such birds more than pay for the crops they destroy by devouring injurious insects—white grubs, beetles, cutworms, grasshoppers, crickets, moths, ants, wasps, caterpillars, wire-worms, army worms, leaf-eating and wood-boring beetles, and larvae of gipsey, brown tail and forest moths. A mother robin in six hours fed her young 103 "helpings" of such insects.

Our correspondent claims that orchardists have destroyed the wild fruits which birds prefer and therefore choke cherries, juneberries and Russian sun berries should be grown for their use.

Those who justify the killing of fruit-eating birds say that in newly settled timbered regions, where neither the birds nor their natural fruit food have been molested, it is especially difficult to prevent birds from destroying crops; also that in such localities some insect pests are just as numerous and destructive as in places where birds are scarce.

"What's New?"—Keeping Abreast of Agricultural Progress

Dust Corn With Arsenate

THE best method of controlling the corn ear worm and the tomato worm, according to the Extension Service, is dusting at intervals with one part of finely powdered arsenate of lead and four parts of hydrated lime. The same treatment is effective for flea beetles and certain other insects which attack young plants.

Boys Succeed With Poultry

HENRY GRIFFITH made the best record in the Lomita (Los Angeles County) Poultry Club during the season which closed June 15, earning a profit of $2.19 with each of his hens. Howard Holmes won first place in the South Santa Anita Club, lacking only a half point of reaching perfection. Philip Cogan was placed second and George Bien third in the club. All were given prizes in a meeting of the Farm Bureau Center.

"Bring Home the Bacon"

BY feeding garbage, a waste product, in connection with grain, Long Beach High School boys succeeded in producing pork at a cost of only five cents a pound during a recent pig-feeding contest. The work continued eighty-two days, during which time the twelve pigs which were fattened increased in weight from 85 pounds to 184 pounds, an average gain of a pound and a half per day. Leslie Trader made the best record, earning a profit of $5.13 with two pigs. P. H. Ernst, County Club leader, superintended the work.

Are Canned Almonds Next?

"THE salvation of our industry lies in the sale of shelled nuts," declares T. C. Tucker of the California Almond Growers' Exchange, who recommends the establishing of a department for shelling, blanching, salting and canning almonds in vacuum, in glass jars. Preparing almonds for the trade by dipping the kernels in chocolate is also advised by this department. "If we fail in the marketing of shelled almonds, there is no future for the growing of this crop," Mr. Tucker points out.

Kill Stumps With Chemicals

RECENT tests by the University of California, held at Santa Monica, have shown the surest way to kill the stumps of trees so as to prevent sprouting, is by the use of chemicals. Holes are bored about four inches apart near the ground and filled with a chemical made up as follows: White arsenious oxide, one pound; washing soda, one pound; water, four gallons. The soda is dissolved first in a gallon of water and then the arsenic is added in the form of a thin paste, stirring constantly. The solution is then boiled for half an hour, care being taken not to breathe the fumes, after which the rest of the water is added. The treatment is effective when used at any time of year.—J. ELIOT COIT.

How Many More Tractors?

A RECENT survey of the tractor situation by the Chilton Company asserts the industry is at the turning point and the era of expansion has been ushered in. The report points out the farm market for tractors scarcely has been touched. Estimating conservatively the requirements of farms of different sizes, the statistician shows there is a market at present for nearly one and one-half million tractors, 275,000 motor cultivators and 365,000 garden tractors. An interesting angle of the present situation is this: While California manufacturers are said to be selling more machines for industrial than for farm purposes, the industrial and highway markets combined represent less than three and one-half per cent of the potential farm market. It would appear we are indeed far from being tractorized!

Is Grit Essential to Hens?

EXPERIMENTS conducted by Dr. B. F. Kaupp showed that a fowl may go for an entire year without replenishing the supply of grit in the gizzard, and still grind and digest the food in a normal way. It was determined, however, that grit is essential and must be provided. The hens tested had practically no exercise and were so confined that they could not be expected to lay. The appetites of the birds appeared to be normal for most of the 365-day period. Hens maintained under ordinary conditions, however, could not be expected to go without grit for any considerable period of time, it was concluded.

Avocado Pollination Discoveries

FOLLOWING ideal weather conditions during the blossoming season, Avocado trees throughout Southern California are setting a record crop. Even the Taft variety, which has proved a disappointment to many on account of its failure to bear while young, is setting well in most localities. Fuerte trees are setting well where grown in mixed plantings, but where isolated many of the fruit are small and seedless, thus proving the need of cross-pollination.

Several growers, following suggestions made by Dr. Stout, the pollination expert, already have placed single buds of Spinks or Dickinson in the tops of young Fuerte trees with the intention of growing one limb in each tree for cross-pollination purposes. This will not result in any confusion in harvesting, as the Fuerte is a green-colored winter and spring fruit, while both Spinks and Dickinson are black summer fruits. Facing the prospect of an oversupply of fruit on the Los Angeles and San Francisco markets, the California Avocado Association is already taking steps for a proper distribution of the fruit in Eastern markets.—J. ELIOT COIT.

Vanilla Beans in Porto Rico

VANILLA BEAN growing, after a careful trial, is being introduced by the Federal Agricultural Experiment Station in Porto Rico as an export crop particularly adapted to old coffee lands. The first commercial plantings on the island, made in 1918, now are coming into bearing. One planter, according to reports to the United States Department of Agriculture, has just marketed his first crop, produced on about three acres. The yield amounted to 850 pounds of cured beans, which sold for $4 a pound. The Porto Rican product compares favorably with Bourbon or Java vanilla in the same grades, or that of Guadeloupe.

A County Improvement Plan

BY UTILIZING $46 of the premiums won by the previous year's agricultural exhibit at the State Fair to purchase seeds of crops, vegetables and melons on the premium list of the fair which were not grown locally, a Nebraska county last year introduced a number of desirable crops into its farming system.

The seed for each variety was divided into several parts and one part given free to a volunteer grower in each of four different sections of the county. Products resulting from this plan won more than 100 prizes at the next fair and, together with premiums won on regular products, placed the enterprising county at the head of the list.

Institution's Work Recognized

THE remarkable achievements of the California Junior Republic, the noted school for boys at Chino (San Bernardino County) at last have gained proper local recognition. At a recent meeting attended by members of the Kiwanis, Rotary, Commercial and other influential clubs and organizations, leading citizens of the southern county formed an association known as the "Big Brothers of the Junior Republic." Moral and financial support was promised Messrs. Wright, Condee, Messer and other officials and patrons of the school. The pupils govern themselves, at the same time learning how to become good citizens. They devote part of their time to learning a trade or working on the school farm.

"THEY SAY"

ARTHUR W. CHRISTIE

ARTHUR W. CHRISTIE,

Assistant Professor of Fruit Products, University of California

DEHYDRATION is here to stay! The splendid success of the California Prune and Apricot Growers' Association has greatly increased the value of the prune crop, which together with the ever increasing tonnage makes the problem of reliable drying one of great economic importance. As one grower aptly said, "We prune growers spend much money and work hard in our orchards for eleven months in the year and then put our year's crop at the mercy of the weather for the remaining month. I put in a dehydrator to take the gamble out of the prune business."

Attracted by the local interest in dehydrators for prunes and other fruits as well as a world-wide development in this method of food preservation which arose out of the food demands of the great war, several concerns began the construction and sale of dehydrators.

About 150 variously termed "dryers," "evaporators," and "dehydrators" were erected in California during the past three years. Unfortunately a number of these were total or partial failures because persons untrained in and utterly ignorant of the first principles of successful dehydration, designed dehydrators and formed "shoe-string" companies for the exploitation of this field. Naturally such failures caused most growers to be skeptical of the feasibility of dehydration and many a wise prune grower said, "It can't be done."

However, it is within the memory of these same growers that the statement was applied in the beginning to automobiles, tractors, aeroplanes and many other modern inventions now in common use. All new processes and machines pass through an experimental stage before they become generally accepted and used. Dehydrators have passed through this uncertain period during the past few years. There is, of course, room for still further improvement, but the fundamentals of construction and operation are now so well understood that further changes probably will be minor in nature.

County Farm Grows Inmates' Food Supply

By WILLIAM R. BUTLER

SAN BERNARDINO COUNTY has reason to be proud of its well equipped and efficiently managed county farm. It is a fine illustration of practical sociology and a good example of successful "gumption" farming. Similar institutions could well afford a first-hand study of this farm.

The plan of the farm and its management was evolved by Supervisor M. P. Cheney, who takes a constant personal interest in the working out of the system of production adopted.

F. M. Barney, a man of generous proportions, both physically and intellectually, is superintendent of the farm, having taken over its management a little over a year ago. Farm Adviser H. J. Wilder renders valuable assistance in the making and carrying out of production plans, which have proved eminently practicable.

PRODUCES VARIETY OF FOOD

The original farm comprised 93 acres. Last year 50 acres were added. Under Mr. Barney's management the farm is producing most of the vegetables and fruit, all the dairy and pork products, as well as some of the veal and beef consumed by the 200 patients in the county hospital.

The farm is cropped as follows: Alfalfa, 35 acres; barley and oats, 40 acres; potatoes, 10 acres; table grapes, 2 acres; four-year-old orchard of peaches, apricots, apples and pears, 7 acres. A plum orchard is to be planted. Such vegetables as onions, turnips, beets, cabbage, radishes, lettuce, tomatoes, etc., are planted in patches of one-half acre to one and one-half acres. Last year two cement silos were filled with late Indian corn. This year sorghum will go into the silos.

The alfalfa is cut six or seven times a year and is made into hay for the dairy and work stock. Part of it is used as a soiling crop for the cows and hogs. Last year the spring crop of potatoes averaged 125 sacks per acre, and the fall crop 75 sacks.

BUILDS HOLSTEIN HERD

During the past five years a good Holstein herd has been built up. The last three years it has been under the supervision of Herman Stroup, the present herdsman. There are 47 animals, of which 23 cows are milked. Ten cows, 8 heifers and 2 bulls are purebred, the balance good grades.

The herd sire, Sir Veeman Bona De Kol, is a half brother to the National champion three-year-old, Princess Maida Veeman. The Riverside County Cow Testing Association records for April show an average of 41 pounds of butter fat for twenty-one of the herd's cows on test. A half sister to the herd bull made a recent record of 52 pounds of milk per day, testing 4.4 per cent butter fat.

The cement floor of the milking barn, as well as the cement paved corrals, are washed off in the irrigation system, which spreads the fertility over the farm. Two reservoirs are used for domestic and irrigation water supply.

INSTALL PUMPING PLANTS

A new electric motor pumping plant has been installed at a cost of $10,000. The larger pump delivers water to the main reservoir, located on an elevation at the back of the farm, at the rate of 650 gallons a minute. A smaller pump delivers water to the irrigation reservoir at the rate of 90 gallons per minute.

The farm maintains an average of 18 Duroc Jersey sows, from which two litters—averaging 7 pigs each—a year are raised. The shoats are fed garbage, ground barley, milo and some Indian corn. The hogs are butchered on the farm at an average weight of 150 pounds. Two hogs are killed each week for the hospital and one every two weeks for the county prison camp. The farm is equipped with an excellent slaughterhouse and smokehouse. The hams and bacon are cured on the farm.

A good example of Mr. Barney's managing ability is the farm's 12-pen, well equipped farrowing house. The local contract price on this building was $1470. The superintendent, acting as architect and builder, built the house with farm help, at a total cost of $796.

Views at County Farm
Above is shown a vegetable field with County Farm buildings in background. The Holstein herd, part of which is shown at the right, includes nearly 50 animals.

"Rotate Rice Crop"—Robinson

Heavy Production Costs Justified Only by Heavy Yields—Cultivated Crops Are Needed

EVER since the post-war price slump in the rice market there has been more than a suspicion in the public mind that there was something radically wrong with the California rice industry.

From the palmy days of 1919, when this grain sold as high as $6 a sack and yielded up to fifty sacks an acre—$300 on $150 land—until the present time, when yields and prices are so low that a large portion of the available acreage is unplanted, California rice history has been discouraging reading.

At first blush it woud seem that there was good money to be made in raising rice at present prices, $2.25 to $2.50 per hundred-pound sack, even if the yield were only half the one mentioned, for rice land can be bought at half the price or less than the one given. This figures a yearly gross return equal to the cost of the land, which looks good enough for a grain crop. Where is the colored gentleman in the fuel heap?

This quesetion was put up to S. A. Robinson, one of the pioneer rice growers of the Sacramento Valley, who still owns a large acreage.

"In the first place," pointed out Mr. Robinson, "a good crop of rice cannot be grown every year, or even every other year, under ordinary conditions because watergrass and other weeds will crowd out the grain. On a small acreage, with efficient help, it is possible to keep the ground fairly free from weeds.

ROTATION WITH WHEAT

"Many growers plant rice two years in succession and then grow a crop of wheat. The latter takes two years, the ground being plowed in the spring and seeded in the fall, and the crop harvested the following summer. The wheat is not irrigated, and only one fair crop is produced in two years.

"Owing to the high price of water, of which rice requires an immense amount, large labor costs and danger of losing all or part of the crop by rain damage during harvest, large yields are needed to make the crop profitable. It is customary for renters to furnish the seed and deliver one-third of the crop, sacked, to the warehouse for the use of the ground, the owner paying for the irrigation water."

The heavy, black soil where Mr. Robinson's land is located, four miles southwest of Richvale, is underlaid at a depth of 33 inches with a light colored lime subsoil, through which moisture passes very slowly. This water-holding capacity of the subsoil is what makes the land valuable for rice growing, since it permits the continuous flooding of the crop during the growing season. It has been found impracticable to break up this subsoil by blasting because it is of such a soft, putty-like consistency that it runs together again.

Mr. Robinson was asked if he thought it was feasible to grow cultivated crops on rice land in order to clear the land of noxious weeds.

"Undoubtedly," he replied. "Land owners, however, have been handicapped for want of definite knowledge regarding what crops will pay best and how they can be produced to advantage. For several years the Government has maintained, near Biggs, an experiment station, but the director has turned a deaf ear to the demands of land owners that crops other than rice be experimented with.

"At this late day, after farmers themselves have demonstrated the fact that a variety of fruits and vegetables can be grown on rice land, the Government is undertaking experiments along that line. Only about 40 per cent of the land in the district where the station is located, around Richvale, was planted to rice this year.

OTHER CROPS GROWN

"It is a shame such a large area of rich, productive land, with plenty of water, should be allowed to lie idle, much of it growing up in weeds, for want of a profitable crop system. Owners of land under the Sutter Butte Canal are forced to pay an annual irrigation tax of $2.30 per acre, whether any water is used or not.

"Although the subsoil is called hardpan, it is really fertile soil, capable of growing good crops when aerated. This is proved by the fact that wheat grows better on this subsoil, when the latter is thrown out on ditch banks, than on the surface. Wheat makes a better crop the second year after rice than the first.

"The finest kind of grapes, strawberries, pears and various other fruits, as well as a variety of vegetables, are grown in a small way in the Richvale district, proving the capability of the soil. Thinner, poorer soil in other sections produces profitable crops of fruits and vegetables.

"Paul Lofgren has a fine vineyard of two acres a mile southwest of Richvale. During the last three years 50 acres of grapevines has been planted just south of Richvale, 20 acres being set this year. The vines make an enormous growth and bear heavy crops of fine fruit."

"Why don't rice farmers plant fruit on a large scale?" Mr. Robinson was asked.

"Because they haven't the necessary capital," he explained. "Furthermore, circumstances make it imperative that farming in the rice country be something of a co-operative proposition. It is impracticable to grow a small area of cultivated crops when the surrounding land is flooded for rice.

"Rice land values are ridiculously low, considering its potential value," declared Mr. Robinson, in conclusion. "As soon as an intelligent cropping system can be worked out, such land can be made to pay interest on at least double present prices."

Power Pointers

By WALTER H. GARDNER

THE LONGEST ORCHARD ROW

Where is it? The California Packing Corporation can boast of one just five miles in length. That is on the Fancher Creek ranch at Planada. On one side of the road there are three-mile rows that are worked without a turn. And here develops a peculiar problem—the tractor operator needs a little watching as the afternoon lengthens! For even at 4 o'clock he doesn't like to "start another round." The whistle is liable to find him three miles from supper!

W. H. GARDNER
Contributing Editor of Orchard and Farm

TAKE A PEEP INTO THE COST

This firm believes in big tractors—here they happen to use track layers. Based on the records of two years, six of the big fellows have averaged 90 cents an hour for fuel and lubricants, 45 cents an hour for labor and 63 cents an hour for all replacements and repairs—a total operating cost of $1.98 per hour. And the tractors each pull 10-foot loads and average 1500 hours of actual work a year. The figures for the smaller "thirties" are 64 cents for fuel and lubricants, 46 cents for labor and 39 cents for repairs—a total of $1.49 an hour.

DEPRECIATION IS NOT INCLUDED

This firm calculates at 50 per cent for the first year, 25 for the second and 25 for the third. It is admitted that this is conservative; the machines are kept in such excellent repair that 20 per cent a year would be a better constant. Already some of the machines have been written off the books—yet they are in efficient operation. The writer believes the following schedule of depreciation charges for standard makes of tractors is well considered: Forty per cent for the first year and 20 for the second, third and fourth.

RECENT TRACTOR SALES

In Southern California a number of recent sales have been consummated only after the buyer has been assured that the machine will pull an excavating grader! Many a farmer is looking forward to the not-so-distant time when his farm will be staked out in bungalow sites.

HENRY FORD HAS ANOTHER!

It is reported that in reconditioning the locomotives on the Detroit, Toledo & Ironton Railroad, Mr. Ford insisted attention be given to their appearance, on the theory that the average engineer and mechanic are attracted by a good-looking piece of machinery and, in consequence, take better care of it. That is true on the farm, too. The well-made, well-proportioned tractor or pump or plow earns more attention from the driver. It becomes as much his pet as a pedigreed bull or a standard-bred horse. This fact alone will justify a little greater investment in any piece of machinery.

THE EAST STILL IN THE DARK!

It is surprising how few of the farmers east of the Rockies know about "deep tillage"—how few know this practice differs from "deep plowing." And the subsoiler and the deep tillage chisel perhaps hold the solution of poor drainage, plow pan and lessened yield problem. When we write to the folks back home let's tell something of the wonders worked by the "subber" plus ample power.

HE CULLS 25,000 HENS

Henry Graff, widely known poultry culling expert, has resided in Petaluma for twenty-five years. Graff works steadily on the poultry ranches in the vicinity of Petaluma and Sonoma County, culling non-layers out of the flocks. He states that during the past seventeen months he has culled 25,000 hens. His services are in big demand, owing to the excellent results of his methods.—K. R.

Pointers on How to Pack a Pump Properly

By JAMES KOEBER

Division of Agricultural Engineering California College of Agriculture.

WITH increasing usage during the summer season, there is more need for attention to pumps, especially oiling and adjustment of packing glands and repacking at frequent intervals.

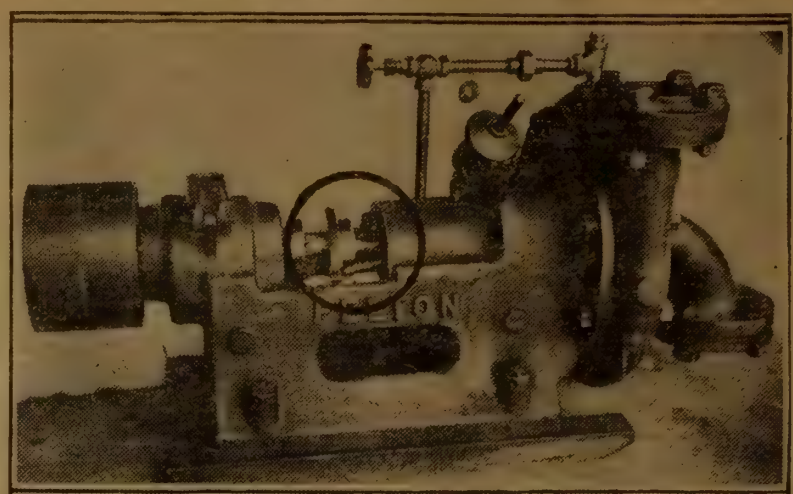
Defective packing, subject to pressure from the discharge end of a pump, usually is plainly evidenced by squirting out of water. If on the suction end, it is not so evident, even being difficult to locate in many cases, but is much more serious in its effect on the efficiency of the machine.

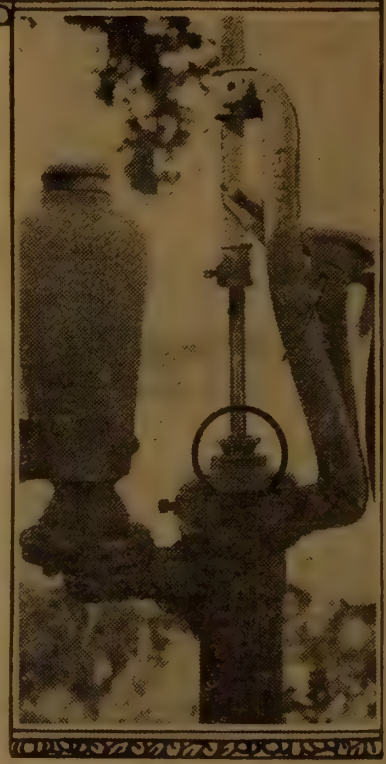
This is especially true if the pump is of the centrifugal type, as the speed of the impeller is sufficiently high to pump water by centrifugal force, but not high enough to pump air, as does a blower. Furthermore, the air thus pumped is of no value, tending to accumulate in bends and pockets, and if entering in large quantities will cause the pump to stop discharging in short order.

Packing or stuffing boxes on pumps are of two general types as regards the direction of motion of the shaft or rod that the packing surrounds. The common windmill pump, the rod of which moves backward and forward in a longitudinal direction represents one type. The centrifugal pump, with its rotating shaft, represents the other.

SMOOTHING ROUGH ROD

When repacking a pump one of the first things is to examine the condition of the rod or shaft and packing gland or follower. A roughened rod moving endwise through a packing box quickly will rasp out the packing, no matter how good the material may be, and if it can move about and come into contact with the gland, will affect it in the same manner.





Above—Stuffing box of centrifugal pump. Gland removed for packing. Right—Windmill pump, showing stuffing box and packing gland in circle.

A roughened shaft that rotates will act similarly to one moving endwise, but usually not quite so quickly. A packing gland or follower that does not fit closely fails to support the softer packing properly and as a result it cannot last as it should. Smooth a roughened rod or shaft by "draw filing" and using fine emery cloth. Replace worn followers with good ones.

If the metal parts that come in contact with the packing are in good condition, many things can be used to pack a pump. For small clearance spaces the common candle wick packing is good; this should be thoroughly oiled or greased before using. A mixture of powdered graphite and grease, thoroughly worked into the packing, is still better.

Cotton rope, untwisted and well greased, often is found to be quite durable, especially when the rod and nut are worn badly. Strips of canvas or, in an emergency, strips torn from old overalls, lightly twisted and greased, have been used successfully as pump packing. When large spaces are to be filled with packing, the square-braided flax type, thoroughly greased, usually is satisfactory for farm conditions.

HOME-MADE TOOLS GOOD

The necessary packing tools can be made easily at home. By heating the point of an old pitchfork tine to soften it and bending it to form a hook, a satisfactory tool to remove old packing can be made. A piece of round or square iron, bent "L" shape, is convenient for pushing packing into place. The size of the iron and length of the "L" will vary with the job to be done. Fife-sixteenths-inch stock, with the bend about two and one-half inches from the end, will serve for most small centrifugal pumps. The handle may be any convenient length desired.

Usually small pump packing is put in by winding it around the shaft or rod in the direction that the packing gland turns or shaft rotates. One or two turns are made and the packing pushed into place. Other turns are put in place until, when the excess is cut off, the packing nut will just start. The nuts are screwed down firmly, then backed off and tightened with the fingers.

When square packing is used, it is considered the best practice to cut pieces that will just reach around the shaft, similar in shape to bevel-cut piston rings. These are placed in such manner that the joints are distributed around the shaft. If the recess will take three or more rings the spiral method will serve just as well as the other and the packing can be put in and taken out much more quickly.

Pump packing around a rod that moves endwise or around a piston of a high pressure, single-acting pump can be made to last much longer by the use of gear "dope." This is a thick, sticky material that has the appearance of being between a tar and a grease. Warm the gear "dope" and apply it to the rod or piston with a paddle on the downward stroke of the pump. The "dope" will be worked into the packing and if applied once a day usually will double its period of usefulness. The only objection is that if it is improperly applied it is likely to make the outfit mussy and disagreeable to handle.

Try this Modern Magic in Jelly Making

New PEN-JEL makes jelly "jell" instantly. Boil two minutes and your jelly is ready for the glass. It never fails. No anxiety lest your jelly be a failure.

PEN-JEL is effective with any fruit juice. Supplies pectin, the active fruit property which makes jell. Perfect results assured with fully-ripe fruits. Made from fruit, hence its absolute purity is sure.

Improves the taste, too, because the delicate, natural flavor is not boiled away. Insures clear, firm jellies. Saves fuel, energy, time, and sugar.

Once you've tried PEN-JEL you'll always use it. Order from your grocer. Should it be possible he hasn't it, send 15c in stamps for a full-size package, enough to make six 7-ounce glasses.

A valuable book of recipes and information in each package. Full directions for making delicious jams and jellies from every kind of fruit. SEND YOUR 15c TODAY.

LEO PECTIN CO., St. Joseph, Mo.

NEW PEN-JEL MAKES THE JELLY JELL NEVER FAILS

JELLY RECIPE

Put 2½ cups fruit juice in kettle (about 6 quart); add 1 package New PEN-JEL, stirring until boiling vigorously. Add 3 level cups sugar, boiling vigorously from 2 to 4 minutes, depending on fire. Pour into glasses.

You should try PEN-JEL for making delicious jams and jellies with strawberries, cherries, blackberries, raspberries loganberries and all other fruits.

15¢

USED PIPE AND CASING FOR IRRIGATION PURPOSES

All Sizes in Stock

Standard and Screw Casing

PACIFIC PIPE CO.

203 Howard St.

San Francisco, Calif.

Foil Fire Demon

FIRE is the dread of many a farmer, and many a fine ranch house has been destroyed due to lack of water, when only a few feet away was an irrigation pump, with ample power to drown the fire demon before he had got well under way.

At least one manufacturer has been clever enough to make provision in an ordinary installation of an irrigating pump so that when the emergency came the irrigation outlet could be turned into the fire outlet.

The so-called "non-overloading" runner type of pump is particularly adapted to such utilization. Harry Saurman of Oakley and Ed Sommers of Napa are two farmers who have taken full opportunity of this protection.

Most farm houses are helplessly beyond the reach of any adequate fire apparatus. Here is an opportunity for a wide-awake rancher to use existing equipment to give protection to his buildings and to his home furnishings.—W. H. GARDNER.

Local Jersey Record Falls

HARRY H. COOK of Chino, Calif., is the proud owner of Shylock's Gay Bettie, 476505, the new champion senior four-year-old of the State. This cow started tests at 4 years 11 months of age and in one year produced 13,622 pounds of milk and 664.70 pounds of butter-fat, displacing California Owl's Nora, 488368, which held the record with 638.57 pounds.

It is of great interest that Bettie produced in excess of 50 pounds of butter-fat six of the twelve months on test and in November produced as high as 72.02 pounds. Her sire is Shylock's Financier, 84645, with five tested daughters and one proven son. He is a son of the famous bull Fabby's Shylock, 70334.

Novel Cropping Plan

IN ORDER to secure an immediate "cash crop" from 75 acres of farm land recently acquired at Huston Farms, near Winters (Yolo County), Leroy T. Farnum is raising beans and Sudan grass. It is his belief he thus can realize net returns of approximately $3500 in four months' time.

In the fall he plans to set out grapes, interplanted with figs, apricots and peaches. By this plan Farnum expects to make his crops pay for the land quickly; he points out there will be no long waiting for returns as in the case of single cropping without interplanting.

Marin Builds More Silos

THE seventh silo to be erected in Marin County this season is being put up by John R. Alexander of Tomales. Alexander is one of the younger dairy men who has found improved methods pay. He has been testing his cows for production for some time, and had one of the prize-winning pure-bred Guernsey bulls at the recent Valley Ford Stock Show—an animal he purchased last fall in the Better Sire Campaign. Realizing that selection and breeding were not sufficient without proper feeding, Alexander decided upon the silo. Farm Advisor Boissevain reports Marin County dairymen are building silos faster than their Sonoma County neighbors.—K. R.

KIKIYU GRASS EXPERIMENTS

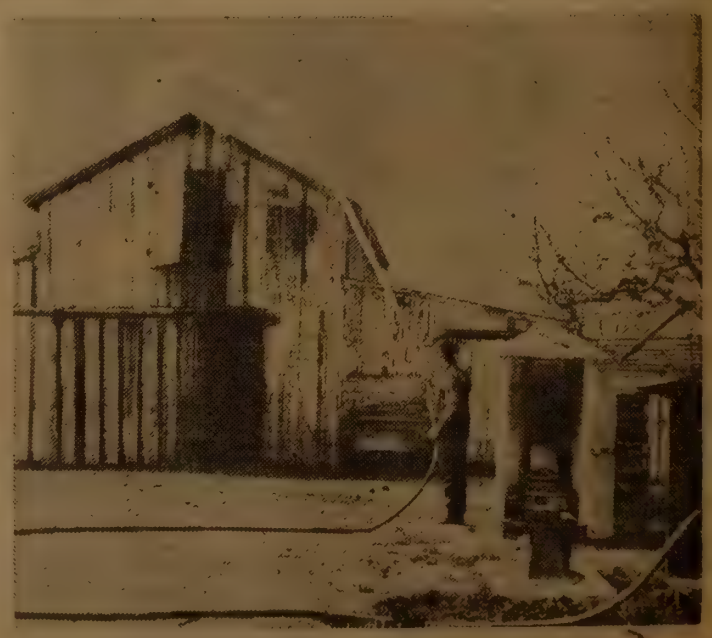
J. C. Longley of Bolinas, is trying out Kikiyu grass on his salt marsh land, having secured the seed from the University of California through the Marin County Farm Advisor, who is interested in finding a good grass for salt lands.—K. R.

POPULATION INCREASE NOTED

Stanislaus County increased its population 95 per cent in the ten years from 1910 to 1920. Stanislaus is the leading dairy county of California.

CALIF. LEADS IN DAIRY QUALITY

California leads in quality of milk and butter, as well as in quality of fruits.



Utilizing irrigation eqiupment to fight fire.

Red Hen Claims White's Place

Dual Purpose Fowls Dispute White Leghorn Supremacy—A Southern California Poultryman's Experience

By O. H. BARNHILL

A CLOUD upon the poultry horizon, at present no larger than a man's hand, portends a war between the Reds and Whites, which in some respects resembles that fought on this continent between human beings of the colors named. But while the Palefaces struggled to displace their bronze brothers, Rhode Island Red and other colored meat breeds of chickens aspire to wrest supremacy in the feathered world from White Leghorns, who now are in undisputed possession of the egg-laying field.

One of the most prominent breeders in the poultry world, foreseeing which way the wind may blow, is taking no chances of being caught short when poultrymen demand the heavier breeds. In order to provide against this contingency, he is proceeding upon a 50-50 basis, dividing his flock equally between Plymouth Rocks and White Leghorns.

"Here is the situation," explains this breeder. "The commercial poultryman found the demand for eggs far exceeded the call for meat, and therefore deemed it profitable to keep the kind of hens that laid the most eggs. Leghorns, especially the Single-Comb Whites, seemed to fill the egg basket quicker than any other breed, and for this reason are now grown in greater numbers than any other type.

CONSIDER CHANGE OF BREEDS

"Two factors, however, are causing poultrymen to consider a change of breeds. One is the belief that the egg-laying characteristic is not inherent in any particular variety of fowl, but is developed by selection and breeding, made possible by trapnesting. The other is the increase in the value of and demand for meat, which lends greater importance to the price received for cockerels and old hens."

V. R. Long, Baldwin Park (Los Angeles County), "little lander," is another poultry breeder who is trimming his sails to meet the expected storm of protest against the lightweight egg fowl. He is growing White Leghorns to meet present demands, but also is raising Rhode Island Reds, for which he finds a strong and growing market. Asked which breed he considered most profitable, he replied:

"The Reds, of course. There's really no argument as to which kind of chicken pays best, when all the facts in the case are faced. It is true that Prof. James Dryden bred a 300-egg White Leghorn hen, proving the egg production possibilities of that breed.

MEAT HEN MAKES RECORD

"It also is true that he developed a Plymouth Rock hen which laid 324 eggs in one year, proving that egg-laying is a matter of breeding and selection, rather than variety. Rhode Island Reds have been leading the White Leghorns and all other breeds at the Pomona Farm Bureau egg-laying contest this year.

"Rhode Island Red cockerels not only weigh more than their little Leghorn brothers, but sell for a higher price per pound. The Reds are easier to raise than the Whites, being less delicate and flighty. They are especially adapted to the beginner, the back-yard poultryman and those who desire a dual purpose fowl.

"One of the greatest advantages of the Reds over the Whites is the larger price which the old hens bring. Old Leghorn hens are a drug on the market at 50 cents each, while Rhode Island Reds are in good demand at $1.75. They sometimes bring $2.25. I never sell for less than $2. This means that the 1000-fowl poultryman, instead of taking a $1500 loss when he sells his old hens, can get all his money back—if he raises Reds. Of course the latter require a little more feed, but not enough to offset all their advantages."

COMBINES POULTRY AND FRUIT

Long keeps his chickens in an orange orchard. The fowls have proved the more interesting and profitable. The fruit department of the farm, therefore, has been forced to play second fiddle. The grove provides needed shade for the fowls, although deciduous trees would be better, because they shed their leaves in the fall and admit the sunlight during the winter, when warmth and light are needed.

The orchard is allowed to grow up in weeds during the summer, providing additional shade for the little chicks, and in the fall the ground is plowed, destroying any possible disease germs and affording fresh, clean earth for future breeding operations.

"When I started with poultry here," related Mr. Long, "I expected to build up a big breeding business, employing a large force of helpers. I found, however, that hired help not only consumed the lion's share of the profits, but would not take proper care of the stock, or feel the same interest they would in their own fowls.

TRIES SELLING COCKERELS

"Then I tried selling cockerels to neighbors and buying hatching eggs from them. After I had spent $300 in advertising one season, the poultryman on whom I was counting to supply a good share of my hatching eggs raised the price to a point where I could make no money in the chick business.

"The plan which I have found most feasible and profitable is to rent my cockerels to poultrymen whom I know will take proper care of their chickens and furnish first class eggs. If the price is not satisfactory I can take away my cockerels and place them with another poultryman who will do business on the proper basis."

One kind of work of which Long has had enough is contract pullet raising. He produced several hundred this year for $1.25 each, the price having been agreed upon in advance. The buyer, however, refused to take any birds which did not measure up to the strictest specifications. Many of those rejected were sold at $1.50 each. These were Rhode Island Red pullets. Long always culls his stock severely, which accounts for the high prices obtained.

SELLS SURPLUS WATER

Surplus water from a pumping plant is sold to neighbors, who sometimes have been inclined to complain of the price charged. Upon investigation, however, they learned that if Long's water selling operations were governed by the State Railroad Commission he would be required to raise his rates about 50 per cent. His customers thereupon decided to let well enough alone.

"I prefer to keep upon good terms with my neighbors," explained Long, when asked why he did not charge the regular legal rate for water.

Mrs. Long is president of the Baldwin Park Woman's Club, which recently put up a $5000 building. The Longs have an interesting family of little children, who are growing up strong and happy among the chickens and oranges.

He Finds "Kick" in Strawberry Honey

UNDER the title of "Strawberry Honey," a Southern California newspaper recently published the following item:

DELANO—A new confection is reported to have been invented by the bees owned by Wildey Packard, near Earlimart. It is "strawberry honey," said to be superior in flavor to the orange honey which now commands the highest price of any on the California market. A hundred stands of bees on the Packard place are located next to an acre of strawberries, where they find no other blossom. The honey is said to have a perceptible strawberry flavor and is dark in color.

There is too much misinformation in this statement to allow it to be unnoticed.

Strawberry blossoms yield a small amount of honey in favorable weather, but their greatest contribution to the beehive is in pollen, which is the principal ingredient of the larval food prepared for the brood—immature bees.

Like all fruit-bloom honeys, strawberry honey is dark colored and strong flavored, not at all like that beautiful white orange-blossom honey. It is secreted in the blossoms in such small quantities that a hundred colonies of bees would starve to death in a week with only an acre to forage upon.

The nearest approach to the claim made in the item quoted is where fifty colonies of bees in the Sacramento Valley made a living and stored a small surplus from an acre of full-bearing orange trees. I am told the State University has a record of this.—J. D. BIXBY SR.

Happy, healthy flocks are raised on Fleischmann's Pure Dry Yeast.

Left—Brisk cockerels and pullets, raised on Fleischmann's Pure Dry Yeast by George Morrison, at Arlington, N. Y.

Others have already tried it out for you

For better results feed Fleischmann's Pure Dry Yeast to Chicks—Pullets—Hens

Countless poultrymen have found that yeast produces excellent results in their fowls—in chick, pullet and hen.

"Best of all are the results obtained with the baby chicks," writes Dr. E. C. Morris of Petaluma, Calif., "which is the big test for any product."

"My five-week-old flock look to everybody seven weeks old. "They are a strong, healthy-looking bunch," writes Jacob Gerlack of Toms River, N. J.

"Let me thank you once more for introducing this life-saving element into our feeding program," Harvey C. Wood of Bound Brook, N. J., writes, and terminates a long letter of hearty endorsement with: "I will be glad to relate my personal experience with yeast to any one."

Similar endorsements come to the Fleischmann Company every day.

Use ½ lb. of Fleischmann's Pure Dry Yeast to every 100 lbs. of mash for dry or wet feeding.

Fleischmann's Pure Dry Yeast can be profitably used for feeding all farm animals. Check on the coupon which booklet you want.

Fleischmann's Pure Dry Yeast comes in 2½-pound cans, delivered. We pay postage or express. Mail the coupon today.

Caution: Do not be misled by imitations. Fleischmann's Pure Dry Yeast is *all* yeast—yeast in its most concentrated form. It contains no cornmeal or other fillers. To be sure of results, order Fleischmann's Pure Dry Yeast—using coupon below.

FLEISCHMANN'S PURE DRY YEAST

Order direct from The Fleischmann Company's Branch Office in any of the following Cities:
New York, Chicago, San Francisco, Los Angeles, Seattle, Hartford, Portland, Maine; Buffalo, Albany, Philadelphia, Pittsburgh, Baltimore, Boston, Birmingham, Cincinnati, Cleveland, Columbus, Dallas, St. Louis, Detroit, St. Paul, Newark and Toronto.

PRICES

1 to 10 cans $2.00 per can
10 to 20 cans 1.95 per can
20 to 40 cans 1.90 per can
Over 40 cans 1.80 per can

(Add 50c per can if in Canada. Other countries, prices on request.)

Any number of cans delivered direct to you, transportation charges prepaid.

THE FLEISCHMANN COMPANY, Dept. D-276, 941 Mission St., San Francisco, Cal., or 314 Bell St., Seattle, Wash., or 947 Maple Ave., Los Angeles, Cal.

Enclosed find $..... Please send me ..... 2½-pound cans of Fleischmann's Pure Dry Yeast, postage prepaid.

( ) Send me your book on raising pigs, cattle and horses on yeast-fermented feeds.

( ) Send me your book on raising poultry on yeast-fermented feeds.

Name .....

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CLASSIFIED RATES

60 cents a line (average 7 words). For white space, cuts or display type, most is computed according to total space occupied by advertisements.

Advertisements must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

POULTRY

PROFITABLE POULTRY and CO-OPERATIVE ELECTRIC HATCHERIES, capacity 250,000 chicks, 280-290 egg Leghorns, Anconas, Reds, Rocks, Minorcas, Wyandottes, Brahmas, Andalusians (ducks, turks). Off every week. Also chicks from large 2-year hens for rapid growth into broilers, fryers, roasters. Booking for July to October delivery. Reduced booked ahead. Early fall chicks profit most. "Never saw such vigor, rapid growth, in chicks." Write BOX O, 13 N. FAIR OAKS, PASADENA.

CERTIFIED WHITE LEGHORN QUALITY CHICKS for Summer and Fall months, from selected free-range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Send for catalog and attractive prices. Safe delivery and full count guaranteed. MUST HATCH INCUBATOR CO., INC., 432 Seventh St., Petaluma, Calif.

CERTIFIED BABY CHICKS from inspected flocks. All hens have undergone rigid inspection; mated with males having authentic trapnest records of at least 200 eggs on the sides of both parents. Certified by Alameda County Poultry Breeders' Assn. Now booking orders for fall and spring deliv. Utility prices. Chanticleer Elec. Hatchery, Inc., Hayward, Cal.

WHITE LEGHORN baby chix from flocks mated to males having sire's dam record of 240 to 297 eggs per year. Full particulars and interesting literature on request. We are accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, P. O. Box 476, Petaluma, Calif.

HANSON'S Pedigree S. C. White Leghorns. Over 210-egg flock average for 6 years. Over 221-egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalog. J. A. Hanson, Corvallis, Ore.

ORDER SUMMER AND FALL CHICKS now. They pay. White Leg., R. I. Reds, Barred Rocks. Safe arrival guaranteed. Send for circular. Fine lot of White Leg pullets and breeding cockerels. Stubbe Poultry Ranch and Hatchery, Box 67C, Palo Alto, Calif.

BABY CHICKS—All kinds hatching each Monday. Ducklings, turkeys, hatching eggs. Pullets, pigeons, rabbits. FANCIERS' EXCHANGE, 640 S. Main st., Los Angeles.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

TURKEYS, DUCKS AND GEESE

WILD BLOODED TURKEYS—Eggs and stock for sale. Prices right. Small and large orders promptly taken care of. Jenkins the Veteran, R. 3, Box 148, Burbank.

FARM LAND FOR SALE

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land, deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and berry farming in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land; near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

REAL ESTATE FOR EXCHANGE

FOR SALE or Exchange—Improved ranch, 90 miles north San Francisco. Spring water piped to house. Owner, 1721 ARLINGTON, Los Angeles, Calif.

FARMS WANTED

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

HELP WANTED—Male

EARN $110 to $250 monthly, expenses paid, as Railway Traffic Inspector. Position guaranteed after 3 months' spare time study, or money refunded. Excellent opportunities. Write for free booklet G-91. Standard Business Training Inst., Buffalo, N. Y.

HELP WANTED—Instruction

WANTED—Women, girls. Learn gown making at home. $35 week. Many openings. Learn while earning. Sample lessons free. Write immediately. FRANKLIN INSTITUTE, Dept. A-589, Rochester, N. Y.

HEMSTITCHING, picoting attacht. Fits any sewg. mach. Does beautiful wk. Attrac. premiums free with orders. Write for illus descript. B. Krafft, Box 896-OF, San Francisco.

TANKS, PIPE AND WINDMILLS

REBUILT WINDMILLS, tanks, pumps, cylinders, surface irrigat. Pipe, all sizes, used 8, 9 in., cheap. New galv. tanks, all sizes large used redwood tanks. DEMMITT CO., 120 N. Main. Yards, 816 Yale, Los Angeles.

LIVESTOCK—Sheep, Milch Goats

PURE-BRED TOGGENBURGS from recently imported stock. Heavy milkers. Raised under ideal conditions. Sure to please. Canyon Goat Ranch, Redlands, Calif.

PAINTS AND VARNISHES

PAINT—BARN and ROOF—Highest quality, $1.00 per gal. Guaranteed 5 years. Milroy Works, 591 Palisade Ave., Jersey City, N. J.

PLANTS AND BULBS

PEONIES, ROSES and BULBS. Save money, order now, have choice collection, all color. Peonies, 50 cts. each, or 5 for $2. Also 2-year-old Everblooming Tea Roses, 50 cts., or 5 for $2. Also Hyacinth, Tulips and Narcissus. All prepaid. R. J. GIBBINS, Mt. Holly, N. J.

CIGARS AND TOBACCO

DIRECT FROM FACTORY—5-inch, Cuban Twisters, long filler. Sweet as a nut, $4 per 100. Cigar clippings, 60c per lb. FRANK MILLER, 1208 W. 8th st., Los Angeles.

BEES AND HONEY

ITALIAN Bees—100 strong colonies, $7.50 ea. W. A. Tillinghast, Box 444, Santa Rosa, Cal.

Flowers for Children

ARE children interested in flowers? Quite often we hear some one say, "My children don't seem to care a thing about gardening." No; usually they don't, and I have learned why children seem indifferent in many cases. Children distinguish flowers by their colors. It is seldom any one takes the time to go through the garden and teach the child the correct names and habits of flowers. Calendula or marigolds are "those yellow flowers," and scabiosa or mourning bride is usually "that flower with a pin-cushion middle and white or lavender lace around it," while zinnias are "those flowers with stiff faces."

We have found a boy is more interested in the chemical action of the soil on plants, while a girl cares little about anything but the beauty of the blossoms. A boy is interested instantly in a flower if we stop and explain why it failed to send forth many flowers, while the foliage was very rank and heavy. He is always much more interested in experimenting with soils and planting seed under different conditions. He considers the blossoms and growth of the plant as proof of his labor.

A girl usually asks, as she plants the seed, "Now, what color will these flowers be, and how long will it be before they bloom?" Also she is interested in arranging bouquets. She may be naturally artistic, and arrange flowers with very little directing, but she always is studying in color schemes and the blending of varieties. She likes to form mixed bouquets, and likes to study the effect of this color and that with several varieties.

We have found that normal, healthy children usually are interested spasmodically in gardening. They are intensely absorbed in the planting, and perhaps this interest will last a week or more; then gradually it wanes.

Perhaps later they will hear a discussion of flowers or plants, or will see a beautiful garden, when their interest reawakens. There is a scurry of irrigation and cultivation, but again the industry abates.

We have found it is absolutely necessary to make a child tend his garden regularly instead of trusting to his judgment. He learns one of life's greatest lessons if he has to "stay on the job." If dad hoes the weeds and waters his garden for him, he soon loses every bit of interest, for he feels that dad, through his labor, has become part owner.—HELEN TEMPLE.

SULPHUR INCREASES ALFALFA

Experiments on the Neilsen ranch, Durham State Land Colony, are reported to have shown excellent results from the application of sulphur to alfalfa fields. Twice the tonnage was secured from sulphured plots as from those not treated, it is said.

SPRAYING FROSTED FRUIT

Spraying fruit trees with cool water just before sunrise will prevent slight frost injury in much the same way that frozen fruit is thawed out in cold water, which greatly lessens the injury.—D. Bodoni, Montana.

ELECTRIC FLY KILLERS POPULAR

Dairymen and others report excellent results in the destruction of flies by the use of electric devices, which consist of heavily charged wire mesh frames treated with bait to attract the insects.

COW TESTING IDEA SPREADS

For the past four years farmers have entered each year an average of 209,000 cows in cow-testing associations organized with the assistance of county agricultural extension agents.

ENORMOUS BUTTER EXPORTS

California exported one million pounds of butter from the harbor of San Francisco during the first five and a half months of 1923.

GREATER CHEESE CONSUMPTION

Doctor Mendel, famous food expert of Yale University, says: "Within the next few years the consumption of cheese will jump 100 per cent.

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES
CONTRIBUTING EDITOR.

CHAMBERS BOOST AGRICULTURE

Dr. George P. Clements, in charge of the Agricultural Department of the Los Angeles Chamber of Commerce, tells me that of the 4000 to 5000 farmer settlers who interview his department each year, about 90 per cent of them settle north of the Tehachapi Pass.

This is a fine tribute to the breadth of vision of the Los Angeles Chamber's agricultural department. Two families, said Doctor Clements, had been aiding in finding farm homes in Humboldt County. Of course, most of California's practical farming land is in the great valley north of the line which some people say separates Northern and Southern California.

More of our California chambers of commerce would be better off with agricultural departments. It would keep them in closer touch with the basic industry of California, upon which every city depends for its trade.

The Sacramento Chamber of Commerce has a live agricultural department under the able direction of F. L. Richards. This bureau works in close cooperation with the Farm Advisor and other agricultural agencies.

FROM SACRAMENTO TO FRISCO.

The big fruit companies have picked up their luggage and moved from Sacramento to San Francisco. The latest exodus from the Capital City included the California Fruit Distributors, Earl Fruit Company and Producers' Fruit Company. The Pioneer left several months ago, having followed Charles E. Virden of the Virden Packing Company, who removed his headquarters to the Bay City.

There doesn't seem to have been much stir about it, but the fruit companies represent quite a loss to the business life of Sacramento. The fruit group now is housed in the Wells Fargo Building in San Francisco. The fact that San Francisco is the financial center of the State is given as the reason for the move. The California Fruit Exchange and the California Orchards Company, central organization for several Placer County fruit concerns, are still in Sacramento.

In this connection, it will be recalled that the California Almond Growers' Exchange started in Sacramento and moved to San Francisco, where it is now established. Of course, I don't know that Sacramento could have retained the fruit companies, even if she had tried hard, but there certainly was not much noise made at their departure. I can fancy a much greater howl being raised in Fresno if the raisin association were to move. The raisin people have learned how to make a noise.

"A COW ON EVERY FARM"

The fruit county of Placer has started a "Cow on Every Farm" campaign. A similar campaign is under way in Santa Cruz County. Both of these campaigns are a result of a Farm Bureau inspiration.

It is a paradoxical fact that in America there is a greater percentage of malnutrition among country children than among children of the cities. This is due to the fact that country children do not get enough milk.

The dairy industry's efficient system of distribution is equipped to take care of the cities, but in specialized farming districts the family cow, like the kitchen garden, has gone out of fashion. Such is the case in Placer and Santa Cruz Counties.

The California Dairy Council recently received a letter from a school teacher in Meadow Valley, Plumas County, to the effect that she could not get milk for the children there. "Meadow Valley"—doesn't that strongly suggest dairy cows, knee deep in grass? Yet the school children there cannot get enough milk.

May we suggest that campaigns for "A Dairy Cow on Every Farm" well may be instituted in many California counties—for the sake of the children.

PEANUTS OUTVALUE ORANGES.

We Californians are a little inclined, particularly when talking to an Easterner, to emphasize our spectacular crops and forget the less pompous staples. The unique is given special attention, while staple industries plod on and keep our rural and community economic life on a solid foundation.

The dairy cow, for instance, produces more wealth in a year in California than do all the orange trees and the raisin grape vines combined. Yet we take the cow for granted and are forever talking about the oranges and raisins.

J. A. Teagarden of Auburn, a director of the California Farm Bureau Federation, told me of an amusing experience which certain California orange growers had at Washington. They were there to seek tariff protection for their fruit. A meek Southern gentleman elbowed in and asked for tariff protection for peanuts.

The orange growers gave him the frozen stare and pointedly remarked that the orange industry was one of great financial importance. The meek Southern man responded that the peanut crop had sold for more than the orange crop that year. Teagarden says that an investigation proved the Southerner's statement was correct.

Why Cry Over Non-Bearing Walnuts?

Other Varieties May Thrive Where Standard Crop Cannot Be Grown Successfully.

By C. C. STAUNTON

Agricultural Extension Service, University of California

A 53-YEAR-OLD black walnut tree, the foliage of which spreads more than 80 feet in diameter, and which yielded nearly a ton of nuts one year, is one of the many interesting horticultural sights of the historically famous Camulos Ranch in Ventura County.

The owners have found, however, they cannot compete commercially with other sections in growing soft-shelled walnuts. Yet this is not regarded as a serious handicap, in view of the success attained with other nuts.

The family orchard, perhaps, is of most interest to the visitor. Here will be found, in pairs, nearly all the common fruits and many rare trees. There are apples, peaches, pears, plums, feijoa, guava, butternut, persimmon, Italian chestnut, pecan, filbert and pistachio. The latter never has fruited, probably on account of the trees being of one sex, either pistillate or staminate, but the Division of Plant Introduction of the Department of Agriculture, forwarded grafts of each, which have been set in these trees in the hope that they will fruit through cross-pollination.

ARE HEAVY PRODUCERS

The chestnut, pecan and filbert, however, are heavy producers at the present time; the chestnut particularly is said to have yielded immense quantities of fine nuts. This season's crop gives promise of being heavy also, as they were full of catkins and the bees were working industriously.

The pecan trees are beautiful in foliage and symmetry and bear much more fruit than any of the other few found in various places in the county. As a yard tree, even if it did not bear, the pecan is worthy of more attention than has been given it. If it does bear, then we have added to our variety of food.

The butternut trees also are beautiful and heavily set with this most delicious nut, which is far richer than the English walnut and has more graceful foliage and general form. To those from the East it brings back pleasant memories of brilliant autumn foliage, snappy mornings and "nuttin' time."

The filbert—or hazel nut, if you prefer—also issho wing that it is adapted to that locality, as the crops are prolific and the nuts most excellent in size and flavor.

These experiments in nut growing are of value in that they demonstrate what might be grown where conditions do not seem to justify the production of walnuts. All these nuts are worthy of study, and perhaps we may find that a some one of them than we might expect some of them than we might expect from our present crops.

SIGNIFICANT POPULATION GAIN

The five leading dairy counties of California increased in population 94 per cent from 1910 to 1920. The average for the State was 44.1 per cent.

Bee Notes

By J. D. BIXBY SR.
Contributing Editor

THE orange blossom honey crop of Southern California is practically a failure, but in the great central valleys it has been better than the average.

J. D. BIXBY SR.

San Diego County beekeepers have taken no surplus at all and fear they may have to feed for winter.

Reports of apiaries raided and bees stolen have come from two Southern counties. These recur every season about the time of moving to the sage and alfalfa sections.

The orange honey crop of Los Angeles and Orange Counties has been bought up largely by Los Angeles honey packers for local use.

European foulbrood often is called "melting brood" in Canada, and is treated with two sprayings of sodium chloride. California apiarists will find it cheaper to save their combs, and buy bees by the pound to cover them in the spring.

Only the word "honey" can be used in France to describe the natural product of the bee; even "fancy honey" or any similar designation is forbidden by law, and vendors of any adulterated product are prosecuted.

WORKING AGE OF YOUNG BEES.

We are taught usually that bees do not go to the field to work until after 14 days old. Here is a record of a recent experiment: June 15 a queen was placed on three combs of emerging brood, separated from the rest of the colony by wire screen; all bees first were brushed from these combs. June 21 these three combs (now well covered with bees) were removed from the hive and placed upon a stand as an independent nucleus. June 22 young bees were observed flying freely and carrying in pollen. It would appear that when forced by the absence of more mature bees, those that are only six or seven days old are capable of foraging. These young bees, though at first soft and gray, soon become mature in appearance.

BEES HAVE "SCHOOL SYSTEM."

The bee colony is the most perfect example of communal work of which we have knowledge—with the possible exception of the ant. Each bee's work seems to be regularly assigned and she graduates from each inferior class to a higher until the highest service, that of the gathering of nectar from the field, is attained. It is my own observation that the gathering of water is the first outside service performed by the worker bees. They will appear at the watering places even before it is fully light, and these are always young bees. I am inclined to think, also, that the last and highest service performed for the colony is the gathering of pollen, for the majority of the bees found dead about the hives or yard in bad weather have loads of pollen on their legs and are unmistakably old and worn.

HONEY FROM BEANS.

Lima beans, both the seaside (large limas) and the bush or "baby" limas, yield considerable honey for the bees, especially when irrigated. This honey is of fine light amber color and mild, agreeable flavor. It comes in very slowly, however, and the bees may not store any in the supers.

In this case if you want some bean honey for family use, remove the supers and take out one comb from the brood-nest, replacing it with an empty. Place this empty comb next to the brood on one side. The queen will not lay in it at this time of year and the bees will fill it promptly with new honey. Remove and extract this comb in four or five days, and return it, repeating the process as often as the comb is filled.

AMBER HONEY IN DEMAND

White honey seems to be only moderately in demand in the markets, at fair prices, while amber is active at about the same prices paid last year, which are too low, compared to the cost of labor and containers.—J. D. BIXBY SENIOR.

Hill Top Almond Production

(Continued from Page 2)

to succeed with this tree. It won't stand spring frosts during the blooming period, yet seems to require for best results a period cold enough to make it absolutely dormant. There are only a few districts in California really adapted to the almond, and even in these districts local conditions may spell failure or success."

"To what do you attribute the many failures with almonds and what is the best advice you can offer other growers, particularly beginners," Mr. Talbot was asked.

"First," he replied, "get the right location. This is of primary importance. Hold down production and maintenance expense to the minimum and don't burden the orchard with an impossible overhead due to inflated land values.

"Spray regularly and thoroughly when necessary, for red spider and brown mite. These pests thrive during the hot weather. I believe we have been particularly free from infestation because of the ocean influence. Our occasional fogs, drenching the trees during the warm months, may explain our good fortune in this respect. But spraying, when needed, should be regarded as insurance rather than expense.

"Cultivate thoroughly so as to keep out weeds and conserve moisture. This is particularly important, of course, in a non-irrigated section such as ours.

"Don't expect to apply general rules to all situations. Every orchardist must study his own location and know his own trees. This, I believe, applies to other fruits as well.

"Get behind the Almond Exchange and boost for co-operative marketing. Strive for better quality and more tonnage per acre."

The almond bears a commercial crop at five to seven years and seldom is a profitable producer at four, although certain promoters have advertised alluring problematical returns for four-year-old trees. Under proper conditions, the trees are in full bearing at from 10 to 12 years. A mature orchard in good condition, if well cared for, should produce an average of 1200 pounds an acre. Some trees of course will yield more, but the enormous returns predicted by enterprising real estate agents have not always materialized. Prices have averaged about 18 cents a pound for I. X. L.'s. Drakes usually bring the lowest prices.

PLENTY OF DIFFICULTIES

Almond growing, according to Talbot, is far from being a bed of roses. There are good years and bad, both as to market prices and yields. "We have an advantage," he says, "in that our cultural expense is small when returns are less, and that our crop is not perishable. In some lines of fruit production there is even more risk and the expense goes on just the same, no matter what else happens. We cannot be sure of a heavy crop every year and the orchardist who is in a frosty locality is apt to lose heavily."

Thinning of the fruit is not generally practiced. The almond tree seems to shed naturally down to the maximum number of nuts that can be matured. The crop is harvested by knocking the nuts from the trees with poles onto sheets, which are gathered up and emptied into sacks.

The almond harvest is becoming increasingly important in the Paso Robles district. When Mr. Talbot pioneered in the timbered hills there were perhaps less than ten acres of nuts in that locality. Now the San Luis Obispo County acreage is estimated variously at from 12,000 to 15,000, most of which is coming into production rapidly. Mature orchards are valued at $500 per acre or more.

ALMOND EXCHANGE THRIVING

As a member of the Governing Board of the Almond Growers' Exchange, Mr. Talbot takes an active part in solving marketing and production problems of all the members. The exchange now is practically out of debt, having anticipated the conditions which almost wrecked other marketing organizations. It was only after a very trying period, however, that the present membership of 3200, representing about 80 per cent of the crop, was signed up and held intact. "The old crop now is practically cleaned up," said Mr. Talbot, "the exchange is in fine shape, and we anticipate a most successful year."

Many residents of the Paso Robles district regard it as unfortunate that almond growing has been stressed so highly when it is apparent other fruits will do equally as well without irrigation. In fact, a campaign now is in progress to encourage diversification and to enlighten growers as to the possibilities for general fruit growing. Mr. Talbot has thirty acres of pears and fifteen acres of Tragedy prunes. He has produced excellent walnuts, as well as cherries, peaches and apricots.

With his partners, Babson Brothers of Chicago, he also controls some 800 acres adjoining the almond ranches, but not in fruit, and another ranch of 800 acres near San Miguel. It is planned to set out a variety of fruits upon part of the unimproved land. Other farmers in the district are diversifying also. The advantages of low-priced land that will produce most of the standard deciduous fruits without irrigation are beginning to be appreciated. And while not all lands in the district are desirable for this purpose, it is said hundreds of acres are available at very low prices compared with many other parts of the State.

"After all," says Talbot, "success or failure seems to hinge upon choice of location. Probably there are many other equally suitable districts for almonds. The point is, however, no one should invest in land without careful study."

And that, in a nutshell, appears to be the secret of the big achievements of G. N. Talbot.

The ORCHARD and FARM cameraman stood upon one of the highest hills and secured this typical view of the Talbot almond orchards near Paso Robles.

Farm Bloc Program

"CONGRESS must finish the constructive program it has so well started in the farmer's behalf," declares Senator Arthur Capper, leader of the "Farm Bloc."

"It must put through the complete rural credit plan to provide farmers and stockmen with an adequate financial system.

"It must increase the loan limit.

"It must reduce freight charges.

"It must repeal Section 15-A and other objectionable provisions of the Cummins-Esch Transportation Act.

"It must carry out the policy for a better system of marketing.

"It must put the development of the Muscle Shoals project in the hands of Henry Ford.

"It must pass the Truth-in-Fabric bill.

"It must pass the Voigt Filled-Milk bill.

"It must pass a constitutional amendment prohibiting tax-exempt securities.

"It must bring about still further reductions in tax burdens and still further economies in the administration of government.

"It must make undisturbed surpluses and stock dividends pay their share toward the maintenance of government.

"It must do whatever this Nation can do to promote European recovery and the restoration of a foreign market for the surplus products of our farms and factories.

"I don't think we shall get anywhere in our effort to restore confidence in government by piling more than $50,000,000 a year on the public's back in the form of a ship subsidy, in addition to its present burden."

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Agricultural Leaders of the Pacific West

X—CORNELE G. ROSS

President, Poultry Producers of Southern California

CORNELE G. ROSS, president of the Poultry Producers of Southern California and for five years chairman of the executive committee, has been one of the hardest and most efficient workers for the success of this important co-operative associations, which has been the means of placing upon a profitable foundation the egg-producing business of Southern California.

CORNELE G. ROSS

Thirteen years ago Mr. Ross came here from Vermont, where he had lost his health working as a mechanical engineer. He bought a farm near Pomona and went into the chicken business, in which he has been so successful that he now can afford to employ others to do the physical labor.

Mr. Ross and other poultry producers are congratulating themselves upon the recent completion of their new debt-free concrete warehouse and packing house, said to be the world's finest exclusive egg "plant." It is located on Mill and Industrial streets, Los Angeles, adjoining the home of the California Walnut Growers' Association. The building is 100 by 150 feet, two stories high and has a refrigerator plant and cooler room of 1000 cases capacity.

Money Back Offer

To advertise our paints we are making a *special one-cent offer* this week on our leader—OLD IRONSIDE—a heavy lead, zinc and linseed oil paint, with drier and filler, for only $2.85 a gallon. For each gallon you order at this special low price we will furnish you with another gallon *for only one cent*. Pay only $2.85 for the first gallon, one cent for the next, etc. You save $2.84 on every other gallon you order and, remember, your money back if not satisfied. We give a written guarantee for five years with every order.

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Berry Plants Prove Profitable

Clean, Standard Stock Makes Money for Producer and Planter—A Former Jeweler's Enterprise

FROM jeweler to plant grower is quite a jump, but W. P. De Arman negotiated the distance successfully, landing upon a four-acre tract near Baldwin Park, Los Angeles County. He first grew some plants for a nurseryman, but upon learning the difference between wholesale and retail prices of nursery stock, decided he might as well have all the profits.

Since then—four years ago— De Arman has supplied the retail trade exclusively. He is only now getting his business built up to a point where he can make some real money, yet last year banked $1000, which is more than many city workers did.

Cuthbert raspberries—"cosberries," the Japs call them—are the principal kind of plants grown. The soil—sandy loam over a gravelly subsoil—seems well suited to this particular fruit.

In the home garden, red raspberries sprout so badly they are considered something of a pest, but De Arman turns this tendency to profitable account. The more the bushes sprout, the better it pleases him. The number of plants which an acre of red raspberries will produce is prodigious.

PLANTS ARE HEADED BACK

If allowed to grow the entire season, raspberry plants will become so tall—often waist high—that purchasers are apt to think they are getting two-year-old plants. For this reason, and also to promote root development, the canes are clipped back to about a foot high in midsummer.

"It is hard to keep a plant patch from looking like a howling wilderness during the growing season," declared De Arman, "because cultivation destroys the plants. We must, therefore, be content with pulling out the biggest weeds and wait for the plant digging season for a general clean-up."

King of the Cliff, a superior blackcap raspberry, is also produced. "Blackcaps make plants in an altogether different manner from the red varieties," De Arman explained. "The latter send up sprouts from the roots, while the vines of the former take root at the tip, forming what are called 'tip' plants.

"Vines are ready for 'tipping' when some of them begin to take root. They are put down with a dibble and then covered with a little dirt by plowing a shallow furrow alongside."

The Cory thornless blackberry is highly esteemed for home use, being a prolific producer of large, fine berries, but is considered too soft for shipping. As for the Burbank thornless blackberry, De Arman is non-committal. The Himalaya blackberry is a very vigorous grower and bears much fruit and many thorns, but is hard to get rid of.

The soil is not considered well suited to strawberries, which require a great deal of water. Heavier ground, with clay subsoil, is better adapted to this particular fruit, he says.

"Tastes vary in strawberries, the same as in houses and dresses," the Baldwin Park plant specialist pointed out. "Just now the public seems to want Carolinas more than anything else. This is a very prolific variety, bearing a fair crop the first year. The berries are large and pointed and not as sour as the Klondyke."

De Arman doesn't think much of the Everbearing strawberry, because of its small size. The Marshall bears two or more crops the same year and is a large, fine berry, not sour.

A few strawberries were being sold at $3.50 per case of 30 pint cups. The plants bring $5 per thousand and pay better than fruit. Raspberry plants sell for $20 a thousand and grape cuttings bring $5 to $6. Fifty thousand of the latter were sold last year. One man bought 10,000 raspberry plants.

The Concord, popular slip-skin Eastern variety, is the only kind of grape grown. The bunches are small, but the berries are large and thick on the vines. The fruit brings 7 to 12 cents a pound, a very profitable price. Concord grape vines require much water, which attracts gophers, as the latter like to dig in moist soil. An old cat is considered the best gopher trap, but is apt to catch young chickens as well as rodents.

Arrow shows sprout of new plant.

"Japs sell grape cuttings at $2 a thousand, but I have no trouble in getting two and three times that price, because I furnish superior stock," explained De Arman. "Instead of chopping off the vines with a machine, I cut each piece just below the bud, making the cuttings 12 to 14 inches long. Sometimes the cuttings are placed in the ground upside down to callus, which makes them grow quicker when planted."

ALL PLANTS ARE INSPECTED

All plants must be officially inspected before sold. Nematode and white scale are about the only pests found, so far. The latter is controlled by dipping the plants in a resin wash. A quantity of plants purchased of another grower were found infected with nematode. The first batch delivered, $25 worth, was burned and the remainder refused.

A lath house is being planned to provide storage for plants awaiting delivery, which will expedite the handling of large orders. In addition to the home place, De Arman rents land for plant growing at $30 to $50 an acre and contracts large quantities of plants from other growers." O. H. BARNHILL.

Future of Bulb Growing in California

(Continued From Page 3)

double. David Griffith has this to say upon the subject:

"We are consuming in this country at the present time eighty million of narcissi. When the quarantine goes into effect in 1927 prices are liable to skyrocket and destroy a very large percentage of our market. Before the embargo on iris bulbs went into effect we were consuming eight millions or more of these bulbs. Today one-half million gluts the market, because the price is so high that the demand is reduced."

The big daffodil fly is another problem which must be faced. I believe vacuum fumigation presents the most practical way of controlling this destructive pest. The difficulty in the past has been to find a killing agent which could penetrate into the bulb with enough strength to kill the larvae and at the same time not injure the bulb. One method used successfully up to the present time has been that of heating the bulbs in water for several hours at 110 degrees. This entails expensive equipment and a great deal of work.

Narcissi can be grown in other parts of the United States, this having been accomplished successfully in Washington, Oregon, Florida and Tennessee.

The demand for freesias is said to be increasing at the rate of 20 per cent each year. It multiplies very rapidly, is a winter growing crop and does well under a great variety of conditions. The ideal planting stock to use is the ⅜-inch size, from which a large amount of salable bulbs are obtained the first season.

Growers estimate it takes from a million to a million and a half freesia bulbs to plant an acre. The price will range from $1 to $3 per thousand, making the cost of planting stock from $1000 to $3000 per acre. Some growers feel they are doing well if they get their seed back the first year, with enough to plant an additional acre. Other growers put the net profit on an acre of freesias after the first year at $700. Although many growers have made a success of freesia bulb growing, many have failed completely. It is one of the simplest bulb crops to grow; yet experience, good methods and intelligence are necessary for success.

The growing of white calla lilies has a promising future. One grower, Miss Fritz, after ten years of experience and study in cropping two acres of callas, has demonstrated that she personally can take a $2500-per-acre crop from her land.

Instead of allowing the callas to remain dormant during the second summer, this grower keeps watering and cultivating them and gets a crop every two years instead of every third year. She advises beginners in the business to start with "finger size" bulblets, which sell for about $2.50 per thousand.

Make the rows 18 inches apart and set seven bulbs to the foot. This will require 203,000 bulbs, which will cost about $500. In two years, with good care, a yield should be obtained of 100,000 salable bulbs. Twenty-five thousand should be 1¼-inch size, worth $35 per thousand; 50,000 1½-inch bulbs, valued at $45, and 25,000 2 inches and larger, worth $75. This indicates a possible income of $5000.

R. Kent Beattie, prominent floriculturist, has this to say about the bulb business:

"I have no doubt that California will become one of the leading bulb growing States in the Union. Californians already have learned the business of growing specialized crops. Therefore, growers will not find it difficult to adapt themselves to bulb production.

"It is not probable that all the bulbs planted in America will be grown in California. Western Washington and Oregon are well suited to the industry. Bulbous irises seem to be doing well in Southwestern Tennessee and apparently successful methods of growing irises, partly under glass and partly out of doors, are being developed around New York, Philadelphia and Chicago."

Mohair and Chevon

MOHAIR from the younger goats is the finest and most valuable. As compared with wool, the shrinkage in mohair is far less. Wool scours away from 45 to 55 per cent. Mohair seldom loses over 10 per cent in washing. The hair is marketable at once after shearing, prices this year ranging from 50 cents to $1 a pound for the different grades.

Mohair goats came originally from Turkey and Asia. South Africa and the United States are the only other sources of supply. There is a big field for the Angora, and it is not surprising that increasing numbers of practical farmers are engaging in goat growing.

The list of articles made from mohair is almost endless. Wigs and toupees, doll hair, false fronts and transformations for women, rugs, robes, imitation furs and palm beach suits are made of this material. An attempt has been made to manufacture heavy mohair cloth for men's clothing. It is so durable, however, that a suit of it would outlast other goods two to one, and the material is limited.

"CHEVON" EXCELLENT MEAT

"Chevon" is the new name for goat meat, which makes fine eating. The flesh of the bucks is not used, however. The does and kids have excellent meat. Kid meat is called "cabretta" and brings a good price.

Angoras accommodate themselves to almost any climate. Several herds in Alaska are giving good results. Texas has a million and a half on her range and in most of the States there are flocks of these useful animals. Deserted farms in New England are being restored by them.

This little fleece-bearer is worthy of attention. But they need care and supervision. It has been said that "goats will take care of themselves." This mistaken idea has cost many a Pacific Coast man his entire investment. Angoras will live, perhaps, without care, but they will not thrive unless tended. They require as much attention as sheep or any other farm animal. If they receive care, they produce well. If not, they are like a "boarder" cow better out of the way.

A Question Answered

GRASSHOPPERS EATING TREES. Is there any way to prevent grasshoppers from eating the leaves of trees and vines? JULIUS FRANKENHOFF.

There is no tree spray for grasshoppers that is altogether satisfactory. Sometimes it is quite effective to spray with arsenate of lead, using three pounds of the paste or one and one-half pounds of the powder to 50 gallons of water. This will poison the hoppers, provided that they eat enough of it with the foliage they are consuming. Bordeaux mixture (copper sulphate and lime) has been used as a repellant with fairly good success in some cases.

The best method for controlling grasshoppers is poisoning them with the following mixture: White arsenic or Paris green, 2½ pounds; bran, 50 pounds; lemons chopped fine, ½ dozen; molasses, 4 qts.; water, 5 gallons.

The bran should be mixed dry with the poison and the solution of lemons, molasses and water made separately. The two are then stirred together, just prior to using. The bran should be scattered lightly over the surface of the soil in places infested with grasshoppers.—G. P. WELDON.

IMPORT NEW ZEALAND BUTTER

A New York chain store company is shipping in $2,000,000 worth of butter from New Zealand in one order.

Growing the Blueberry, Queen of Small Fruits

By O. H. BARNHILL

LIKE many other gifts of Nature which were once considered worthless but now are held in high esteem, the blueberry until quite recently was believed to be of little commercial value. One fine day, however, the owners of some rocky, abandoned Maine farms which had been overrun with wild blueberries awoke and found themselves in possession of veritable gold mines.

Such lands since have sold for fabulous prices. Canners have paid as high as $6 a bushel for blueberries, which have been known to yield 150 bushels an acre. Commercial plantings have yielded at the rate of 117 bushels per acre and the fruit sold for $11 a bushel —$1280 per acre. This was from eight-year-old vines. Wild bushes have been known to live to the age of 100 years.

From the foregoing it will be seen that the blueberry offers great possible profits. It is, however, the most difficult berry to grow, being most exacting in its requirements, which are very different from those of most fruits. Blueberries will not succeed unless all conditions are favorable.

PACIFIC COAST BLUEBERRIES

The writer has talked with people who claim to have seen blueberries growing wild on the Pacific Coast—and wild pigeons also, by the way. The former were probably as unreal as the latter, although closely resembling the genuine.

Mrs. George Melvin of Seward, Alaska, writes, however, that blueberries grow wild all along the Tanana River and that the Indians gather them by the boatload. She states that she has seen them growing so thick that the berries covered the ground like a blue carpet; also that she has picked as many as three bushels in a single afternoon.

H. W. Gartley of Wrangell, Alaska, says two kinds of blueberries grow in Alaska. Both sorts are described as of blue-black color, growing on bushes as high as a man's shoulders. Mrs. Melvin says the vines are trailing in form and the berries bright blue.

C. L. Snyder also writes of gathering blueberries in Alaska and enthuses over their wonderful flavor, claiming it is equal to that of the Eastern blueberry, which he used to enjoy in his boyhood days.

BOTANIST IDENTIFIES BERRIES

The identification of the berries mentioned by these correspondents was taken up with Frederick V. Coville, botanist of the U. S. Department of Agriculture, who reports as follows:

"The blueberries found in southeastern Alaska by C. L. Snyder and others belong to the same species as those which grow along the Oregon and Washington Coasts. The tall species of the so-called huckleberry of the northwest coast is Vaccinium ovalifolium and bears blue fruit; V. Parvifolium, a bright red berry; V. Membranaceum, a dark, purple berry.

"Neither of these is a true huckleberry nor a true blueberry, but both are close relatives of the whortleberry of northern and western Europe. They should, therefore, be called whortleberries. The high-bush blueberry is V. Corybusum; the low bush V. Angustifolium."

SOME EXPERIMENTS

While in Clatsop County, Oregon, two years ago the writer talked with J. S. Dellinger of Astoria, who had experimented with blueberries on a small scale. Twenty-five plants were set out in 1915 and the number increased until there were eighty, six years later. The bushes were obtained from Professor Colville at Washington, D. C. A small quantity of excellent fruit had been harvested, but the vines seemed susceptible to frost injury. It is believed in warmer districts of the Pacific Coast the berries would thrive.

Blueberry branch in full bloom. This valuable berry often is confused with the huckleberry, which it resembles.

$1000 Per Acre

THE many difficult problems connected with the propagation and culture of blueberries at last have been solved, and this delicious fruit which commands a higher price than any other berry now may be grown commercially.

Before going farther let us distinguish clearly between the huckleberry and blueberry. The former belongs to the genus Gaylussacias, while the latter is of the Vaccinium family. A huckleberry has ten large seeds, which crackle when crushed between the teeth, while blueberry seeds are so small as to be scarcely noticeable when eaten.

Blueberries are larger than huckleberries; remain plump several days after picking; have a dense, light-blue bloom; no superficial moisture, and possess a sweet, delicious flavor. These numerous good qualities explain why this fruit commands such high prices, higher than those paid for any other berry.

One of the peculiarities of the blueberry is that it will wither and die in rich, sweet soil—the kind in which other berries thrive. Blueberries must have sour soil; the more acid the soil contains the better the blueberries grow. This is really one of the blueberry's good points—the ability to utilize soil which is too acid for other crops.

Another unusual thing about the blueberry is that it gets its necessary nitrogen by means of a fungus growth on its roots, the mycorhizas fungus. Like cranberries and unlike legumes, blueberries obtain nitrogenous food from non-nitrified organic matter.

PLANTS HYBRID SEEDLINGS

A century of study and experimentation was required to place cranberry culture on a profitable commercial basis. The problems connected with the propagation and culture of blueberries have been found similarly difficult, but have been solved successfully.

Credit for this important work is due chiefly to Professor Colville and Miss Elizabeth C. White of New Lisbon, N. J. The latter co-operated with the Department of Agriculture in the planting of 27,000 hybrid seedling blueberries on 16 acres. A few of the best sorts were selected and given to nurserymen for propagation and sale, but the demand for plants for exceeds the supply. Unscrupulous dealers are said to be selling inferior wild blueberries for grafted hybrids of high quality.

Blueberries thrive in much the same soil and locations as are suited to cranberries. The latter are grown extensively near the mouth of the Columbia River, and it is believed both cranberries and blueberries successfully could be cultivated in other places along the Pacific Coast where soil, sand and water conditions were similar.

Before engaging in blueberry culture readers are advised to send 30 cents for a copy of a bulletin upon the subject to the U. S. Department of Agriculture, Washington, D. C.

Typical blueberry bush of an improved variety, obtained by selecting superior wild specimens.

Cultivating a planting of blueberries, which resemble cranberries in their requirements.

This bunch of blueberries helps explain the heavy yields secured.

Water for Apple Valley

CHEAP water has resulted in the planting of 10,000 acres to apples, pears, alfalfa and other profitable crops in Apple Valley (San Bernardino County). There are three benches in this district. One and one-half acre feet of water can be pumped 180 feet to the highest bench at a cost of $12 per acre per year. The average annual rainfall is six inches.

Water is lifted 60 feet to the second bench and 20 feet to the lower bench, at a much lower cost than the price mentioned for deep-well pumping. One ranch on the upper bench has a 10-acre orchard planted to alfalfa, which yields six one-ton cuttings, worth $1200, per year. The trees make a vigorous growth and need no cultivation.

Five hundred acres has been planted to pears, which buyers claim can be grown here of better quality than anywhere else in the State, with a single exception.

Apple Valley is one of the few places in the Pacific West where Concord grapes, which sell for $200 a ton, can be grown successfully. Peaches raised here brought $70 a ton last season.

Because of the dryness of the atmosphere and the abundance of insect food, this section is adapted admirably to turkey growing, which is becoming an important industry here. One farm is growing pheasants successfully.—FRANK DARROW.

BEHOLD OUR HOMES!

This neat little walnut farm home of H. W. Bender is located near Puente, in one of the best nut districts of the State.

J. D. Bixby, Sr., the bee editor of Orchard and Farm, here shown in front of his attractive residence near Covina.

This new stucco, tile-roofed home of W. J. Ferrell, near El Monte, indicates that California farm builders are up-to-date.

Palms lend a tropic air to the beautiful country residence Jordan, near Whittier, in the orange district.

This photograph of Emil Handel's house, near Glendora, with shrubs and flowers, was made in midwinter.

Temporary dwelling, Delki State Land Colony. A type which is often replaced by a home as fine as any of the others shown on this page.

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

AUGUST 5, 1923

Pullet Production Yielding Princely Profits

"We would not trade the profits and pleasures of poultry farming for anything the city has to offer us," assert Mr. and Mrs. Freeman. They are very fond of dogs, these big fellows acting as guardians of the car, the home and the pullets.

A Novel Poultry Enterprise

BECAUSE he deliberately chose the most difficult and confining branch of poultry raising as his specialty and concentrated all his energy and ability upon its successful management, W. S. Freeman of Hayward (Alameda County), Cal., today owns the largest and most successful pullet specialty farm in America.

The entire plant, valued at more than $30,000, has been equipped and paid for since 1918 out of the profits of the enterprise, and yields a net annual income estimated at more than $15,000.

Mr. and Mrs. Freeman work tremendously hard at the business during nine months of the year, but usually all stock is disposed of by June 1, leaving them free to take a vacation during the summer months. Read their interesting story. —*The Editor*

IMAGINE a great, smoothly-working "machine," into the receiving end of which pour thousands of baby chicks, and which delivers at the other end more than 90 per cent of them as pullets and cockerels. That is the Freeman poultry ranch, on Castro Valley highway near Hayward, Cal.

However, there is nothing really mechanical about the plant except the precision with which it operates. For raising baby chicks is one of the most difficult branches of the poultry business and requires the utmost in personal attention.

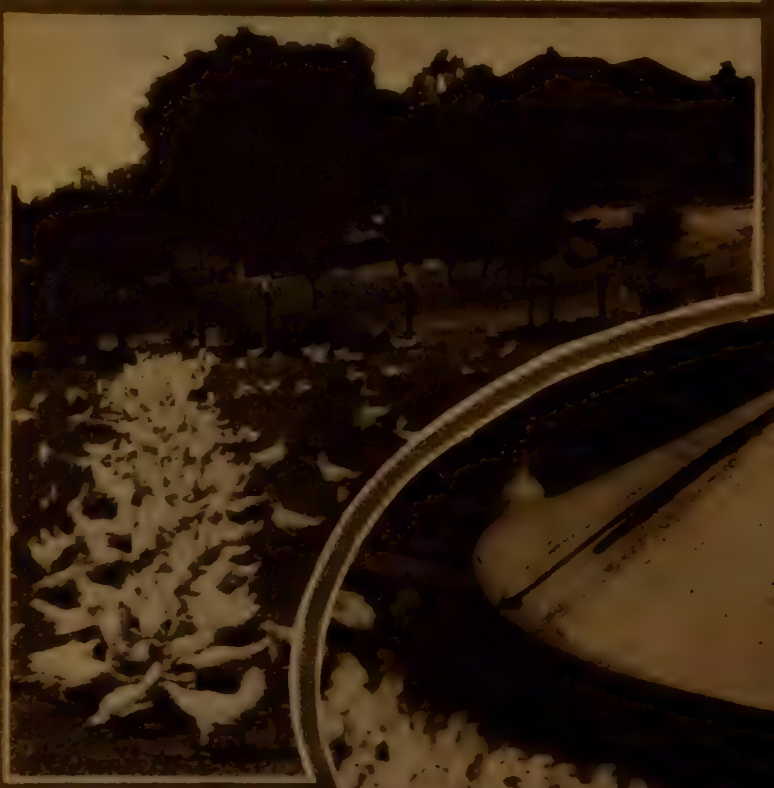
It is this skillful personal touch, in fact, which has made it possible for Mr. and Mrs. Freeman to score their wonderful success. Frequently both are at work before 5 o'clock in the morning for days at a time, and often it is nearly midnight before the last electric light is extinguished and the "babies" are left in their brooders.

But they are compensated in two ways for the strain of carrying on their interesting business: by the attractive profits, and by the fact that the ranch is cleared of stock during the summer, giving them an opportunity to recuperate.

"Our entry into the pullet business was purely accidental," smiled Freeman in answer to our inquiry. "We rented this place originally, and as an experiment fitted up an old horse-stall in the barn with a coal-burning brooder stove. Here we raised 500 day-old chicks, and having no accommodations for them, were forced to sell when they were about eight weeks old.

BUSINESS BUILT ON PROFITS

"The profits on this transaction and the facility with which we disposed of the stock, led us to build a brooder house and with the income from each succeeding lot of chicks, we expanded our equipment *(Continued on Page 9)*



An unusual photograph of young chickens lined up along the mash trays. The fine Freeman home is seen in the background.

The brooding equipment has been built up gradually out of the profits of the business. Heat is maintained by means of coal stoves during the entire eight-weeks' period before the birds are sold. The "cool rooms" are seen connecting the brooder houses in units of three.

This is "White Prince," head of Mr. Freeman's small breeding flock. Daughters of this fine male are making a splendid showing at the Santa Cruz laying contest. Mr. Freeman believes heavy egg production and show type may be combined successfully.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
AUGUST 5, 1923

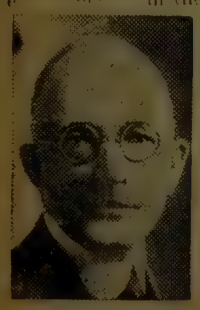
Hats Off to the Efficient Association Cow Tester

His Opportunity for Service—Why Every Dairyman Should Co-operate With Him—Big Things Achieved in California

By GORDON H. TRUE
Professor of Animal Husbandtry, University Farm, Davis

[Editor's Note—What California stockman or dairyman does not know, respect and admire Professor True? It would be difficult to estimate his share in the wonderful development of the livestock industry of the State. Unconsciously he has incorporated in this important article about cow-testers, his own ideals of service. No farmer can read it without strengthening his resolve to strive for better things. The article was prepared especially for this publication.]

THE writer had the privilege recently of sitting in at a conference of the men who have the responsibility for testing the dairy cows in the testing associations of a certain district in the State. The apparent high character and efficiency of these men was the first striking thing about their meeting. Their earnestness and interest in the discussion of their problems, was in keeping with the character of the men and their job.


PROFESSOR TRUE

The co-operative cow testing associations furnish one of the best possible illustrations of co-operation in education—education for efficiency in one very definite and perhaps narrow line of work to be sure, but a line of work upon which the co-operating farmers depend for an income that makes possible comfortable living and a broader general education and better future for the family.

Ever since the development of the Babcock method of determining the amount of butter fat in milk, only some 30 odd years ago, it has been recognized good practice for dairymen to test the individual cows of their herds and to build up their herds on the basis of the resulting knowledge of the production of each cow. The dairyman is a busy man, however, and has been slow in adding to the already crowded routine of the day's work this most important detail of weighing and testing milk. In most cases, too, he is not familiar with the details of the operation of testing and has not seen his way clear to taking the time off to learn the operation of the test.

SPECIALIST MEETS NEED

So there has been developed the co-operative testing association, in which one qualified man devotes his entire time to going from herd to herd and weighing and testing the milk of all the cows in each herd of the association on a given day of each month. It has been found through careful comparison of data by the experiment stations that the monthly test gives sufficiently accurate information on each cow's efficiency for the practical use of the dairyman in culling out and making new selections for his herd.

The knowledge gained by the herd owners is of such great value and importance to them that it goes without saying the tester must be undeniably competent in his work. His weights and tests, his computations and compilations must be correct. In this part of the tester's work there are mechanical devices that aid materially in accuracy. But the tester, if he be a young man of vision and interested not only in cows, but in the owners who make up his association, is not satisfied with letting his work end with preparation of a perfect report of testing operations accurately performed. Beyond that he will want to present to the public the results of his work in such a way as to stimulate a healthy rivalry amongst his men, to maintain their interest and be a means of education for other dairymen not in co-operative testing associations. This matter of giving proper publicity to his work is most important.

Still beyond that, however, is the tester's greatest opportunity for service. This comes through the monthly personal contact with the herd owners and their families. Here is where the opportunity comes to furnish the inspiration to higher ideals not only in daily milk and butter fat production, but in herd management as well. Better herd management includes rational feeding, the balancing of rations, giving consideration to fluctuating market values of certain concentrates and to the utmost use of the cheaper home grown feeds, and the management of the farm in such a way as to make it contribute most effectively to the support of the herd.

Farming calls for a dual efficiency: First, efficiency in doing promptly on the day the thing that cannot be done with the same results tomorrow and, second, planning a long time ahead for future results. A Scottish farmer writing recently in the "North British Agriculturist," closed his article with the statement that the farmer, to be most successful, must do the work of every day as though that day would be his last day to live; but that he must plan his farm practice as though he expected to live forever. This idea of farming as though one expected to live forever has been responsible for some of the significant accomplishments in agriculture.

It is in helping the farmer in his long look ahead that the tester perhaps may find his greatest opportunity for service—the testing of the herd is but a means to an end. If the dairyman is satisfied with the milk production for the year as an end he is not looking far enough ahead to be getting the highest results from the work of the tester and his associations.

PERMANENT RESULTS, AIM

The permanent improvement of every herd in his association through better breeding should be the aim of every tester. He is not paid for this, to be sure, but unless this attainment follows the work for which he is paid, the results are only transient. The tester should do his work, not with the idea that he is the association's hired man, paid for the performance of certain fixed tasks, but rather with the feeling that he is the leader of a group of men in the permanent upbuilding of whose businesses, he has an important part.

Going as he does from herd to herd, he can see more clearly than the herd owners themselves how they may best make the next forward step toward permanent development. How to make the suggestion in such a way as to appeal to the dairyman that it is the practical thing to do, is a human problem up to the tester. No mechanical device can help him out here. But when he has done it, he is himself a bigger man. Particularly must the idea that herd building is a permanent business dominate if one is to make a marked success in the building up of a great dairy herd; and it is here that the monthly visit of the tester may be made the means to a great end. His is the opportunity to inspire the farmer to plan a constructive program for herd building through careful, intelligent breeding operations.

The tester should know blood lines in the various dairy breeds, be familiar with production records; how and by whom the animals were bred to make the high records—in other words, should be a "fan." There is just as much real sport in following the record being made among pure bred dairy cows as there is knowing the standing of the baseball teams and the batting and fielding averages of the individual players. It makes good subject for conversation on the monthly visits and must lead to a larger interest in better animals and the better breeding it takes to get them.

It might properly be the aim of the tester to have every herd in his association headed by a purebred bull. This is not ordinarily counted to be his job, but the result is the natural sequence of the test- *(Continued on Page 10)*

Now Is the Time to Consider Orchard Heating for Lemons

Foresight Better Than Hindsight in Preventing Frost Damage to Citrus Trees

By J. ELIOT COIT
Formerly Professor of Citriculture, University of California—Contributing Editor of ORCHARD and FARM.

IT has long been recognized that lemons are more easily injured by cold than oranges, yet some persons apparently lose sight of the great importance of this difference. Orange trees recover quickly and often produce an unusually heavy crop in the year following a freeze. Lemons, on the other hand, are slower to recover and yield smaller crops for two years after the cold injury. Lemon growers are urged at this season to give careful thought to the heating question and to lay plans for next winter.

DR. COIT

That lemons may suffer seriously and yet not lose any fruit by actual freezing is shown this year by the small picks current in locations where the cold of January, 1922, was long continued, but at no time sufficient actually to freeze the full-grown lemons on the trees.

In such cases thorough chilling of the wood and young fruiting twigs operated to weaken the bloom and greatly to reduce the crop for the succeeding year.

FUNGI ATTACK TREES

There are several kinds of fungi which ordinarily grow only on dead wood, but which are able to grow, and sometimes very rapidly, in lemon wood which is still alive, but has been weakened by prolonged cold though not necessarily freezing temperatures. The Eureka variety appears to be peculiarly susceptible to this form of injury and many orhcards owe their present poor condition to the ravages of wood-destroying fungi, which under ordinary conditions are powerless to injure a healthy and resistant tree.

Such fungi gain access through neglected pruning wounds and sunburn cracks. As they spread through the wood of the trunk or main branches the flow of sap is obstructed and the tree is unable to do its best, no matter how much stimulating fertilizer is applied to the soil around it.

HEART WOOD AFFECTED

The writer recently took up an old lemon tree which had failed to respond to excellent treatment. The root system was found to be in good shape, but when the trunk was taken to the carpenter shop and sawed lengthwise with a band saw the heart wood all through was seen to have a "dirty blue" color in irregular areas.

A specimen of the discolored wood was sent to the Citrus Experiment Station and an active fungus reported present. Often it is possible to trace the spread of such wood-destroying fungi back to some old neglected pruning wound. The fungus was able to progress but a short distance into the living wood while the tree was healthy, but once it was chilled and weakened by cold, the semidormant fungus awakened to the opportunity and made a rapid spread through the entire trunk.

We learn by experience and there are two lessons to be learned from this experience. In the first place, orchard heaters should be used at temperatures above 32 degrees in Eureka lemons. It is likely that the money spent raising the temperature from 33 to 38 or 40 degrees is well worth while. Yet few lemon groves are equipped with heaters.

TREE SANITATION IMPORTANT

In the second place, we must pay more attention to tree sanitation and tree surgery. All pruning wounds on trunk and main branches must be more carefully made and covered with asphaltum paint. Old wounds should be repainted at each pruning. It should be remembered, however, that paint should not be used on old wounds which have not been painted before. In such cases the fungus spores already have got into the checks in the wood and to paint them over would simply improve conditions for decay. It would be like filling a tooth without first cleansing out the cavity.

Old pruning wounds first should be prepared by removal of the dead wood with a gouge-chisel. Then the wound should be well sterilized by swabbing with cyanide of mercury (1 to 1000 in 50 per cent wood alcohol). This stuff is so poisonous it makes one dizzy to think about it. But it is most effective in tree surgery on account of its penetrating power. It should not be spread over living bark (which it will kill), but is used only in cavities in the wood from which decay has been removed.

WOUND IS DRESSED

Asphaltum paint is applied after the sterilization and has the same function as a dressing on a wound. Pocket cavities should be provided with a notch at the bottom for drainage.

There are, of course, many old lemon orchards where on account of long neglect the condition is such that a proper job of tree surgery would cost too much and the only thing to do is to let them alone for a few years and then dig them out. But we must take better care of our young groves and keep them from getting into such bad condition. Successful and profitable lemon growing is rapidly coming to be a highly specialized business and the man who would succeed must give much care and attention to details.

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

STAY IN THE GAME TO WIN.

The experience of a Kern County High School boy, who this year raised a carload of potatoes on three-quarters of an acre and sold them for $610, shows how history repeats itself in the potato game. Last year thousands of acres of potatoes did not pay for digging, the result being that many farmers dropped out of the spud game, leaving rich pickings for those who continued to "sit in." As a rule, the man who makes good money in the long run raising crops and animals is the one who produces a uniform quantity year after year, regardless of prices and conditions.

A NEW SOLUTION OF THE WHEAT PROBLEM

Although price fixing is frowned upon by economists and the Federal courts, there are other and perhaps better routes to the same destination. The California co-operatives are working along the line of increasing consumption. This, also, is part of the plan of the Wheat Council of the United States, organized by the recent National Wheat Conference. It is hoped, by gathering and disseminating accurate information concerning world conditions, to place America, rather than Europe, in control of the domestic price of wheat.

In the words of Sydney Anderson, chairman of the National Conference, "The wheat farmer of the United States is likely to be prevented from selling at a profit on his essential labor, through competition with countries less advanced than our own, until production and consumption approximate a balance in the United States."

Since wheat is the key to the agricultural situation and since prosperity in industry depends principally upon prosperity in agriculture—and this, in turn, depends largely upon the price of wheat, it will be seen the new movement is one of the most important ever inaugurated.

IN DIVERSITY THERE IS SAFETY

We American farmers learn most of our lessons through hard knocks and, as a rule, do not profit by past experience. Single cropping is an evil which has shown its fangs again and again; yet we continue to invite its ravages by fostering it.

The "Solid South" was almost ruined agriculturally by its devotion to cotton. More recently our Imperial Valley all but sacrificed its prosperity in the same manner. Fortunately, however, climatic conditions and other factors made it possible quickly to change the cropping system and thus to recover from the shock of market depression.

The lesson has been brought home again by the raisin slump. The San Joaquin Valley is paying the penalty of single cropping, just as the Imperial Valley did—only on a larger scale. Now agricultural leaders are preaching the gospel of diversification in the great Sun-Maid empire. Livestock (particularly the dairy cow), alfalfa and other field crops, as well as the fine tree fruits for which the San Joaquin is noted, will save the day. But for some vineyard owners the strain will be too great, and for a time the entire valley will suffer.

We have expected the impossible of CO-OPERATION. Unless it be reinforced by DIVERSIFICATION, co-operation eventually is doomed to failure.

JONES WRITES DAIRY BULLETIN

Robert E. Jones, associate editor of ORCHARD and FARM, has prepared a bulletin entitled "Dairying in California," thousands of copies of which are being distributed all over the world by "Californians, Inc." Mr. Jones, an executive of the California Dairy Council, was selected by the big development association as best fitted to gather authoritative data on dairying and to present the facts and figures in the most interesting, pleasing form.

"To the outsider," writes Jones, "California means blossoming trees soon to be laden with oranges, peaches, cherries or pears, or perhaps a green field of succulent, crisp vegetables.

"To us who know, California means, as well, the sleek cow, knee deep in alfalfa, her udder swelling as the descending sun tells of approaching milking time.

"Suppose we translate California's dairy industry into money—a term that all of us understand. The total for 1922 was $100,000,000 in round figures. California was placed ninth by the latest census among the States in quantity of milk produced on the farm. The outstanding dairying States of Wisconsin, New York, Minnesota, Pennsylvania, Ohio, Michigan, Illinois and Iowa only exceeded California in production. Yet California is young in agriculture, and exceedingly young in dairying.

"The dairy business has a sure foundation here. Development is only in the beginning. There is room in the Great Valley of California and the coastal valleys adjacent for tens of thousands more dairies."

"What's New?"—Keeping Abreast of Agricultural Progress

Watson Says 'Cheese It!'

HAVING orders for several tons of cheese beyond the capacity of their plant to produce is the unusual and encouraging experience of the owners of the Watson cheese factory at Bieber (Lassen County). Their advice to dairymen is to "cheese it," referring to milk which is not bringing profitable prices.

'Trapnesting' Rubber Trees

THE yield of rubber trees is expected to be increased 100 to 200 per cent by growing better stock and also by budding seedlings to superior trees. Production records enable orchardists to select specimens which yield a large amount of sap. This work is being carried on by the United States Rubber Company in Sumatra.

New Poultry Association

THE Farmers' Egg and Poultry Association is the name of one of the latest additions to the growing family of co-operative marketing organizations. Its territory includes Eastern Washington and Western Idaho. The contracts have been approved by Washington officials. Operations are expected to begin immediately and it is thought the association will join the Pacific Poultry Producers.—W. J. D.

Learn Farming by Radio

"WE have recently established a powerful broadcasting station here at the State College of Washington and are sending regular programs three times a week, Mondays, Wednesdays and Fridays, from 7 to 8 in the evening," writes the dean. "One-third to one-half of these programs is made up of timely agricultural information for farmers and others interested, the remaining one-half being devoted to entertainment features, such as concerts and readings.

"I believe that work of this character is only in its infancy and that radio is destined to prove an exceedingly effective medium not only for broadcasting timely agricultural material to farmers, but for conducting regular extension courses."

Testing Electrified Ensilage

EXPERIMENTS recently conducted at the University Farm, Davis, in the treatment of small quantities of silage with electricity were so successful that more extensive tests are to be made in the near future. Heavy woven wire fencing is laid upon the bottom of the silo before the latter is filled. A wire from a 220 or 440-volt line leads from the metal mat to the underside of a wooden cover resting on top of the silage.

Electrical current is used until the silage attains a temperature of 132 degrees, amounting to 27 to 32 kilowatt hours per ton. Color, odor and palatability of the silage were reported excellent. In Europe, where the electrical process has been used, it is believed that the food value of silage is conserved thereby.

Will Build Comfort Stations

LOS ANGELES County has appropriated $25,000 for the construction of public comfort stations in the mountains and along the seashore at points where people congregate for recreational purposes. This county has an ocean shoreline thirty miles long and 1080 square miles of mountains and foothills, together with a population of approximately 1,000 000.

Tens of thousands of persons constantly are visiting the mountains and beaches. The pollution of the streams is one of the results which the building of comfort stations is designed to prevent, according to J. L. Pomeroy, county health officer.

Bulk Elevator Is Successful

FARMERS who have been patronizing the bulk grain elevator at Murietta are so well pleased with the sackless system of handling wheat that none has returned to the old method. Although the elevator holds 30,000 bushels, all the available space was engaged this year before harvest time.

The charge is 5 cents per hundred pounds for cleaning, grading and loading, providing the grain is disposed of within 48 hours. If not, the charge is 7½ cents for a short period, or 10 cents for a year. R. M. Cummins, who makes a business of harvesting and hauling wheat, transports six to seven tons at a load and dumps it all in 15 minutes. Growers mail warehouse receipt to buyers and receive the full market price by return mail, before the grain is shipped. Most of the stock in the elevator is owned by thirty farmers.

Molasses for Codling Moth

THROUGH the efforts of W. H. Volck of the California Spray Chemical Company of Watsonville, and Donald Penny, horticultural commissioner of Santa Cruz County, what promises to be a great discovery in the control of codling moth, leaf roller, caterpillars and certain other leaf eating insects has been made. It has been found that adding blackstrap molasses to the arsenical spray renders the poison far more effective.

The molasses is a benefit in two ways. It is perhaps the finest and cheapest spreader known. When 2½ gallons of blackstrap molasses are added to 200 gallons of arsenical spray, the latter spreads readily and makes a perfect covering. Molasses also serves as a bait for the codling moth worm and other insects. One trouble with controlling the codling moth has been that as the worm ate its way into an apple it often would push most of the poison inside and so escape injury. The molasses seems to attract the worm, which eats enough poison to kill before entering the apple.

In spite of the newness of the discovery, two carloads of molasses were used in the Pajaro Valley last year for spreading and sweetening spray dope. D. J. WHITNEY.

Boy Makes Big Potato Record

THREE HUNDRED FOUR sacks of No. 1 potatoes and thirty-two sacks of No. 2's this year were grown on three-quarters of an acre of land near Wasco (Kern County) by Peter Janzen, 1923 high school graduate. The crop was sold to a wholesale dealer for $610. The yield was at the rate of 745 bushels per acre and the returns at the rate of $812.—R. C. M.

Dusting Plants by Hand

DUSTING plants with a hand bellows is becoming a popular method of controlling injurious insects in Oregon, according to Prof. A. G. Bouquet of the Oregon Agricultural College. Powdered arsenate of lead is used for eating insects and nicotine dust for the sucking species. The last named material is also being used to advantage in controlling the greenhouse white fly. By using an extension tube it is possible to dust small fruit trees. Hot, dry weather is considered best for dusting.

Yucaipa Apple Trees Blight

IN the Yucaipa Valley this summer myriads of apple tree fruit spurs have been killed by pear or fire blight, according to Max Richards, one of the pioneer orchardists in that district. Most of the germs die after the disease has destroyed the twig, but in some varieties there is danger of larger limbs and even entire trees being killed, in the opinion of plant pathologists. In the Rogue River Valley, Oregon, a number of Spitzenburg orchards had to be grubbed out on account of blight injury.

Dryden Heads Association

THE Trapnesters' Association of Santa Cruz, having a membership representing more trapnested hens than can be found in any other community in the State, if not in the world, has secured the services of Professor James Dryden, formerly head of the poultry department at the Oregon Agricultural College and now owner of the Dryden Poultry Breeding Farm at Concord.

Professor Dryden will make regular inspections of the flocks, organize the work of records and certifications and generally oversee the work of the organization. The members, now numbering twelve, will be limited to poultrymen who trapnest and have secured excellent results. The flocks comprise some of the highest record hens of the country. It is to be expected that much reliable data will be secured which will be of great value to the poultry industry of the State. Through the breeding and distribution of high producing strains throughout the State, this association is expected to exert a strong influence in improving California's laying stock.

"THEY SAY"

HOWARD A. MILLER

Agricultural Department, Los Angeles Chamber of Commerce

H. A. MILLER

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"Climatic conditions here are said by experienced woolen men to be ideal for mill work; it is believed the mild atmosphere will make possible better ventilation and less injury from the lint which menaces workers in Eastern factories.

"One effect of the growth of the industry will be the establishment in Southern California of more farm flocks, a development which should be of great benefit to our orchard districts.

"Prices for sheep are now so high that many farmers and fruit growers who are interested, hesitate to buy, but I look for the development of hundreds of small flocks in the Southwest when breeding stock is more easily obtainable."

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New Salicciana Plum

OLAF DAHL of Exeter is greatly pleased with a new plum, the Salicciana, which he obtained in the spring of 1922 from the U. S. Department of Agriculture. It has made a good growth and in this, its second season, it has produced an enormous crop of fine looking plums, excellent for cooking and home use, though too small for shipping.—TULARE FARMER.

Foster Peaches Profitable

FROM an old orchard near Visalia Foster peach trees planted 35 years ago are bearing fruit which outsells all other varieties because they are in such strong demand for table use. The price this year, however, is only $27.50 per ton at the ranch. A former owner cut the trees back nearly to the trunk and they made new heads, which are now vigorous and strong. Present owners are Bodine & Bodine.—D. J. W.

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Prepare to Plant Cover Crops

By J. L. QUAIL
Merced County Farm Adviser

THE more I see of the orchard districts of Merced County, the more I become firmly convinced of the great need for the incorporation of organic material into our soils. These arid regions before the coming of irrigation, for the most part, grew but little ground cover. The short material that did grow often was burned off by accident or by direct intention.

With the arrival of the farmer, the better lands were sown to grain and for a period produced well. The small amount of humus and organic matter contained in this desert soil was soon depleted by this manner of farming, until the present stage has been reached.

Numerous noted agricultural men have stated that the productivity of our lands in the West was limited by two factors: water and organic content. We have provided water, sometimes even in overabundant quantities. It was easily evident that water was essential and lacking, and correspondingly easy to convince men to provide it.

It is not easy to convince men of the need for organic matter, humus and nitrogen, yet that is still one of the two great limiting factors in the productivity of our land. How long will we continue to squeeze the last dollar of profit from the soil before we come to realize that we must also build that soil up?

It is relatively easy to build up good land, but it is a slow process to build up land which has been almost totally depleted. This accounts for some of our failures to establish good cover crops at the first attempt. This failure the first year is not a legitimate excuse to cease all attempts to grow manure crops. It may be necessary to apply commercial stimulants or manures to aid in starting the first manure crop.

The popular supposition that our soils can be rejuvenated by the addition of salts or commercial preparations is erroneous. A hungry man is not satisfied with sugar alone. A tree or a vine may be temporarily stimulated by a fertilizer, such as sodium nitrate, but only the best results can be obtained, even from commercial fertilizers, when the soil contains an ample amount of humus.

Organic matter makes light soils heavier and aids them in holding moisture. It makes heavy soils lighter, aids tilth, prevents crushing and helps them to take moisture. Organic matter is the life of our soils.

Most of our tree and vine troubles are directly influenced by the lack of this life-giving material. Why is it old alfalfa ground always produces fine trees or other crops? Answer: Organic matter supplied by the dying roots of that old crop.

Stock manure is becoming too scarce to depend upon. We must learn to grow this material on our soil and plow it in. The results are the same if sufficient quantities are produced.

Legume cover crops have been produced successfully on most types of Merced County soils. We know it can be done and we want to see more of it. Three things are essential: early planting, early fall moisture, correct seeding with proper varieties. The results are slow to show. They are as a rule cumulative. The cover crop itself improves with each year's attempt and is the best proof of soil improvement.

Think it over and then act. September is the month. Your farm is the place. You can't afford to? You are too rushed? You can't afford not to. Your future prosperity depends upon adding organic matter to the soil.

Actual photographs of Dr. Morris' fine yeast-fed birds

Dr. Morris gives Fleischmann's Pure Dry Yeast the entire credit for the excellent condition of these fowls

"They surpass anything I have ever raised"

What Fleischmann's Pure Dry Yeast has done for Dr. E. C. Morris

Among the first to see the unusual possibilities of feeding Fleischmann's Pure Dry Yeast to poultry was Dr. E. C. Morris of Petaluma, California, who runs one of the world's largest hatcheries.

He found that it increased egg production, reduced death loss, eliminated diarrhea from chicks, and improved the vigor of his flock.

"I have never seen chicks feather so rapidly and develop such bone," he writes; "this we attribute entirely to the addition of Fleischmann's Pure Dry Yeast, as all other conditions are practically the same as in preceding years."

Feed one pound of Fleischmann's Pure Dry Yeast to every 1000 layers or 2000 chicks, in dry or wet mash, and you can have the same success that Dr. Morris has had.

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Bleaching Sulphur

THE right kind of bleaching sulphur is better than the ordinary kind in at least two ways—it is purer and it burns better.

Formerly sulphur came from the volcanoes of Italy and Japan. Later there were found immense beds of sulphur underlying the coast lands of Texas. Wells are sunk into these sulphur beds and superheated steam forced down, melting the sulphur, which is brought up in liquid form.

The sulphur is run out in immense piles 80 feet high and covering sometimes 10 acres. Steam shovels dig into these piles and load the sulphur into cars. So little labor is needed in the process that America controls the sulphur markets of the world.

One common fault of commercial sulphur is that it often contains a trace petroleum, because there is a slight amount of petroleum in most sulphur wells. This foreign substance does no harm when the sulphur is used for most purposes, but petroleum fumes are very injurious to dried fruit. Petroleum free sulphur, therefore, is needed for bleaching sulphur.

The way sulphur is ground is important. Good dusting sulphur has to be ground into the finest kind of a powder in order to spread well, but very finely pulverized sulphur will not burn properly. Good bleaching sulphur is not in dust form, but is prepared in a fibrous condition in order to burn properly.

Heat will be lost if sulphur is put in an iron pot resting on the floor of a bleaching house, as the chemical will not all burn. An ideal burning method is to use an asbestos trough for holding the sulphur. This insulation prevents loss of heat and insures the burning of every particle of the sulphur. It also prevents accidental fires.—D. J. W.

Litchees Tropical Fruit

A CHINESE friend urged me to grow litchee, a Chinese nut much in evidence at Chinese New York celebrations. I investigated this fruit and found that it requires a really tropical climate. A few litchee trees grow in Southern Florida, but they will not thrive in California.—TULARE FARMER.

MILK EXPORTS DOUBLED

The export of evaporated milk from San Francisco has nearly doubled for the first five and a half months of 1923 over the corresponding period of last year, according to California Dairy Council.

The Principles of Pear Drying

By L. C. BARNARD

College of Agriculture, University of California

THE Bartlett pear is the variety grown in greatest abundance and the principal variety used for drying. Good, close-grained fruit of good size is required if the best dried product is to be secured.

In Lake County it takes about 4½ or 5 pounds of green fruit to make one pound dried. In other sections of the State it takes from 5 to 7 pounds of green fruit to make one pound of dried—perhaps 6 to 1 is a fair average.

Yields vary from three-quarter-ton to one and one-half tons dried per acre. One ton per acre is a good average.

HARVESTING AND HANDLING METHODS

Practically all pears are hand-picked and only the best of the windfalls are picked from the ground. Some growers prefer canvas bags and others pails for picking. Generally it takes two and sometimes three pickings properly to harvest the crop. Pears are picked when they are hard ripe, or when the stem separates readily from the spur. They are at this time too green for immediate curing and must be given time to ripen. The fruit is put in field boxes and then hauled in to the drying plant, where it is culled and graded.

Wormy, sunburned, bruised and blemished fruit is sorted out and placed by itself, as it ripens more rapidly. The remaining good fruit generally is roughly graded on the basis of size, each size being placed by itself. Some growers do not size the fruit previous to cutting, but pick out the small fruit when it is partly dry on the trays. The small fruit dries much more quickly than the larger, and if it is not sorted out becomes too dry by the time the larger fruit is at the right stage. Better work results, however, when the sorting out is done previous to cutting the fruit; then all the work of sorting out the small sizes from the trays is saved.

If the grower has enough boxes, it is best to allow the fruit to ripen in the boxes, keeping each day's picking separate. In case there are not enough boxes, the fruit is allowed to ripen in bins in a shed, care being used not to pile the fruit too deep nor to mix the pickings of different days. If this were done, the late fruit would be too green when the first day's picking was ready to be cut.

If the fruit is allowed to ripen in bins, it is well to cover it with canvas sheets, which keep the temperature more uniform during the day and night, thereby hastening the ripening process. In case the grower has neither enough boxes nor shed room, straw may be spread six inches deep in the shade of trees and the fruit piled carefully in rows about six inches deep and one foot wide and six or eight inches of straw placed on top. The wormy and sunburned fruit will be ready to cut in from five to seven days and the remainder in from a week to ten days. To secure the best results and obtain the maximum weight of dried product the fruit should not be allowed to become too ripe before being cut.

CUTTING THE FRUIT

When the fruit is ripe, but not overripe, the pears are cut into halves lengthwise. The best product results if the stem is pulled and the core and calyx are cut out. Some growers remove only the stem; others only the stem and calyx.

Probably there is less uniformity in the methods, time and amount of sulphuring required for pears than for any other product dried. The amount and time of sulphuring generally is considerably greater than that required for other fruits. A high-grade product, as demanded by the trade, is nearly translucent when cured, and in order to secure this result, long-continued sulphuring must be given.

The practice in Lake County is to put the fruit in the sulphur house as soon after it is cut as possible and light the first charge of four or five pounds of sulphur. Early next morning another charge of four or five pounds is put in the house and lighted. The third and last charge of four or five pounds is put in the house on the evening of the same day. On the second day, forty-eight hours after the fruit is placed in the sulphur house, it is taken out and spread on the dry ground.

The amount of sulphur burned probably ranges between twelve to twenty pounds per green ton and the time of sulphuring twenty to forty-eight hours, depending on condition of sulphur house and fruit.

THE CURING PROCESS

The condition of the fruit, amount of sulphuring and the weather determine very large how long the fruit should be exposed to the sun and how long it should cure in the stack. Small, very ripe fruit requires less exposure to the sun. Fruit which has been sulphured forty-eight hours should not be exposed to the sun's rays as long as fruit sulphured twenty-four hours or less. In any case, the fruit should not be exposed too long to the sun or it will be discolored.

In Lake County pears are exposed to the sun about five hours if the weather is very hot, but usually they are exposed for from one to two days. Principal curing is in the stack during a period of from one to four weeks.

Sometimes the trays are stacked on a slant, one end a foot higher than the other. The top of the stack then is covered with a roof tray. The roof tray has the same size bottom as the others. The roof is made of shakes laid roof-fashion and often covered with roofing paper. If stacks are covered with a roof or cover tray, they may be exposed to the rain without damage to the fruit. Some growers have sheds in which to stack the trays in case of rain. In the open the stacks are about twenty trays high. It is a good plan to place a one-inch strip between the trays or to allow the ends of alternate trays to project a few inches to insure aeration. The stacks should be so placed that the prevailing wind will have the greatest opportunity to hasten the curing.

Curing is said to be complete when the fruit is rubbery or leathery to the touch, but not mushy. Some growers allow a handful of fruit to roll across the tray and if the fruit rattles it is called cured.

As soon as the fruit is sufficiently cured on the trays it is usually stored in bins, boxes or on a good, clean floor of a shed. The fruit should be placed so that air may circulate around it if it is to be stored for any length of time. If this is not done some of the product may mold.

Higher Fruit Prices

DECIDUOUS fruit growers confidently expect higher fruit prices in the near future, but it will be too late to benefit those who already have disposed of their crop. This expectation is based upon the following conditions as compared with last year:

Poor crop of fruit in the East, instead of a large one; higher priced sugar; better business conditions. Costlier sweetening is resulting in less home canning, which means that more dried and canned stock will be sold, while a short Eastern crop creates a demand for more California fruit.

Dealers, however, are paying lower prices this year than last, while the reverse should be true. High prices and liberal buying last year resulted in overloading warehouses and dealers' shelves with stock which did not move freely on account of the conditions mentioned; large Eastern stock, moderate priced sugar and depressed business. The low prices which dealers are paying this year for raw material will enable them to realize handsome profits, because of the high prices which they likely will receive for the finished product.

It would seem that dealers base prices to growers upon conditions which prevailed the previous year, instead of those of the present season.—TULARE FARMER.

Selling Chinese Jujubes

MANY California ranchers who are continually looking for newer and more profitable crops have become interested in jujubes, which are sometimes called Chinese dates. Having some friends who had a quantity of jujubes for which they could find no market, I got then in touch with a young Chinese friend in San Francisco.

"I showed the fruit you sent to some local Chinese merchants who deal in imported jujubes," wrote the Chinaman. "These dealers retail imported jujubes at from 30 to 35 cents per pound. The wholesale price is 15 to 20 cents. The imported jujubes are cured more solidly and are sweeter than those grown in California.

"These merchants claimed that your jujubes are not properly cured. Chinese varieties are sun dried and not cured by artificial heat. The import duty is 2 cents a pound."

Since California producers estimate that a price of 15 cents a pound is necessary to pay expenses, jujube growing does not look promising. Two cents a pound duty is little protection for a product of Chinese labor.

Any one who has a jujube tree might profit by this suggestion, which came from my Oriental friend:

"Chinese people use jujubes in soup. I suggest that when you make soup you put five or six jujubes in it. Let them boil ten to twenty minutes and they will soften and double in size by swelling. This sweetens the soup and gives it a very distinctive flavor.

"The Chinese do not use the jujubes for making candy, although they may have some sprinkled with sugar and called candy, as nearly all Chinese candies are made in this manner."—D. J. WHITNEY.

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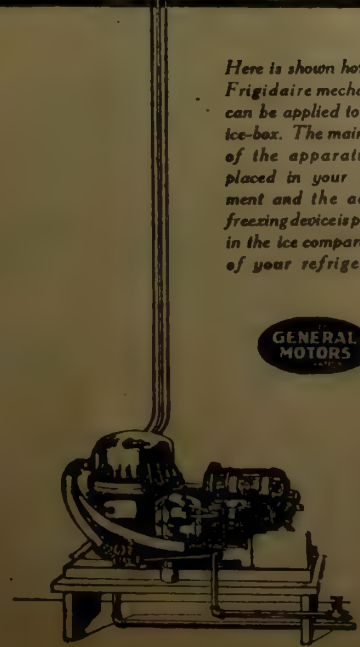

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OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land: deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and berry farming in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land; near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

FARMS WANTED

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

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GUERNSEY BULLS for sale from California's first Federal Accredited Guernsey herd. Last test June 11. JAMES BROWN, Capitola, Calif.

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PURE-BRED TOGGENBURGS from recently imported stock. Heavy milkers. Raised under ideal conditions. Sure to please. Canyon Goat Ranch, Redlands, Calif.

Home Farm Happenings

BY ONE OF US

BEST MAKE OF FRUIT DEHYDRATOR.—A good many dehydrators are being built in the Sacramento Valley, and more will be constructed before the fruit crop is ripe.

Several different makes—apparently all good—are being sold. Like different kinds of machinery and breeds of livestock, the various sorts appeal to different people. To get the heat to the fruit and the moisture away from it seems to be the main idea of dehydrator makers.

We are reminded of a remark made by neighbor Wood Yerxa, an authority on prunes, after listening for a while to an argument between advocates of different systems of pruning.

"Just plant prune trees on good Sacramento river land and you'll raise fruit no matter how you prune the trees," he remarked.

HOW WE PROP PRUNE TREES.

Our prune trees have an enormous load of fruit this year. As the fruit was developing, folks who saw the crop often asked, "What kind of props are you going to use?"

"Not any," was the answer.

The reason for this is that the limbs bend over with the load of fruit and long before the fruit is ripe—and before the limbs break—the ends of the limbs are resting on the ground. As soon as the end of a limb touches the ground the load is partly taken off the tree, and limbs that get this support do not break.

Our trees have 10 to 15 main scaffold limbs, instead of the usual three to five. These limbs are necessarily tougher and more willowy than fewer larger ones would be and they get the bending over habit early in life.

"That's all right for the lower limbs," people say, "but how about those that are not long enough to get to the ground?"

Well, those simply bend over and rest on the ones that are already touching the ground, and consequently do not break.

"But how can you cultivate your orchard, with the trees bending over like a hay stack of prunes?" is another question we are frequently asked.

Cultivation is a difficult matter when the fruit is on the trees, but as soon as the prunes are picked in the fall the limbs spring right back into place again and are out of the way until the fruit begins to pull them down again the next season.

Of course, a limb does break occasionally, but it is of little consequence, when the size of the crop and the size of the trees are considered. And when a limb does break it is only a small part of the tree gone—a part that is filled in with new growth almost before it is missed.

ON THE TRAIL OF THE TRAILER.

"What's the handiest tool on the ranch?"

The trailer.

"What's the easiest tool on the ranch to loan?"

The trailer.

"How can you keep it in any kind of shape if you do loan it?"

Nobody knows.

John has more trouble trying to keep our trailer in shape—with tires on it, with the axles straight and most of the bolts in it—than with any other piece of equipment on the place.

He may even develop into a pretty fair liar from telling folks that the trailer is out of commission or being used—or something else. But he is being forced into this in order to have at least a part of a trailer to use when he needs it.

We have decided that our trailer, which was made by a local blacksmith, is a fine tool for work around the ranch, and for short trips, but a poor thing to take out with a big load on the highway and make long trips at high speed. When any one wants to borrow it for a long, hard trip, we frankly say that it was not made for that sort of thing and won't stand the strain.

TATTOOING NUMBERS IN CALVES EARS.—We tattooed numbers into the ears of some registered calves a few days ago and branded the numbers on the horns of several older ones.

The tattooing is done within a few days after the calf is born. Numbers made of sharp needles set in little lead blocks are slipped into a groove in the jaw of a set of pinchers. These needle numbers are then pierced through the ear and India ink rubbed into the holes made by the needles. This makes a mark that stays in the ear for life.

It is important to pierce the ear in the open spaces between the "ribs," so there will be little, if any, bleeding. When there is much bleeding the ink is washed out. When this happens the number should be pierced in another place.

As soon as the calves get horns big enough, the same number that is in the ear is branded on the horn with branding irons. The numbers on these irons are three-quarters inch high.

Big, fat calves that are getting plenty of milk and are on good feed can be overheated very easily at this time of the year. There is always a big temptation to get a job of this kind over as quickly as possible, but we have learned that to go slow is the best way.

THOUGHTS ABOUT IRRIGATING.

Did you ever notice how much easier it is to irrigate soil when it has some moisture in it than when it is perfectly dry? We are irrigating now, and will be all the rest of the summer. Experience tells us most emphatically that it pays to follow one irrigation with another before the ground gets dried out too much.

An orchard of big trees pumps hundreds of tons of moisture out of the soil through its leaves. Even rich, moist river bottom soil produces far more tonnage of better fruit when the water content is kept up to the maximum.

One solemn resolution is made every time we irrigate. Never again will we plant a tree on land that has not been leveled. More time is spent—and much more hard labor—getting water over an acre of uneven land than five acres that has been leveled.

Our river bottom land ordinarily takes water very readily and the subsoil is such that there is no danger of over-irrigating. The water should go down three or four feet. It is difficult to determine how far the water has penetrated, without a test of some kind. A sharpened half-inch steel rod is a good thing to do this with. It can be forced down readily as far as the soil is moist, but comes to a sudden stop when dry ground is reached.—W. S. GUILFORD.

Refrigeration Without Ice

Illustration, Courtesy W. L. Cochran, Inc.

SCIENCE has conquered one of the few remaining "bugaboos" of ranch life. Automatic refrigeration makes the rural housewife independent of weather conditions and the iceman. Even the most isolated farm home may enjoy perfect refrigeration.

Hidden in the base of the attractive home cold storage plant illustrated is an electric motor, which starts and stops automatically, maintaining the temperature of the food compartments 10 to 20 degrees lower than would be possible with ice; moreover, the air is dry, an important item in preventing spoilage. Ice may be frozen in small cubes simply by filling with pure water the compartment provided for this purpose. This device also makes frzoen desserts.

There is no mussy filling each day as with the ordinary refrigerator; no drip pan to run over and ruin the floor; no inconvenience. Yes, indeed, we are progressing! With a fireless cooker, an iceless refrigerator and a dustless vacuum sweeper, housework becomes a thing of joy. Now, inventors, bring on some washless dishes—and drudgery will be eliminated.

SPERRY SURELAY MEANS MORE EGGS -ask your dealer

Freeman's Prize Pullet Plant

(Continued from Page 2)

until now we have twelve brooder houses with a capacity of 1200 chicks each, a laying house to accommodate 1000 hens, and all the facilities needed to handle 50,000 chicks a year." The original six acres was purchased for $7500, and recently two and one-half acres adjoining has been acquired.

The proprietor and his wife joined in explaining to us the methods which have brought about their signal success. The latter is in every sense a partner in the enterprise, overseeing personally such important matters as sterilizing the drinking fountains, regulating the stoves and examining the little fellows frequently for signs of disease. One man is employed the year around and additional help occasionally, but the Freemans believe their business is one the details of which cannot be left successfully to others. Their equipment, however, is so complete that labor is reduced to the minimum.

In this accomplishment, as well as their plan of operation and their business methods, the Freemans have displayed unusual ability. Mr. Freeman was for years with a large New York poultry supply concern and is applying to his own business some of the qualities which made him a star salesman.

THE PERSONAL FACTOR

His is a personality combining genial frankness with dynamic energy, and he is active in local affairs, being a director of the Chamber of Commerce, as well as a Rotary Club member and tireless worker for the general welfare of the community.

His personal charm, his wide acquaintance among the poultrymen, and his reputation for square dealing, all have contributed to his rapid rise. The matrimonial-business partners both find much pleasure in their work. To use their own expression, "We get a lot of real fun out of it."

Briefly, their plan of operation is this: Believing in specialization, they buy baby chicks from a hatchery of the best reputation, which in turn secures eggs only from trapnesting breeders of heavy laying fowls. They do no hatching themselves.

Mr. Freeman places his order with the hatchery a year in advance for 12,000 day-old chicks to be delivered in September. A like number is ordered for November, another lot for delivery in January and a fourth in March. After the March flock is out of the way, the place is cleaned up and the yards planted to kale. After this has been used barley is planted, and when all the green feed in the yards has been consumed, the older chicks are given the run of the farm.

In addition, cabbage and other green feed is secured from a nearby truck farmer in exchange for manure. "Plenty of green feed" is ranked next in importance to "plenty of clean water," as an essential to success.

The brooder units are constructed with a stove room, 14 by 14 feet, connected with a large cooling room, each series including three such units.

Before the chicks are placed in the brooder house it is thoroughly disinfected, and clean, sharp sand about an inch thick is placed on the floor. Over this are spread a bucket of charcoal, five pounds of grit and shell and two sacks of cut straw for each brooder house.

A one-inch mesh wire screen, banked outside with cut straw, is placed around the stove, just outside of the brooder dome, to keep the chicks near the stove for the first 48 hours or until they have been educated in finding the heat. Thereafter all changes are accomplished gradually. After the first ten days the chickens are let into the cooling room. Part of the feed trays are placed in the cooling room and later the fountains are moved gradually until only two water crocks remain in the stove room.

Every precaution is taken to prevent crowding. When the chicks are let out of the brooder compartment in the morning, an attendant is always at hand like a "traffic cop" to hold back the eager throng. Furthermore, the houses are approached quietly, in order that the youngsters may not be startled into stampeding towards the exit.

Freeman believes in keeping the houses even warmer than necessary. This practice, he maintains, rather than making the chicks less vigorous, tends to force them outside and away from the stove as well as preventing crowding.

The heat, in fact, is maintained constantly, even on warm days, until the birds are eight weeks old. Freeman has found this not only increases circulation of air, but also keeps the litter dry. He points out much of the trouble in raising chicks comes when the heat is removed suddenly, and believes it especially advantageous to avoid sudden changes during the crucial feathering period.

Freeman starts his chicks upon a home-mixed mash, giving one handful of mash to 100 chicks. In the brooder house is placed one tray for each 100 chicks. These trays, very shallow, are 24 by 6 inches, and are placed in spoke shape around the stove with a drinking fountain between each tray. By starting the chicks with the mash instead of a scratch feed, Mr. Freeman has found it unnecessary to give milk or buttermilk.

The feed is left with the chicks about one and one-half hours. The next feed of mash is given three hours later, a prepared scratch being fed between the mash feedings and again after the last feeding of mash.

The water given the first few days is heated enough to take off the chill. The water is continued during the entire season except in case of any signs of trouble, when the mash is taken away and buttermilk given instead of water.

The Freemans are strong believers in cleanliness. Every water container on the place is washed twice daily with hot water and refilled. In warm weather fresh water is given three or four times a day. Nothing is allowed to interfere with this schedule.

As soon as weather conditions permit and the chicks are in shape, they are let out on the ground and the feeding gradually is changed to outdoors. The trays are moved away from the house, a few feet at a time, in order to encourage the chicks to use the entire farm as a range.

After the first fourteen days the chicks gradually are changed to a growing mash which consists of 300 pounds light bran, 200 pounds middlings, 100 pounds ground oats, 100 pounds corn meal, 100 pounds fish meal, 50 pounds charcoal and four ounces of salt to 100 pounds of mash. The amount of salt is increased gradually until the chickens are eight weeks old, when they are getting eight ounces of salt to the 100 pounds of mash.

In order that the chicks go to roost with a full crop, oats (which have been soaked for 24 hours) are given late in the afternoon while they are between four and six weeks old.

NO DISEASE LOSSES

Freeman never has had any trouble with outbreaks of disease. This is due probably to the fact that the chicks are watched every hour and at the first indication of trouble are treated or put on a different ration. He has been able to keep the mortality below 10 per cent; this includes all culls.

The Freemans sell their eight-weeks-old pullets at $10 a dozen. Those remaining unsold are disposed of the next month at $12 a dozen, and the next month the price is raised to $15. After that the pullets are put into a laying house and held for $18 a dozen. Freeman never has forced a sale: if he cannot get the set price he holds them until they bring that figure and so far has always made money by holding. Usually the pullets are contracted in advance, but in order to take care of any pullets that might be held over, he has constructed a laying house.

One lot of young hens, held longer than usual, yielded an egg income of more than $40 a week while awaiting a buyer at $18 a dozen! Later the entire lot was disposed of to one company.

It took Freeman some time to find out that he could also make good money out of his cockerels. Instead of selling them at one and half to two pounds for about 22 cents, he holds them thirty days longer and sells for 54 cents.

Since it costs 29 cents to raise them to eight weeks, and very little more to carry them thirty days longer, he makes a good profit by holding. He has figured out that it costs about 12 cents to buy the cockerels, 12 cents for feed, and 5 cents for overhead and other expenses.

It is estimated the Freemans have made from $15,000 to $25,000 a year profit on their White Leghorn pullet farm, and if there is any couple who enjoy life more thoroughly, we should like to find them! It is easy to understand why neither has any desire to return East. They have answered and embraced the "lure of California."

Apricot Profits—Losses

AN experienced apricot grower of the Santa Clara Valley figured up his costs recently, just before harvesting time, and found up to that time his crop, estimated at 400 tons, had cost him $15,000, or $37.50 per ton, on the tree. He had an offer of 11 cents a pound flat if he would dry the fruit. With efficient methods he could dry the crop, he figured, to make it worth approximately $25 per ton, green, on the tree. Therefore, on an 11-cent orchard run basis he was likely to lose $12.50 for every ton of fruit he had.

One thing which promises a big advance in apricot prices when the season is over is that the low prices and the cost of labor together is making many growers let the fruit fall and spoil. The tree output of the State is big, but the dried output, owing to wastage, will be moderate. Prices, however, are based on the orchard crop and not on the dried output.

Persons coming here from the East very much like our dried apricots, but they have to pay 38 cents per pound for them here in California. Naturally they don't eat many. Who knows what Eastern dried prices are if they are 38 cents a pound here? Similar conditions exist with most dried fruits.

"As long as such conditions exist there will be no use groaning about lack of a market," declares a leading orchardist. "If a large part of this outrageous middleman profit was cut off the market would pretty nearly look after itself."—TULARE FARMER.

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TANKS and PIPE

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318 Market St. San Francisco

Propagating Fruitful Avocadoes

Whittier Horticulturist Succeeds With Rare Fruit—Develops "Hanging Garden"

By O. H. BARNHILL

WHITTIER (Los Angeles County) claims her own "plant wizard"—A. F. Rideout, whose avocado nursery and orchard overlook the town and valley like the hanging gardens of Babylon.

If you want to visit this enchanted land, just say something to its creator about avocados being shy bearers and hard to grow. He will take you up into an exceedingly high place and show you his "promised land."

It will be explained to you that this is the thermal belt, to which Rideout was driven by the disastrous freeze of 1913. Difficulty of access, cultivation and irrigation are as nothing, you will be assured, compared to the loss of valuable trees by freezing. In this high and favored region it is said that not a single leaf of the tenderest plant has felt the withering touch of Jack Frost.

HILLSIDE LAND IS TERRACED

Rideout has his ten-acre place terraced like an Oriental hillside farm, with rows of nursery stock and fruiting trees growing along the outer edges of the big clay steps. Life giving water trickles through a tiny ditch just inside the trees, which look remarkably healthy and thrifty. Few of the larger trees are perfect, however—a fact which caused Dr. George Clements of the Los Angeles Chamber of Commerce to ask, "Rideout, have you a single avocado tree just as the Lord made it?"

The veteran nurseryman, who for thirteen years has been growing avocado trees, admitted that he had not, explaining the partial mutilation of his bearing trees by the necessity for securing choice bud wood for propagation purposes. The Lyon trees, Rideout's favorite, have suffered especially in this respect, yet manage to bear some remarkable crops of fruit.

Growing and budding avocados has been reduced to an exact science by this enthusiastic horticulturist. The result seems marvelous to the novice—avocados here, avocados there, avocados everywhere, growing in tropical profusion, as though this were their native habitat.

AVOCADOS TENDER PLANTS

In order successfully to grow and bud this luscious, high-priced fruit, certain facts and principles must be respected, Rideout pointed out. "An avocado tree is a tender plant, very sensitive to drouth and hot sunshine, as well as frost. From the time the seed is planted until the trees are well established, watering and sun protection must not be neglected.

"Make the holes for the seedlings somewhat deeper than is needed; place the plant in the hole, throw in a little dirt and pull up the seedling a little. This will leave the roots pointed downward, so they will grow in that direction, instead of with an upward trend, as when the plants are forced down into the holes in the usual manner.

"Seedling avocado trees are very tender and when transplanted must be protected with cloth or paper to shield them from the sun, or they will all be killed. Even a citrus tree will be killed if left exposed to the sun two minutes, in transplanting."

FORCES BUD DEVELOPMENT

Because of its peculiar habit of growth, good, plump avocado buds are hard to find. Rideout has two methods of forcing bud development: breaking down a new shoot, and trimming off the leaves. It is best to leave a short piece of the leaf stem, which will help hold the sap for a few days and then drop off naturally. Whitewash the limb, to prevent sunburn.

Budding cloth, twine and raffia largely have been discarded in favor of rubber tape, which costs $1.75 per pound. Red rubber has been found to last longer than white. Instead of tying, it is necessary only to tuck under the end of the rubber band. The beauty of the latter is that it exerts a constant pressure, holding the stock and scion in constant, close contact, which is necessary to effect a growing union.

Rideout has many methods of budding and is constantly inventing new ones. He has become so familiar with this work that it seems he can accomplish almost anything in the way of avocado propagation. He even cuts the seed away from the root when the latter is but three or four inches long and grafts the root into the limb of a tree.

HINTS ON BUDDING TREES

After inserting a bud into a T-shaped cut, it has been found advisable to pare away a portion of the outer bark, to prevent the edges from curling up when they dry out. A small piece of chewing gum sometimes is used to shut out the air between the upper end of the bud and the limb. It is considered very important to select plump, well rounded buds, full of sap and swelling noticeably.

A number of successful examples of girdling shy bearing trees to "throw them into fruit" were observed. Rings of bark one-eighth to three-eighths inch wide are removed, the width depending upon the size of the limb. Strange as it may seem, the fall of the year is the proper season to girdle avocado trees.

Girdling is also used to prepare trees of undesirable varieties for top-working. While the girdled limb is bearing fruit, new shoots will be thrown out just below where the bark is cut. When large enough, these shoots may be budded much more successfully than the parent limb could have been grafted.

Two more "tricks of the trade" will prove of interest to avocado growers. One is to grow limbs where needed to balance the top by making a crescent-shaped cut above a dormant bud, which causes the latter to throw out a shoot. The other is to plant Sudan grass around young trees two or three months before they are to be transplanted, where the ground is too sandy for "balling." The grass roots hold the dirt together so it can be kept on the tree roots while the latter are being wrapped, with burlap.

EARLY, HEAVY BEARING

Anyone who has a preconceived idea that avocados are shy bearers will rub his eyes in amazement when he sees Rideout's trees of all ages simply loaded with fruit. Grafts and trees both bear the second year after being set, while fifty-four one-pound fruits were counted on a limb not much larger than a shovel handle.

Three seven-year-old trees ripened 150, 125 and 125 fruits, respectively, the present year. At 75 cents each, the fruit from these three trees had a market value of $300. The trees of this heavy fruiting variety, Lyon, are very small in circumference, there being plenty of room on one acre for 300, according to Rideout. This would mean a $30,000 per acre crop, estimated on the basis of the three trees observed!

"But," says Rideout, "let's be conservative and cut that estimate down to one-tenth. That is still enough to pay good interest on $30,000 per acre land."

TREES SIX FEET APART

Rideout is showing his faith by his works by planting Lyons six feet apart in his orchard, using the space between to grow young trees. The latter bring $3.50 to $5 each and the demand is said greatly to exceed the supply.

An official analysis of the Lyon avocado showed 26 per cent oil and 4 per cent protein, compared to 2 per cent protein and 30 per cent oil for the Fuerte, the standard of quality, he said. The shell is hard and the seed small—only 10 per cent of the total bulk. Season, January to April, when prices are high. By means of bud selection, Rideout is developing strains with extra small seeds and those which will ripen at other seasons of the year.

The three trees mentioned had at seven years already borne four crops and were a rod high, pretty and vigorous, good for several more big crops, according to Rideout.

Rideout also grows the "Dickey A" and the "Prince." Some heated arguments over the merits of Lyon have developed in the California Avocado Association, but its principal propagator and defender is not at all backward about standing up for the rights and value of his favorite variety.

Value of Cow Testing

(Continued from Page 8)

ing work. One does not see how he can help being most intensely interested in seeing this result accomplished.

If the dairy herds of the next generation are to be better than those of today it must be the result of constructive breeding. Culling and better care and feeding will help for tomorrow, for next month and next year, but for the future the slower method of breeding must be depended upon.

No one in our whole educational system holds a more strategic position for help and inspiration to this end than does the association tester, and it is hard to imagine an achievement more worth while than to have had a part in so stimulating the ideals of a group of farmers as to result in the permanent raising of their standards of production. The final results are not recorded in terms of milk and butter fat alone or the increased amount of money they bring. Increased self-respect, better living, higher ideals for family life all naturally follow recognized leadership in one's chosen calling. And this after all is the end and the aim of all education.

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Playing for Big Stakes in the Orange Game

CREDIT is more important than capital in orange orcharding. Close application counts for more than correct theories, while willingness to take big risks often wins success where conservatism fails. These are the conclusions of W. A. Jones, who has had long and successful experience in growing oranges —*The Editor.*

By O. H. BARNHILL

THE orange grower plays for high stakes. He must have plenty of nerve and be willing to place big money on the board if he expects to win success.

"I have never known a man to fail in orange orcharding who stayed on the job and used reasonably good judgment, regardless of the amount of money he had for his initial investment."

So says W. A. Jones, Azusa orange grower, who had nothing but an interest in a small home orchard when he entered the citrus industry and who now holds clear title to a place valued at $100,000.

Before sitting in at the orange game, Mr. Jones took a little flyer in gold mining, which is generally considered even more of a gamble than growing citrus fruit. He emerged with several thousand dollars' worth of interesting experience, but nothing at all in the way of financial assets. Returning in 1908 to his home town, Pasadena, he decided to engage in orange growing.

CARES FOR HOME ORCHARD

During twelve years' service as mail carrier, Mr. Jones had taken care of the home orange orchard, in which he owned an interest, working nights, mornings, week-ends and vacations. He knew by experience that there was money in the business and therefore felt comparatively sure of his ground in purchasing a ten-acre grove. Being without capital, he obtained ownership of the orchard by giving a mortgage on the home grove. Seven months afterwards the new grove was sold at a profit of $8000 and a nice "bunch of money" made on the crop.

With this capital and his share of the crop from the home orchard, Jones bought an old, run-down forty-acre orange orchard, going deeply in debt. That was in 1912. The next year came one of the worst freezes in the history of Southern California. Instead of being able to wipe out a portion of his debt, the latter was increased to $33,000. Six years later, however, the obligation was paid in full and both the intrinsic and market value of the place materially increased.

"It is necessary to spend money—lots of it—in order to make money growing oranges," declares Mr. Jones. "Last year I invested $3000 in fertilizer alone. One of my neighbors spends $300 per acre per year on his orange orchard and receives a handsome profit on his investment.

PIONEERS IN TRAPNESTING

Mr. Jones was one of the first citrus growers to "trapnest" his trees. Just before picking time a plat of the orchard is carried through the grove and the estimated production of each tree marked in the square space allotted to it. Five means 50 per cent, eight 80 per cent, etc. Two rows are inspected by walking between them, which makes it possible to observe three sides of each tree.

"We found it impracticable to keep track of the exact number of boxes borne by each tree, because the trees are picked in 'sets' of four, and Mexican laborers will not keep the crop of each tree separate. We also have found it unnecessary to letter numbers on each tree, as row numbers painted on the irrigation flume at the side of the orchard serve as a sufficient guide."

Water is delivered through this intake by a progressive co-operative irrigation company.

The best fertilizer to buy, in Mr. Jones' opinion, is the one which contains those materials which the orchard most needs and is sold at lowest price, quality considered. Stable manure is largely used, being purchased of Mexicans who make a business of hauling this material from dairy farms to orchards.

SELECTING FERTILIZER

Chicken manure costs 18 cents per cubic foot and is considered three times as valuable as stable manure. Dried blood is favored for the nitrogen it contains. Last year each tree was given five pounds of sulphate of ammonia, also a large quantity of manure. Nitrate of soda is also used extensively.

Tying dairy cows to fruit trees and keeping chickens to furnish manure for orange orchards Mr. Jones considers mistakes. "Dairying, poultrying and orcharding each require a man's undivided attention," he declares. "Where an attempt is made to combine two or more such branches of farming, one is bound to be neglected.

"Last spring a neighbor told me he had been so busy looking after his baby chicks that he hadn't done much work in his orange orchard. It is difficult, furthermore, to find a man who is well adapted to both horticulture and animal husbandry."

Mr. Jones and one of his heavy-bearing orange trees, which yielded 22 boxes of fruit in a single season.

The plan of burying manure in a deep trench is not followed; because, Jones asserts, large roots are cut off, the root feeding area reduced and the top soil unused. Where the soil is shallow the surface stratum should be utilized, believes Mr. Jones, by scattering fertilizer all over the top of the ground. Irrigation ridges are leveled with a spring tooth drag and the ground cultivated with a small shovel cultivator.

"Aphycus, a parasite which feeds on the black scale, were imported, but failed to destroy their host as well as chemicals," Mr. Jones relates. "A gum disease which kills the bark is undoubtedly the worst disease which attacks orange trees. Neither cause nor cure has been discovered, although several hypothetical theories have been advanced and various treatments tried."

Monthly irrigations each require 11 days' time. San Gabriel River water costs $10 per acre per year.

Mr. Jones is a firm believer in the old saying: "The best fertilizer for an orchard is the footprints of the owner." With the help of one man and team he takes care of his forty-acre orchard, keeping it in first class condition. Mules are preferred to horses. Bean straw is fed for roughage. It costs $14 a ton and is believed to have three times the value of barley straw, which was priced at $24 a ton. Oat hay was $27, alfalfa $40.

Yields as high as twenty-two boxes per tree have been secured and the fruit sold for $3 per box. Mr. Jones is a firm believer in co-operation, being an active member of the Azusa Irrigating Company, the California Fruit Growers' Exchange and the Farm Bureau. For years he served as a director of the Azusa-Covina Farm Bureau Center and has willingly given a good share of his time to co-operative work.

Giant liveoak trees add shade and beauty to the residence on the Jones forty-acre orange ranch.

Is Fumigation a Failure?

THE newcomer to Southern California who is at all familiar with the control of citrus insects in other citrus growing regions always is surprised to find that fumigation is here the standard method of scale control instead of spraying, not only in citrus districts, but in deciduous sections as well.

Spraying for scale has not been given serious consideration for the past twenty-five years. Preliminary studies have been conducted from time to time, but no thorough and complete investigation of the subject has been made. The unscrupulous manufacture and sale of spray materials designed to sell rather than to kill also has discouraged the investigation and use of scale spraying.

In the San Joaquin Valley spraying has proved the most satisfactory method of controlling the resistant citricola scale. Spraying also has proved effective in handling resistant species of scale in Texas and in Florida. From the results of many observations of sprayed orchards in Southern California, however, it is apparent that all sprays, with one exception, have proved to be unsatisfactory. This single exception is that class of sprays in which miscible oil is the prime factor.

Because of some of the results obtained through the use of miscible oil sprays and because of the very unsatisfactory results that have obtained through fumigation, especially during the last two years, there is a very strong feeling widespread among growers in the interior sections of Southern California that there should be a very thorough and adequate investigation of the whole question of spraying for the control of black and other scale pests of citrus trees. Fumigation has become a heavy tax on the citrus grower. It frequently has increased from one fumigation every two or three years to at least one every year and in many cases two a year, and its cost is rapidly becoming prohibitive.

Beginning with a rather crude but apparently effective method of using potassium cyanide in pots, fumigation practice has changed so that at the present time warm gas is introduced from outside the tent. This gas is made from sodium cyanide. With the rapid evolution of fumigation methods there has been a lack of equal development in efficiency.

In the coastal region, where the work is carefully and thoroughly done, fumigation is still quite satisfactory in killing all kinds of scale. The situation in the interior districts, however, is quite different.

There are several reasons given for the breakdown in the effectiveness of fumigation. One of the most common is that of the development of so-called resistant forms of scale.

Horticultural Commissioner Ryan of Los Angeles County, who has observed a large number of orchards which have been fumigated annually over a period of years, states that they contain 15 per cent more scale this season than last year. The scale situation is very disturbing to many growers.

Prof. H. J. Quayle of the Citrus Experiment Station has conducted a number of experiments on the use of cyanide dust for fumigation. The results are so promising that the work is being continued.

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

AUGUST 12, 1923

Beautiful Highways Mirror Community Pride

By LEWIS Y. LEONARD

Agricultural Extension Service, University of California

ROAD improvement is one of the most important and successful community activities carried on in California. The annual report of Prof. F. B. Crocheron, head of the Agricultural Extension Service, showed that during the past year 50 "Good Roads Days" were held, resulting in the improvement of 258 miles of road, at an estimated saving of $82,684.

Such worth-while activities can be made possible only through the hearty co-operation of the members of the entire district. A leader is selected who possesses an understanding of road repair. His duties are not only to arouse interest in the community for such activities, but also to sign up sufficient equipment and men to accomplish the desired amount of work.

ADVANCE SURVEYS MADE

Surveys are necessary in advance to ascertain the proper position of the culverts. These must be delivered beforehand, and a sufficient number of men assigned to each to be assured of their proper installation.

The grading next is undertaken. The tractor power generally is of various kinds, the only prerequisite being that the machines pull. Even then a tandem hitch often is necessary.

Aftes the grade is prepared, graveling often is advisable. If so, the gravel must be delivered to a near-by siding in time to be used.

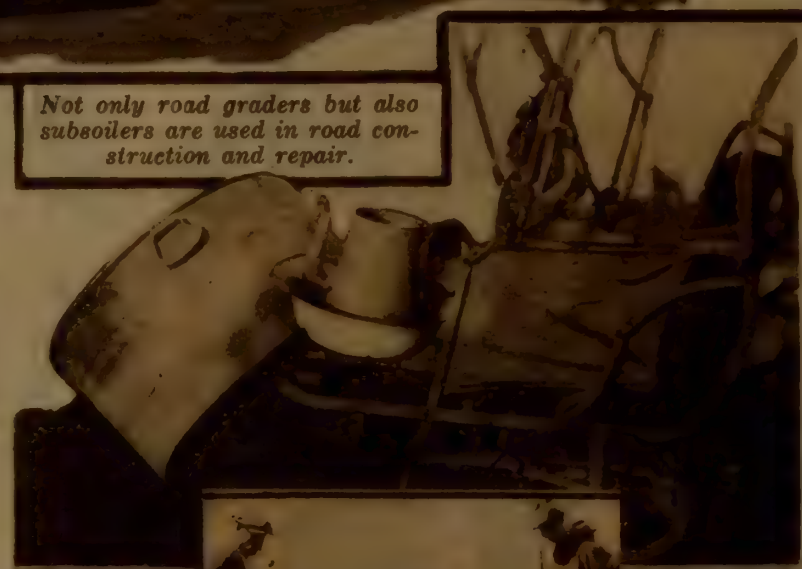
The ladies usually prepare the noon meal at some convenient place where the hungry workers may congregate. This plan not only makes better roads in the district, but it also makes better community spirit, two things to be worked for and treasured in every part of California.

Many communities are noted for their beautiful highway trees. This is a most enviable reputation. There are few districts which cannot, through proper planning and the expenditure of time and a little money, become a beauty spot.

"MANANA" POOR MOTTO

A common practice in the various districts is to "wait." Not that waiting is particularly conducive to results, but it is the easiest thing to do. One of the best methods for beautification of highways is to "go ahead and beautify," and in order to proceed, some one or some organization must take the lead, prepare the plans, secure the materials and put the plans into execution. This is not as difficult as may appear at first glance. There are many communities in California which have put over such programs, planting hundreds of trees along the roadway, and which have left behind them living monuments of their thought and industry.

There is great need for more highway plantings, and every community should look about and see just what can be done. The highway is theirs. That's certain. The funds, however, do not seem to be available. These often are raised by subscription, by societies or by entertain- (*Continued on Page 10*)



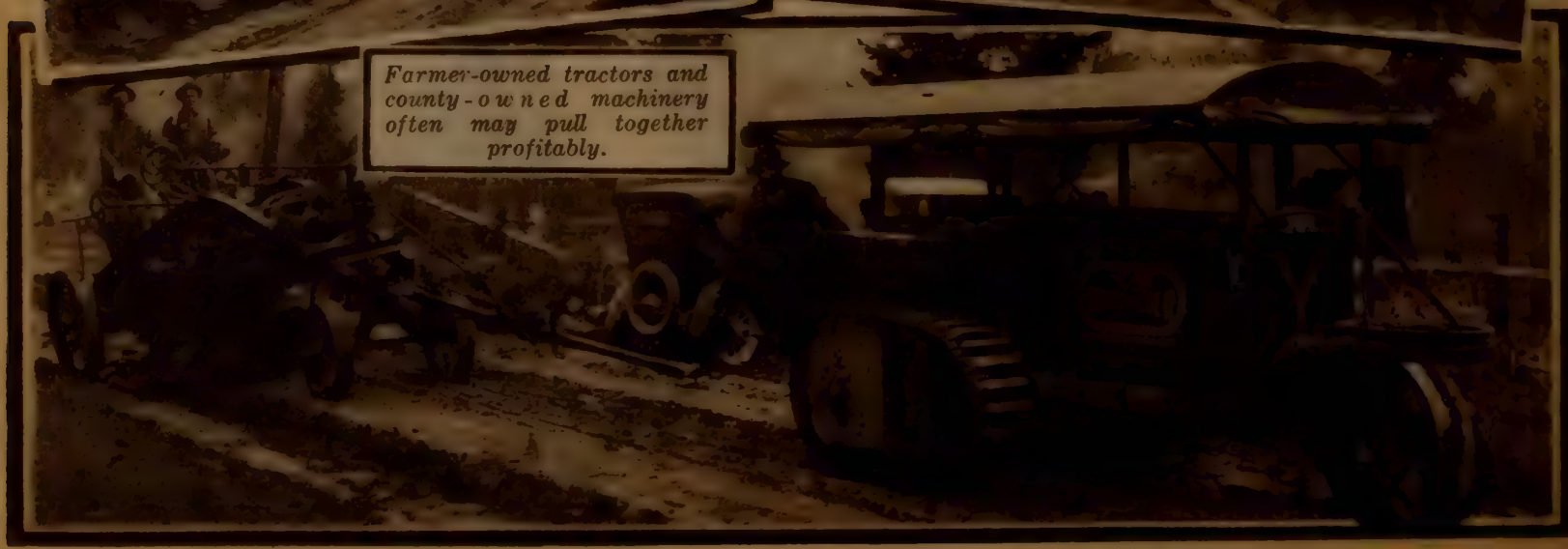
Not only road graders but also subsoilers are used in road construction and repair.

Above is shown an "ornamental planting" according to the views of some careless citizens. Community pride puts an end to such rubbish heaps.

Many hands make light work. The culverts are delivered in advance and not much time is required to put them in place.

This roadside junk pile was an eyesore until public opinion forced its removal.

Below is the kind of highway in which a community takes pardonable pride.



Farmer-owned tractors and county-owned machinery often may pull together profitably.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
AUGUST 12, 1923

Modern Miracle—Fruit Drinks Without Fruit

But What of the Grower and the Ultimate Consumer? Must They Join Forces in Order to Stop Manufacture of Bogus Beverages?

- *By* W. V. CRUESS

Fruit Products Laboratory, University of California

DID it ever occur to you to buy a bottle of so-called "orange," or "strawberry," or "raspberry," or "grape" soda water, take it home and compare its contents with the juice expressed from the real fruit? Or have you ever bought an "orange" drink at a fountain and wondered what sort of oranges were used in preparing it?

After even such a brief investigation you would be convinced of one fact—that somebody is making an enormous quantity of carbonated "fruit" beverages without fruit. This miracle ranks with the best described in ancient or modern literature.

The American public consumes some 5,000,000,000 bottles of carbonated beverages (we used to call it "soda pop") per year. Much of this huge total consists of drinks with "fruity" names. Some are labeled with trademarked cognomens and the name of the fruit is omitted, but the advertising is so illustrated and worded as to deceive the purchaser.

(Nor does the printed admission that the drinks are "artificially colored and flavored" benefit the consumer as long as no genuine drinks are available.—Ed.)

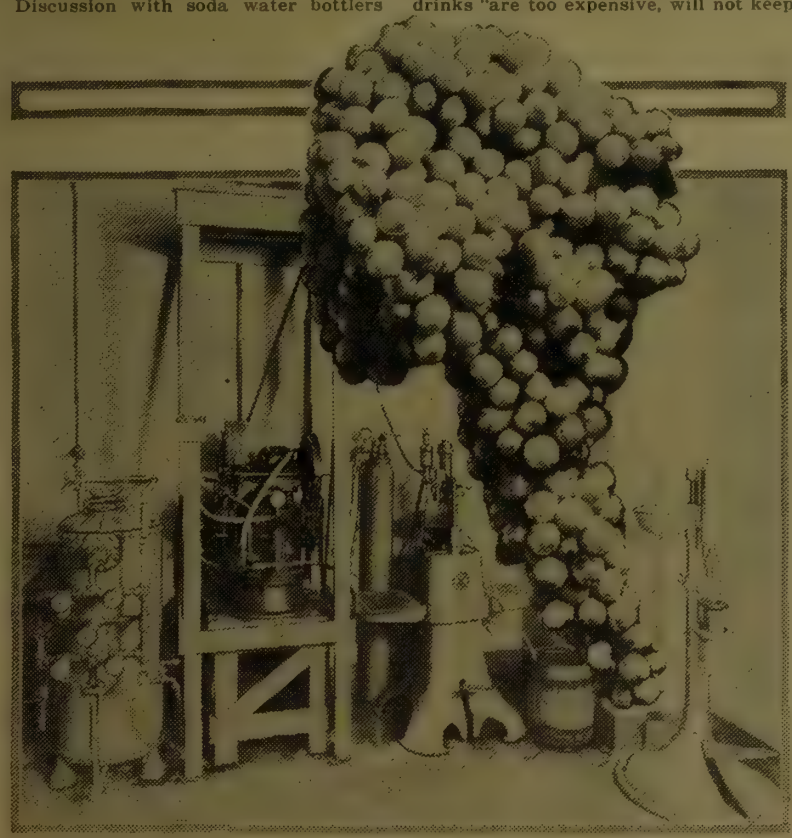
A chemist in the employ of the United States Department of Agriculture recently has studied the composition of fruit flavors and aromas, and as a result has devised recipes by use of which apple and grape flavors can be imitated closely. These chemically prepared flavors now are being used commercially to displace real fruit beverages—all of which tends to make a bad situation worse and doesn't particularly help the apple and grape growers.

It would seem that in the great fruit State of California, at least, some attempt should be made to give the public fruit drinks—in fact as well as in name.

UNIVERSITY EXPERIMENTS

The need for real fruit drinks first was brought to the writer's attention by E. J. Lea, director of the State Food and Drug Laboratory, who, in the course of his official duties was impressed with the vast extent of the imitation fruit beverage industry.

Discussion with soda water bottlers of the preparation of real fruit drinks brought forth the objections that such drinks "are too expensive, will not keep, do not have enough flavor and are thoroughly impractical." As a result of this "encouragement," we equipped the Fruit Products Laboratory at the University in Berkeley for the preparation of carbonated "honest-to-goodness" fruit beverages. We have been at it two years and are convinced that all of the bottlers' objections, mentioned above, have been met.



Small Commercial Carbonating and Bottling Plant at the University

California has a great abundance of fruits from which to choose; oranges, lemons, muscat grapes, red wine grapes, apples, cherries, pomegranates, loganberries, raspberries, strawberries and blackberries all have proved suitable for use in carbonated beverages. Orange, grape and the berry beverages have been the most popular.

Sound, ripe fruit of the lower grades can be employed. Often cull fruit of little or no market value thus can be turned to profitable use. In fact, the writer believes the manufacture of these products will in time afford an outlet for much of the State's rapidly increasing fruit output.

SYRUPS FOR BEVERAGES

In preparing bottled soda water the bottler places in each container a small amount (one to two ounces) of syrup and then fills the bottle with carbonated water. It has been our aim to prepare fruit syrups to be used in this same manner, in order that the present bottling plants could be utilized without alteration.

The process of preparing the syrups varies with the fruit used. Berries first are crushed and then heated to extract their color and to facilitate pressing. They are then pressed through heavy cloths between wooden frames. The juice then is filtered and an equal weight of sugar is added.

Oranges and lemons are pressed whole in order to obtain with the juice some of the oil from the rinds. Sugar is added to form a heavy syrup.

Red grapes are crushed, heated and pressed. White grapes are crushed and pressed without heating. The filtered juices are concentrated to heavy syrups without the addition of sugar. J. H. Irish of our *(Continued on Page 8)*

California Fig, in New Dress, Makes Its Bow to the Trade

Association Announcement Reveals Developments of Tremendous Economic Importance to State

THE final decision in the claim of California that a fig second to none grown anywhere in the world can be produced in the valleys of the Golden State is in sight this year. The jury that will give this decision is the combined forces of retailers and consumers of the country. The principal argument being presented in favor of the California fig is a new pack developed after a long period of experimentation by the California Peach and Fig Growers of Fresno.

The new pack was perfected this spring. It is being offered in the principal markets of the United States, in a limited way for this season, and reactions are being noted carefully. At every opportunity comparison is being made with foreign packs.

Upon the decision, to a marked degree, rests the future hopes of one of the potentially big industries of the West Coast.

The argument over the merits of American grown figs as compared with imported fruit is comparatively recent. California growers are steadfast in their belief in the dying struggle of a foreign supremacy which is bound to go into the discard with the march of progress. They claim further that the argument is recent because the development of the California fig industry is only in its early stages and there was no commercial competition until late years.

HISTORY REVEALS TRUTH

The average man interested in buying and selling figs believes that Smyrna or Asia Minor has been supreme in fig growing for many centuries. History proves this belief to be unfounded. Smyrna, in the light of fig history, is a recent leader.

Supremacy, both commercial and cultural, in the fig industry originated in Arabia. It followed the march of civilization westward, passing from Arabia to Greece, thence to Italy and Spain, and finally to Portugal. For many years Portugal led the world. Its fruit was known to the world as Faro figs, deriving the name from the city of Faro, the port from which they were shipped.

Less than 100 years ago, enterprising Greeks stepped into Asia Minor and developed the dried fig industry to a point where figs grown in the interior valleys, known as Smyrna figs and dedriving their name from the port of shipment, became famous the world over and supplanted Faro figs in the principal markets. Contrary to general impressions, Greeks, not Turks, control fig packing in Smyrna.

With the supremacy of the Smyrna fig, the Faro fruit became but a memory, and the growing of figs in Portugal became a decadent industry. All fig growing countries have bowed to the avowed supremacy of Smyrna for a century, it being only within the last two years, or since the war, that California growers raised the doubt of superior quality.

FOREIGN CONDITIONS ANALYZED

The starting point was a careful physical analysis of Smyrna growing conditions as compared with those of California. They were found to be very similar. In soil, temperature, seasons and land conditions, the similarity is marked. The big difference is in rainfall and moisture. The Aidin Valley where most of the Smyrna figs are grown, receives about 25 inches of rain per year. The San Joaquin Valley, where most of the California figs are grown, receives on the average about 50 per cent of this amount of rain. This is considered a point in favor of California, for heavy rainfall or excessive moisture causes splitting and souring of figs, and Asia Minor is a heavier loser in this respect than is California.

Inasmuch as the Calimyrna Fig is the true Smyrna variety transplanted, it was found that up to the point of packing, conditions and growing practice were the same.

A careful outline of handling methods as applied to Smyrna figs was drafted and with samples of foreign figs turned over to American industrial chemists. A series of analyses, carefully carried out, convinced these authorities that the secret of texture and flavor of Smyrna figs rests not on cultural or physical conditions, but in methods and practice of handling the fruit.

These methods were crude but followed certain lines easily traced by the experts. After a long period of research, the methods were analyzed, and translated into terms of modern packing practice. Following these directions, the manufacturing department of the California Peach and Fig Growers packed a number of cases and submitted them to buying experts in practically every big market in the country.

BUYERS ARE IMPRESSED

The comments received were interesting and extremely encouraging. Many said the new pack contained not California fruit but figs from Smyrna. A majority pronounced the pack equal to that of Smyrna and many said it was superior.

The investigations of the California Peach and Fig Growers have revised the entire packing practice relating to California figs and have brought in new processes designed to eliminate the shortcomings of American packs.

It was found the greatest handicap to expansion in the dried fig industry was infestation. The losses in the dried fruit industry from this source have been very high. To reduce them the association has built an immense vacuum fumigator, through which all fruit passes. This process kills all insect life and destroys the eggs. A sterilization process under live steam at a heat fatal to all insect life, and which also washes the fruit, is supplementary to the fumigator.

Under the new system, fig packing becomes one of the most sanitary fruit handling processes in the country.

All fruit is inspected by trained crews for smuts, sour fruit, and imperfections. Nothing is left to the law of averages. Modern machinery and smart American girls deliver high quality.

California is going about the job of acquiring rightful supremacy in the fig industry in a truly American way. It is making no appeal to prejudice or sympathy. It is endeavoring to deliver the goods in the way that all major American industries have done in winning their market from foreign competition.

QUALITY IS OBJECT

The United States imports each year approximately twice as many tons of figs as are grown in California. Each year the first quality pack of figs is sold within a few months. It is only lower and inferior grades that clog the market. The growers of Californai realize this and the work outlined above is the co-operative effort of 8500 growers to strengthen their position by offering better fruit than foreign interests can offer, thus to facilitate sales and consumption of the American product.

In many European countries figs occupy as important a place in diet as does bread in American diet. In the United States, figs are still in the confection class, generally speaking. The California Peach and Fig Growers has set out to place the fruit in the staple food class.

Under the Blue Ribbon brand, California figs now are being nationally and locally advertised, and the only brand of figs so advertised in the country. The California association of growers is doing the work that no firm heretofore had the strength or inclination to do in exploitation and promotion. With the new pack it is believed a new sales record for California figs will be set for 1923 and new and lasting American market won from foreign competition.

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ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of country and suburban editions of the
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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

FORCING EASTERN FRUIT SHIPMENTS The low prices which local dealers offered for early varieties of California deciduous fruits forced many growers to make unusually large Eastern shipments. Early in July these consignments totaled 4471 carloads, compared to 1463 for the same period last year.

What seemed a misfortune may prove to be a blessing in disguise, since much higher prices were received for the fresh fruit sent East than home buyers would pay for canning and drying purposes. Santa Clara cherries, shipped loose in lug boxes, netted growers as high as 17 cents a pound, single cars bringing $5000 and $6000. The Prune and Apricot Growers' Association shipped 500 carloads of apricots. Precooling, refrigeration and careful handling of well-matured fruit of good quality were important factors in the high prices secured.

SHADE STOCK WITH TREES OR SHEDS It is a common and deplorable sight to see livestock sweltering in hot California sunshine. Chickens which have been provided with costly, up-to-date laying houses and furnished the finest kind of feed, pant pitifully during the dog days, with wings held out, unprotected from the sun's burning rays

High-priced milk cows on model (?) dairy farms spend the long, hot summers in dusty corrals, without a board or branch between them and the enervating and exhausting heat which pours down from above. Other similar instances of inexcusable neglect might be given.

An agent of the Dairy Council was asked why dairymen could not see that it would pay well to plant shade trees and build sheds for shade. "They do see it," he replied. "It's just the California habit of neglecting things, which explains the failure to provide such necessary conveniences." Investigation at one of the largest modern dairies in the State proved this explanation to be correct, at least so far as that particular plant was concerned.

AGRICULTURE AND LABOR ON COMMON GROUND. The farmer and the laboring man do not always agree or pull together—although they have much in common. In at least one instance, however, they have, through their official representatives, arrived at the same conclusion.

Gray Silver, Washington representative of the American Farm Bureau Federation, recently said as reported by "Farm and Fireside": "Laws alone won't make farming pay. A law may be like a hoe hanging in your tool shed; it cuts no weeds until you apply your own elbow grease."

Then Samuel Gompers of the American Federation of Labor, talking before the recent wheat conference in Chicago, delivered the following: "If the farming interests of America can devise no sounder methods of maintaining their proper place in the economic scheme of things than a resort to legislative cure-alls they are inevitably doomed to disappointment."

Gompers' pessimistic utterance, however, need not be taken literally to heart. The farmers, thanks to the Farm Bureau Federation, already have accomplished a good deal of means of legislation. But both these public men are right in stating that laws in themselves are of little practical or permanent value. Their usefulness begins when they are linked with sound business judgment, and applied with vision and wisdom.

GREAT EVENTS PENDING IN LAND SETTLEMENT—An outgrowth of Dr. Elwood Mead's State land settlement plan—one which promises to become the greatest colonization project in America—is well under way in California. Leading owners of large tracts of land have formed the California Approved Land Settlement Association, of which J. V. Mendenhall of San Francisco is president and Fred Faulkner, manager.

It is purposed to advertise the advantages of farming in California and to furnish prospective settlers with definite data regarding locations, climatic conditions, crops and markets. It is expected more than one million acres will be represented in the association and that millions of dollars will be added to the agricultural wealth of California through its activities.

Only projects which have received the official approval of the State Real Estate Commissioner will be included, according to the plan of the organizers. The membership list includes nearly twenty of the leading land holders of the State, most of the tracts represented being in the San Joaquin and Sacramento Valleys. Because of the high caliber of the men behind this movement, prominent bankers and public officials have expressed the opinion it will accomplish results which no individual or single company could hope to bring about.

California long has needed some plan of this kind to bring under cultivation its tens of thousands of idle acres. Since the voters failed to authorize the money necessary to continue the State land settlement work, it is to be hoped the new organization will lose no time in carrying out its ambitious program.

"What's New?"—Keeping Abreast of Agricultural Progress

County Buys Guernsey Farm

IT IS reported that the San Diego County Farm has purchased the famous Edgemoor Farm at Santee. This is one of the most elaborately equipped dairy and breeding farms in California. It was formerly the home of Walter Dupee's world-renowned herd of registered Guernseys. The San Diego County Farm already had a herd of high-class registered Holsteins.

High Prices for Cattle

AT various recent sales of Guernseys, average prices ranged from $456 to $1212. Jerseys have averaged from $699 to $1008. But according to C. L. Hughes of the California Holstein Association, only two sales of the latter breed have averaged more than $600 this year. The average price of the Tulare Guaranty Sale, for example, was $657. Mr. Hughes regards this situation as being most favorable to prospective Holstein buyers, pointing out such attractive prices for the black-and-whites may not prevail again for years.

Old Orchards Bear Best

CONTRARY to the general belief, the older a citrus tree becomes the more fruit it bears, under proper conditions, according to Prof. R. S. Valie, who recently completed a survey of California citrus orchards. Lack of water and nitrogen are the two main factors which limit production, the survey indicates

Each tree needs two and one-half to three pounds of nitrogen, at least half of which is derived from organic sources, and three to four feet of water, in addition to the natural rainfall, for maximum production, concludes Professor Vaile.

Population Pushes Hartsook

FRED HARTSOOK, well known Holstein breeder, is one of the Los Angeles County dairymen who have been forced to move by the rising tide of population. His 40-acre farm just south of Lankershim is said to have been sold recently to subdividers for considerably more than $1000 an acre. The livestock and dairy buildings have been transferred to a tract of land north of Lankershim. Another fine dairy farm on Ventura boulevard, southwest of Lankershim, recently was dismantled to make room for residences.

Saving Silage by Sealing

THE Italian method of saving silage by sealing the tanks, to exclude the air, is being tested at the University Farm at Davis with good results. The material is thoroughly compacted in filling, in order to avoid setting.

The silo top is sealed with a lid made by nailing redwood boards to two-by-sixes and lining the under side with galvanized iron. The lid is weighted with stones to maintain close contact with the silage, and the edges sealed with melted asphalt or coal tar. Keeping out the air prevented spoilage, the tests indicated.

Wine Grapes Are Cheaper

THE price of California wine grapes is 20 per cent cheaper than last year, taking the prices set by the California Grape Growers' Exchange as a basis for comparison. The 1923 prices range from $85 a ton for Alicante and Petit Bouschets down to $15 for Feherszagos, averaging $50.

"The reduction in price was made for the purpose of avoiding the trouble which other co-operating marketing concerns got into by attempting to maintain false valuations," explained E. H. Sheehan, president of the exchange. "We hope to maintain an easy Eastern shipment period."

Finds Fine Shipping "Cot"

A SEEDLING apricot of great promise for shipping has been found by Weller Curtner of Santa Clara County, the discovery coming at a time when the shipping of apricots is increasing in that district. The new "cot" is equal or superior to the Blenheim in size, appearance and quality, though a little rougher, but it is considerably earlier. On a hillside orchard where the season is ten days later than in the valley, the last fruit was picked the day before the first valley Blenheims were gathered.

This new variety is a clingstone, therefore it can be picked ripe and will hold up well in shipping. It will, however, be almost worthless for canning and drying. This is the reason no mid-season clingstone apricots have been developed before.

TULARE FARMER.

Oats Yield 110 Bushels

ALL previous official American wheat production records were broken this season when a field of Onas wheat on the University Farm at Davis, Calif., produced at the rate of 110.4 bushels of threshed grain per acre, equivalent to 47.6 bags or 6624 pounds. This exceeds by 8.4 bushels per acre, the highest previous Experiment Station record of 102 bushels per acre made by Turkey wheat under irrigation at Fort Collins, Colo., in 1918, according to Prof. George W. Hendry.

Professor Hendry in commenting upon this extraordinary crop states that it was the product of systematic breeding, seed selection, seed treatment, approved dry farm practices, and a deliberate attempt to make a naturally productive soil yield to the limit of its capacity. The season was favorable, but no fertilization or irrigation was practiced. The crop, which is of high milling quality, has elicited general interest and is to be widely distributed for seed.

Jail Offending Dairyman

FRED PIMENTEL, San Pablo (Contra Costa County) dairyman, is serving a 60-day jail sentence for selling milk from cows which he had substituted for those which should have been tuberculin tested.

"To willfully sell raw milk from cows afflicted with a loathsome and transmissable disease is a most serious offense," declares G. H. Hecke, director of the State Department of Agriculture. "It is not only a direct violation of the pure milk law, but also a most vicious procedure that endangers the life and health of the milk consumer, who reposes confidence in a law enacted for his protection."

Develop Fruit Bud Orchard

A THIRTY-ACRE orchard was planted this year by the Nurserymen's Bud Selection Association of California for the purpose of raising a superior quality of fruit buds for propagation purposes. Nearly a half million seedlings have been set out. These will be budded with buds obtained from trees having first-class fruiting records extending over several years.

"The growing of this fruit bud orchard was made necessary," explains F. W. Anderson, president of the association, "by the general adoption of the long pruning system, which results in little surplus growth for buds and cions."

Trade Climates and Labor

WITH the opening of the apricot harvest in the Aromas section of northern Monterey County, a committee of growers published in the California Farm Bureau monthly an invitation to fellow producers to come and help harvest the crop. This suggestion was directed particularly to those living in the hot interior valleys, who in this way were enabled to visit the cooler coast region with their families, at the same time finding profitable employment for all. The new lake, formed by the Pajaro River dam at Aromas, was one drawing card which was expected to attract willing workers.

California has so many varieties of topography and climate we may expect the idea to spread. With the family automobile and camping equipment, the producer of one seasonal or regional crop should find it possible to visit an entirely different section after his own busy season is ended. A little "trading about" after this plan would go far towards solving the labor problem, and at the same time enlarge the horizon of all concerned. It should have the effect also of welding more closely the ties of fellowship between farmers of all sections, more particularly some of the younger families or smaller operator who have few opportunities for travel and observation.

"THEY SAY"

CARLYLE THORPE

General Manager California Walnut Growers' Association

CARLYLE THORPE

THE 1922 season tonnage of walnuts distributed by the association was four times that distributed in 1912; the average price received by association growers was twice that of 1912; the association distributed 80.2% of the 1922 State crop; in 1912 it distributed only 51%. The State today has in excess of 100,000 acres planted to walnuts, and in 1912 it had only 30,000 acres.

The California walnut industry for the past eleven years has gone forward steadily, with no serious setbacks, and may today be considered as growing comparatively faster than any other important agricultural or horticultural industry in the State.

The net cost of handling and marketing the crop, including advertising, field work, legal, legislative and growers' service, salaries, commissions and office expense, was only about 1 1-10 cents a pound.

The total (estimated) value of the shelled crop of 1,809,172 pounds for 1922 is $850,000. The f. o. b. value of the unshelled crop of 40,111,800 pounds was $9,213,727.75.

Despite duties of 4 cents on unshelled nuts and 12 cents on shelled nuts, there was imported into the United States during 1922 more than 48,000,000 pounds of walnuts. These imported walnuts were sold to the trade at an average price of approximately 15 cents a pound, as against an average price of all association holdings of between 22 and 23 cents a pound.

It must now seem obvious to every grower that if prices comparative to those established during recent seasons are to be maintained, the association must continue its present standards of grading, which are barely high enough to prove acceptable to the average consumer. It must be apparent that if grading standards are lowered, prices must also be lowered to a point where they are competitive with the less dependable pack of imported walnuts. It must be conceded that he cannot get price without quality and that he cannot get quality without a reasonable amount of grading.

Bob Jones' Corner

Little Stories of Farming

By

ROBERT E. JONES
Contributing Editor

FOLLOWING THE MEAD PLAN

Dr. Elwood Mead is in Victoria, Australia, helping straighten out a colonization problem. In the meantime, demonstration of the new idea of colonization by the State, under the leadership of Dr. Mead, is doing much good in California.

Advanced ideas "take hold" slowly, yet lately I have heard of two private projects that are following the Mead plan rather closely. One is in Kings County, where "ready-made" farms are being provided for the settler on a small payment down and longtime credit. The other project is in the dairy district around Tracy, San Joaquin County. Private land companies have not gone as far in the Mead direction as they will before they move any considerable acreage.

PETALUMA RECOGNIZED

A New York bank has heard the cackle of the Petaluma hen, judging by the following quotation from an article in a New York newspaper written by a banker there:

"It is on the Pacific Coast, where soil and climate are ideally suited for egg production, that the egg industry has been placed on the same scientific plane occupied by other great staple food crops of the Nation. The center of egg production is at Petaluma, which is to the egg industry what Detroit is to the automobile, or Akron to tires."

California supplies most of the white eggs which reach the New York market. We learn that the highly successful Pacific Coast poultry organizations have formed a selling agency in New York and have incorporated under the laws of that State.

LECTURING ON NEW-OLD FOOD

Dr. E. V. McCollum, a plain man who enjoys plain folk, is the person who discovered Vitamine A, the growth promoting substance so abundant in milk. He has furnished much of the ammunition which the dairy industry uses in telling the world of the virtues of its product. It was Dr. McCollum who said, in discussing a satisfactory diet for victims of wrong living:

"First, the most generous use of dairy products is essential. Instead of half a pint a day, the amount used by the average individual throughout the country, each of us should consume at least a quart, either as a beverage or in foods."

At this writing Dr. McCollum is in California, having come out from Johns Hopkins University to deliver summer session lectures at the University of California. He also is making several popular lectures under the auspices of California Dairy Council.

Dr. McCollum once said it was the duty of the dairy industry to "spread the newer knowledge of nutrition," for the human race needs to know what is good for it. The dairy industry of California has responded to this call.

MADDOCK ON SHASTA JOB

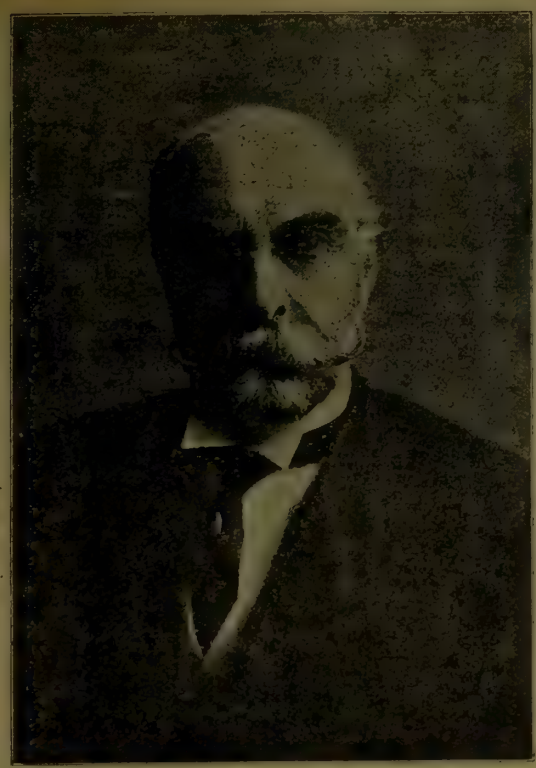
George Maddock, the engineer who built the great Sutter Basin project of the Sacramento Valley, is working on another big job, which eventually will mean the irrigation of 287,000 rich acres in Shasta Valley. Maddock has been engaged as consulting engineer for the Shasta Valley Irrigation District.

"This district was formed about two years ago," writes Maddock, "having in contemplation the diversion of the Klamath River for irrigation of about 287,000 acres in the Shasta Valley. The State and the United States Reclamation Service co-operated with the district in making a report on the feasibility of the project. The report was recently completed and showed the project to be commercially impracticable because of the large unit cost.

"The district is now searching for other means to irrigate Shasta Valley. Wherever water has been available for irrigation in this valley the residents become very prosperous through dairying. The lands must have water and the people are clamoring for it. There are about 3000 dairy animals now producing profitably on lands located in the Granada and Big Springs irrigation districts in the valley.

"There are several good reservoir sites in the lower end of the valley, where can be stored the flood waters of the Shasta River and its tributaries, there being water available from these sources to irrigate about 20,000 acres at a reasonable cost. When this water is made available the lands will become very valuable, and no doubt soon will be colonized. The lands are high grade, but must have water to make them produce profitably."

Professor Edward J. Wickson



UNIVERSALLY respected and admired, and for half a century identified with the agricultural progress of the Pacific West, Professor Edward J. Wickson has gone to rest. Thus has closed an inspiring life of public service.

As former dean of the University of California College of Agriculture, and as editor of the Pacific Rural Press, his influence was ever for high ideals.

California will miss Professor Wickson and his labor of love, but the fruits of that labor will remain as a lasting monument to his fine character, sound wisdom and brilliant mind.

ORCHARD and FARM joins with the late Professor Wickson's thousands of friends and admirers in expressing deepest sympathy for his bereaved family and lifelong associates.

Producing Quality Plums

"HARD work tells the story," declared J. E. Bergtholdt, when asked to tell why three car loads of plums from the Silva-Bergtholdt orchards at Newcastle brought an average of $2895 on the New York market June 11, 13 and 14, while other plums sold for an average of only $2080 per car load on the same dates.

"Good fertilization, thorough spraying both in the fall and spring, intelligent pruning, clean cultivation, careful thinning, abundant irrigation, painstaking picking for both quality and maturity and approximately perfect pack—these are the things which explain the premium of $815 per car which our plums brought on the New York market."

PLAN SPECIAL DAIRY TRAIN

The California Dairy Council is planning to charter a special train to carry delegates from this State to the World's Dairy Congress, which meets at Washington, October 2.

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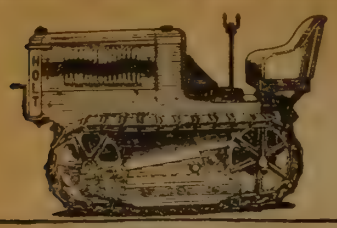

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Prepare Now for Drying Prunes

Seasonable Suggestions on Dipping, Pricking and Drying Prunes and European Plums

By F. C. BARNARD
Division of Pomology, University of California

PRUNES are plums which can be cured without pitting or fermenting. The varieties most used for curing in California are French, Sugar and Imperial. The following European plums also are dried to a certain extent: Silver prune, Italian prune, Robe de Sargeant, Coates, Splendor, Standard, Golden prune, German prune and the Tragedy.

Prunes which fall naturally from the tree contain the most sugar, dry heavier and give the best quality product; therefore, it is advisable to allow them to hang on as long as possible. Most growers go over their trees three or four times during the season. The first two or three pickings take place after sufficient fruit has fallen to the ground, at intervals of from one to two weeks, depending on the climate.

The soil under the trees should be perfectly clean and smooth to facilitate rapid and clean picking. Sometimes the tree is shaken lightly, following the first picking. However, most growers confine their shaking to the third or fourth picking, when the trees are stripped. Prunes which are not fully ripened are very noticeable during the dipping and drying process by their red color, also from the slowness with which they dry.

DIPPING IN LYE WATER

After harvesting, prunes are put in a wire basket and dipped in a solution of lye and hot water. The amount of lye used and the temperature of the solution varies considerably with different growers. However, the solution should be kept as near boiling as possible. The standard dip is four pounds of lye to 100 gallons of water. This is sufficient for about 400 boxes, providing the fruit is well drained before dumping out the basket.

Sometimes when the solution is too hot and the prunes are dipped too long a depth of 1-32 of an inch just under the skin is cooked to a dark brown. This portion becomes jellied or partially solidified and during the drying process the moisture from the fruit does not evaporate properly; hence "bloaters" and "chocolates" occur. A boiling solution gives better results than one of cooler temperature.

The length of time the prunes are left in the solution is best learned by experience. The object of dipping prunes is to remove the bloom and check the surface of the fruit sufficiently to facilitate rapid and proper drying. Fruit which is improperly checked makes many bloaters, therefore the person dipping should watch the fruit and see that the dip is long enough to secure proper checking.

Prunes should not be dipped so long that large cracks appear or until the skin sloughs off, as this makes a poor quality dried prune. The average dip is from 15 to 20 seconds, but varies with the condition and variety of fruit, kind of soil, temperature and strength of solution. The greener prunes tend to check easier than ripe prunes. The hotter and stronger the solution, the quicker prunes are checked.

FRENCH PRUNES ARE TOUGH

Prunes from heavy soils have tough skins. French, Sugar and Imperial prunes rank in the order named in toughness of skin. In fact, Imperials are so tender that a weaker solution is used and some growers spread the fruit on trays in the sun for three or four days before dipping.

After the prunes are removed from the dipping solution, they are sometimes rinsed with cold water. This custom, however, is not practiced by the majority of growers.

The dipped fruit is allowed to pass over a shaking needle-board, which pricks the fruit in numerous places and facilitates drying, especially with underchecked prunes. This practice, however, is used only by about one-half of the growers, probably due to the fact that the needle-board often becomes covered with leaves and dirt, so that the pricking is not effective. However, its use gives the best quality of dried prunes.

After passing over the pricking-board the prunes pass on over the grading screens. The screens are agitated while the prunes pass over them. The average number of grades handled by the majority of graders are three: No. 1, No. 2 and No. 3, or "pie" grade. Some dippers, however, are fitted up with screens to separate a large number of grades. The No. 2 and 3 grades dry most rapidly owing to their smaller size and the fact that a good many of them are shriveled considerably. Therefore the different grades should be dried separately to obtain best results.

VARIOUS TYPES OF DIPPERS

Dippers may be of the manufactured type or ordinary home-made affairs. In the Santa Clara Valley a rotary drum type of dipper is made, also very successful hand dippers, by which the prunes are immersed and removed from the solution by a large hand lever connected to a long wire mesh basket over a steel tank holding about 100 gallons of water built over a brick furnace.

Another dipper has an endless draper arrangement whereby the prunes are lifted from a hopper and dumped into a cylindrical tank. In the tank is the lye solution and a system of revolving paddles, which are so timed on a central shaft as to push the prunes out over the edge onto the grader screens, after the proper length of immersion.

SUN DRIES PRUNES QUICKLY

As the fruit rolls from the grader onto the trays the prunes should be evenly spread over the tray, one layer deep. The trays are then placed on the tray car. After a sufficient number is on the car it is pushed to the drying yard. Here the trays are spread in the sun, the same as for apricots. The different grades are kept separate. Sometime during the drying process some growers rake over the trays with wooden rakes and separate the "bloaters" and "chocolates," while others do no culling or sorting until they are taken from the stacks.

Prunes are exposed to the sun from five to ten days, depending on climatic conditions and the condition of the fruit. As a rule, when they are about three-fourths dry they are stacked after the plan used for apricots. The fruit remains in the stack from one to four weeks, depending on climatic conditions.

Well cured prunes should be leathery to the touch, flexible and fairly firm. If the prunes can be made to rattle on the tray they are too dry. The flesh of the dried prune should be amber colored, not dark. If a double handful is squeezed together and let fall the prunes should fall apart readily if they are dried sufficiently. The pit will not slip in the flesh when rubbed between the thumb and forefinger. If the fruit is not thoroughly cured when stored, frequent mixing or turning is necessary, to prevent possible spoiling before it is entirely cured.

The rate of shrinkage varies, some prunes drying down to one-third their original weight; others in the proportion of from two and one-fourth pounds fresh, to one pound dry. An average yield for the French, Imperial and Sugar prune is 2.12, 2 and 3 tons dried per acre, respectively. The Sugar prune, however, is not a consistent bearer. Five to $6 per green ton includes all dipping and dry yard costs under average conditions.

Reader Defends Cultivation

DOES cultivation in itself conserve moisture? Or is it, as the University of California has stated, following recent experiments, of value only to destroy weeds which the university calls the real robbers of soil moisture?

A subscriber, J. E. Ware of Oceano, writes: "It all depends upon the kind of soil and where located. I know of soils in California which if the former did not cultivate or maintain a growing crop, would crack open as deep as two feet. Cultivation will prevent such soil from drying out."

POMEGRANATES SELL WELL

Two carloads of Wonderful pomegranates—forty tons—were sold last year by J. W. Irwin of Lindsay, who also grows navel and Valencia oranges, olives, quinces and plums in commercial quantities on his Aloha ranch. One car of pomegranates netted $1071 and the other $1044. The remainder of the crop was sold in small lots at various California points at 4 to 7 cents a pound, gross.

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What Readers Want to Know

EFFECTS OF PLANT-CULTIVATION—Did the cultivation experiments recently conducted by the University of California indicate that cultivation increases the amount of carbon taken into plants?—JOHN WILLIAMS, Sacramento County.

The experiments to which you refer had to do only with the effect of cultivation on the control of moisture and not with the other effects on soils. Our tests indicate that in the absence of weed growth in an orchard the constant stirring of soils for the purpose of maintaining a soil mulch is not necessary, insofar as the conservation of soil moisture is concerned.

The formation of organic compounds in plants depends upon the assimilation of carbon. This element is provided in the carbon-dioxide of the air. Carbon-dioxide is absorbed by the leaves of the plants.

You ask whether cultivation is beneficial in increasing the amount of carbon taken into the plants. Cultivation can have no effect on the assimilation of carbon. It might, however, indirectly affect this, because if cultivation is beneficial in any way in increasing the general vigor of plants and results in increased leaf area, the amount of carbon-dioxide absorbed from the air might then be increased.—F. J. VEIHMEYER.

WHITE-SKINNED SUSSEX SHY LAYERS—Please tell me all about the chicken business. Am especially interested in the Sussex breed.—Peter Kofold, Solano County.

The Sussex is an English general purpose chicken that has become very popular in Great Britain. Judged by the American standard, this breed has several drawbacks. In the first place, we have been educated to prefer fowls with yellow skins, and the Sussex skin is white. It is possible, of course, to educate the public to the point where white-skinned birds will be accepted, but it would take a great deal of hard work to accomplish this result.

Americans also demand that hens shall be good layers. Almost any breed of chickens can be bred to heavy egg production, but this trait is not a strong point with the Sussex. There are three kinds of Sussex chickens—white, speckled and red. They have four toes and single combs.

If there are any poultry points upon which you would like information I should be glad to make an effort to supply the desired facts. I cannot, however, tell you all about chickens, because that would require a large library, and I am only one of the many who knows something about the poultry game, but not all.—W. J. DRYDEN.

CURING RABBIT SLOBBERS. We keep a few rabbits for family use and should like to know how to cure them of what is called here "sniffles" or "snuffles." When the young ones are a month or six weeks old they get "droopy" and die.—MRS. W. ROBINSON, Sacramento County.

Your rabbits probably have the slobbers, a form of indigestion usually caused by letting the young ones leave the nest too soon and eating grain and hay before their stomachs are sufficiently developed to handle such food.

Keep the hutch dark by placing a fairly high board in front and do not disturb the young rabbits until they are at least three weeks old. They should be kept with their mother until eight weeks old.

To cure rabbits of the slobbers, take away all food, water and bedding for 24 hours. Rub salt around the wet places twice a day. Add one tablespoonful each of chlorate of potash and powdered ginger to one-half pint of water and give the animals a dose of this medicine, well shaken, twice a day.—GEORGE GREEN.

HONEY FROM BEAN FIELDS—What is the value of the black-eye bean as a honey plant?—C. L. BUNGER, Riverside County.

Black-eye beans give a small quantity of nectar for a considerable period, but rarely or never in sufficient quantity to permit the storage of a surplus, no matter how large an acreage the bees have for pasture.

The nectaries or sweet-secreting glands of the bean plant are at the axils of the upper leaves as well as at the blossom bud. Bees begin to work on beans several days before the blossoms appear and continue until the pod is nearly mature. The amount of nectar secured is so small that a bee can make very few trips per day and a strong colony will secure only enough to keep up brood rearing.

The best and most certain honey yield among beans is the bush or "baby" lima. When irrigated, it gives a honey flow for long periods, often for three months. The yield per day, however, is light compared to other sources of honey, the strongest colonies under the most favorable weather conditions seldom exceeding over three pounds per day.

Next to the bush lima in honey yield is the seaside or large lima, which often gives a larger yield in a shorter time, but is much more uncertain and more easily injured by unfavorable weather conditions. It is rarely irrigated, but is said to yield more beans and honey when so treated.

Bush limas, when dry-farmed, throw up but one set of blossom-spikes, but when irrigated may send up several successive series of spikes, covering a period of several weeks. Lady Washington beans attract bees a little, but ordinary white varieties apparently not at all.—J. D. BIXBY SR.

TREATMENT FOR NEGLECTED TREE—Please tell me how to take care of a small, neglected fruit orchard?—A. LYMER, Santa Clara County.

Care of trees during the summer season consists principally in irrigating and cultivating the soil. In special cases spraying also is required. Apple trees, after they come into bearing, must be sprayed for the control of the apple worm or codling moth. However, if this spraying has been neglected just as the bloom is falling, there is little good to be accomplished by later spraying.

I would, therefore, suggest that you care for the trees this summer by giving the soil the best of attention, and next spring when about 90 per cent of the blossoms have dropped from the apple trees they should be sprayed with lead arsenate, according to directions. Peach trees should always be sprayed with commercial lime-sulphur solution, just before they come into bloom.

Your county horticultural commissioner would, I am sure, be glad to help you with your tree problem.—G. P. WELDON.

TREATING CHICKEN CHOLERA Two of my R. I. Red pullets have developed a sort of palsy, having to struggle to walk. What is the disease and treatment?—MRS. C. E. FREEMAN, Tehama County.

Your pullets probably are dying from cholera. It might be well to send one of the dead birds to Dr. J. R. Beach, University of California, Berkeley, for a post-mortem examination. This service, of course, is free.

Cholera is due to a special organism or bacteria, which could get into your flock either by being carried by other birds or on the feet of visitors.

You will have to quarantine the sick birds at once and if possible remove the rest of the flock to new ground. If it is not possible to remove to new ground, then disinfect and thoroughly clean the houses. I also would suggest that you use enough potassium permanganate in the drinking water to give it a claret color.

With your present mash I would not recommend the use of the additional corn meal. As a matter of fact, this disease often appears to be the result of too heavy feeding. It would be well for you to reduce the mash by adding half of wheat bran or even to use all bran for the time being, in case the rate of death is very large.

Other additions to the ration should include a liberal use of charcoal. I understand you feed no charcoal except what is contained in your mash. By neglecting green feed you are doing considerable damage to the flock. Continue with the sprouted oats and, in addition, feed lawn clippings or some other greens.

You cannot be too careful about sanitary conditions. I would suggest that you sprinkle your ground floor with a liberal amount of lime, in addition to spraying or painting the house with crude carbolic acid, or some mixture containing this chemical. Any reliable disinfectant that will kill germs will serve the purpose.—W. J. DRYDEN.

The pullets looked like little hens. Actual photograph of E. C. Morris's yeast-fed birds.

50% laying at four months of age on Fleischmann's Pure Dry Yeast. Fred H. Clark's ranch, Cotati, Calif.

George Morrison raised these excellent young birds on feed containing Fleischmann's Pure Dry Yeast.

No diarrhea—no leg weakness after using Fleischmann's Pure Dry Yeast. F. M. Crowe's flock, Owosso, Mich.

Leading poultrymen tell why they feed Fleischmann's Pure Dry Yeast

Poultrymen everywhere are making 1923 their most profitable year by feeding Fleischmann's Pure Dry Yeast.

"Let me thank you once more," writes Harvey C. Wood, of Bound Brook, New Jersey, "for introducing this life-saving element into our feeding program."

Fred H. Clark writes: "According to the accurate figures I have compiled from my books covering the test-period from July to November, if I had fed Fleischmann's Yeast to both flocks of 500 hens I would have increased my profits 50 per cent more. And that is on prices based upon what we were receiving from the Poultry Producers of Central California."

"I have never seen chicks feather so rapidly and develop such bone," writes E. C. Morris, of Petaluma, Calif.; "this we attribute entirely to the addition of Fleischmann's Pure Dry Yeast."

Fred M. Crowe's chicks, at the Crowe Poultry Farms, Owosso, Michigan, had leg weakness and diarrhea. He fed Fleischmann's Pure Dry Yeast. "A short time after," he writes, "they were all over it."

Use ½ lb. of Fleischmann's Pure Dry Yeast to every 100 lbs. of mash for dry or wet feeding. Fleischmann's Pure Dry Yeast can be profitably used for feeding all farm animals. Check on the coupon which booklet you want.

Fleischmann's Pure Dry Yeast comes in 2½ pound cans delivered. We pay postage or express. Mail the coupon today.

Caution: Do not be misled by imitations. Fleischmann's Pure Dry Yeast is *all* yeast—yeast in its most concentrated form. It contains no corn meal or other fillers. To be sure of results, order Fleischmann's Pure Dry Yeast—using coupon below.

FLEISCHMANN'S PURE DRY YEAST

PRICES

1 to 10 cans	$2.00 per can
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(Add 50c per can if in Canada. Other countries, prices on request.)

Any number of cans delivered direct to you, transportation charges prepaid.

THE FLEISCHMANN COMPANY, Dept. D-279, 941 Mission St., San Francisco, Calif., or 314 Bell St., Seattle, Wash., or 947 Maple Ave., Los Angeles, Calif.

( ) Enclosed find $. Please send me ..... 2½-pound cans of Fleischmann's Pure Dry Yeast, postage prepaid.
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70 cents a line, or 60 cents a line for four or more consecutive issues (average 7 words). For white space, cuts or display type cost is computed according to total space occupied by advertisements.

Advertisements must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

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PROFITABLE POULTRY and CO-OPERATIVE ELECTRIC HATCHERIES. Capacity, 250,000 chicks. 180-290 egg Leghorns, Anconas, Reds, Rocks, Minorcas, Wyandottes, Brahmas, Andalusians (Ducks, turks) Off every week. Also chicks from large 2-year hens for rapid growth into broilers fryers, roasters, capons. Reduced booked ahead. "Never saw such vigor, rapid growth in chicks." 13 N. Fair Oaks, Pasadena. Mail only.

CERTIFIED WHITE LEGHORN QUALITY CHICKS for Summer and Fall months, from selected free-range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Send for catalog and attractive prices. Safe delivery and full count guaranteed. MUST HATCH INCUBATOR CO., INC., 432 Seventh St., Petaluma, Calif.

CERTIFIED BABY CHICKS from inspected flocks. All hens have undergone rigid inspection; mated with males having authentic (cannot records of at least 200 eggs on the sides of both parents. Certified by Alameda County Poultry Breeders' Assn. Now booking orders for fall and spring delivery. Utility prices. Chanticleer Elec Hatchery, Inc., Hayward, Cal.

WHITE LEGHORN baby chix from flocks mated to males having sire's dam record of 240 to 297 eggs per year. Full particulars and interesting literature on request. We are accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, P. O. Box 476, Petaluma, Calif.

HANSON'S Pedigree S. C. White Leghorns. Over 210-egg flock average for 6 years. Over 221-egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalog. J. A. Hanson, Corvallis, Ore.

ORDER SUMMER AND FALL CHICKS now. They pay. White Leg., R. I. Reds, Barred Rocks. Safe arrival guaranteed. Send for circular. Fine lot of White Leg. pullets and breeding cockerels. Stubbs Poultry Ranch and Hatchery, Box 67C, Palo Alto, Calif.

PETALUMA HATCHERY, Accredited by Sonoma County Farm Bureau. White Leghorn chicks every Monday and Thursday. If you want good fall layers get chicks in the fall. Guaranteed safe delivery. Free circular. L. W. CLARK, Petaluma, Calif.

BABY CHICKS—All kinds hatching each Monday. Ducklings, turkeys, hatching eggs. Pullets, pigeons, rabbits. FANCIERS' EXCHANGE, 640 S. Main st., Los Angeles.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

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WILD BLOODED TURKEYS—Eggs and stock for sale. Prices right. Small and large orders promptly taken care of. Jenkins the Veteran, R. 3, Box 148, Burbank.

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OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land deep, rich, tried soil; complete irrigation with cheap water; thorough drainage, rail water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and berry farming in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land; near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

$2.50 PER A.—Best land, climate, markets on earth, no winter, irrig., taxes. So. America, paradise for farmers, stockmen. Booklet 50c, literat. free. Bolivia Col. Assn., Portland, Ore.

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FOR SALE or Exch.—All or part of 110 acres level garden land, agricultural dist. Suburban to Vancouver, B. C. City water, great future. Owner, C. Westenhaver, Eburne, B. C.

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CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

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WANTED—Women, girls. Learn gown making at home. $35 week. Many openings. Learn while earning. Sample lessons free. Write immediately. FRANKLIN INSTITUTE, Dept. A-589, Rochester, N. Y.

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FOR SALE Brand new electric lighting plant of best standard make. $150 below present retail price. Fully guaranteed. Installed if desired. Plenty power for all electrical appliances. J. R. FORTHMAN, 1548 Third St., Santa Monica.

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REBUILT WINDMILLS, tanks, pumps, cylinders, surface irrigat. Pipe, all sizes, used 5 to 10 in., cheap. New galv. tanks all sizes large used redwood tanks. DEMMITT CO., 126 N. Main, Yards, 816 Yale, Los Angeles.

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PAINT—BARN and ROOF—Highest quality $1.00 per gal. Guaranteed 5 years. Milroy Works, 591 Palisade Ave., Jersey City, N. J.

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THE WORLD'S BEST GLADS

Over 50 varieties. Grown on decomposed peat land same as Holland. Kissed by the Fog of the Pacific Ocean.

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F. J. CONRAD, Proprietor.

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BERGTHOLDT TREES—We are now booking orders for next season's planting. Some of the best standard varieties will again be in great demand and the supply of good trees short. Submit us now a list of your tree wants for next season's planting for quotations at the special prices we now make to the early buyer. Our catalogue of Horticultural Information and 30 years' experience in Commercial Horticulture are at your service. Write us. THE SILVA BERGTHOLDT CO., P. O. Box B, Newcastle, California.

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PATENT ATTORNEYS

HAZARD & MILLER Herman Miller, formerly eight years member examining corps, U. S. Patent Office. Hazard's Book on Patents free. Central Bldg., Sixth and Main, Los Angeles, Calif.

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DIRECT FROM FACTORY—5-inch, Cuban Twisters, long filler. Sweet as a nut, $4 per 100. Cigar clippings, 60c per lb. FRANK MILLER, 1298 W. 8th st., Los Angeles.

BUSINESS PERSONALS

MUSHROOM HOUSES, best in West, in full bearing, for sale. Owner will teach newcomer, if necessary. Great opportunity. R. MANINAT, 1313 Evans Ave., San Francisco.

Fruit in Drinks

(Continued From Page 3)

laboratory has devised a process of concentrating the juices by freezing that avoids loss of flavor. As the juice freezes, pure water separates as ice, leaving a juice correspondingly enriched in sugar content and flavor. He then separates the resulting pure water ice crystals and syrup by draining. The juices also can be concentrated by boiling under a vacuum. Apple syrup is produced in the same manner as white grape syrup.

POMEGRANATE SYRUP PREPARED

Recently we have had excellent results in preparing pomegranate syrup. Here again Irish has solved a knotty problem—that of obtaining economically a juice without "pucker." Pomegranate juice is located in the arals or little red seeds, surrounded by a pulpy rind—than which there is nothing more "puckery." Formerly when juice was made from pomegranates these arals were shelled laboriously by hand.

When an attempt was made to crush the fruit without previously shelling the arals, the juice obtained was so acrid as to be undrinkable. Irish found that pressing the whole fruit without crushing "did the trick"—eliminating both costly "shelling" and pucker. The juice so obtained is heated, settled, filtered and sweetened with sugar.

The various fruit syrups are preserved readily for future use by bottling and by pasteurizing in the sealed bottle at 175 degree Fahrenheit for thirty minutes—in the same manner as milk is pasteurized in the bottle. Pasteurizing is accomplished by placing the filled bottles in a tank of water and heating the water as noted above. The syrups then can be stored or shipped to bottling works.

PREPARING BOTTLED BEVERAGES

We now have the syrups. What next? At the bottling plant an automatic machine measures one and one-half ounces of the syrup into each of a continuous line of clean, sterile soda water bottles that pass beneath its filling spout. Highly charged (carbonated) water then is added automatically to fill the bottle. A Crown cap is automatically crimped to the top of the bottle, sealing it tightly and perfectly.

These filled bottles then must be pasteurized in order to put the "quietus" on our erstwhile friend, Mr. Yeast, who would otherwise soon proceed to make "hard liquor" out of our fruit juice and, incidentally, cause bursting of the bottles. Pasteurization is for thirty minutes at 150 degrees Fahrenheit. Large continuous and automatic pasteurizers are available for this purpose.

The pasteurized bottles are cooled and then are ready for labeling.

We have been able to make some of the beverages for as little as 1½ cents per bottle for cost of the raw materials. Others have cost 2½ to 3 cents per bottle. We are convinced that all of the fruit beverages can be sold at 10 cents per bottle retail—some beverages for less.

Any one interested can purchase the university beverages from Sills' or Chow's grocery stores in Berkeley, or, if you carry your purchase, direct from the Fruit Products Laboratory in Hilgard Hall, on the campus. The grocers will deliver, but sales at our laboratory are on a "cash and carry" plan. During the past year we have sold about 5000 bottles of the beverages and about 1000 bottles of the syrups.

Any one interested in preparing the syrups or beverages will find full directions in Bulletin 359, entitled "Fruit Beverage Investigations." Copies will be sent free of charge on application to the College of Agriculture, University of California, Berkeley.

Subsoiling Becoming Standard Practice

SUBSOILING, or "subbing," formerly was resorted to only on heavy clays and adobe lands which, by reason of their dense character or impenetrable substrata, were unproductive.

It is now known, however, that this practice is profitable on many "looser" soils, almost invariably resulting in increased yields.

It is quite generally understood that the fertile seed bed of any piece of soil is that six or eight inches next to the surface. This depth of soil is always the more "friable"; it contains most of the humus and all of the bacterial activity, for bacteria can exist only in that part of any soil which is open to air and light.

In the former method of tillage this six or eight inches was turned year after year, but the total depth remained the same. Many attempts have been made to overcome this by plowing extremely deep, but this has rarely been a success and the reason is this: Whenever land is plowed to any depth below that of the normal seed bed, this fertile bacteria laden "soil" is turned away from light and air, and the unfertile lower soils brought to the top to act as a seed bed. Is it any wonder that such experiments were rarely successful?

In "subbing" the soil, however, the normal seed bed is allowed to remain where it is. The rich humus filled surface soil, with its active bacterial qualities, stays on top, where the young seeds and tender roots may germinate and extend. The implements used for deep tillage or "subbing" are so designed that they stir and till the soil thoroughly, yet do not turn it.

Cover crops of various kinds are effectively subdued and prepared by heavy double discs designed for the purpose. A generous depth of seed bed is readily prepared by the use of "goose neck" cultivators which can till the land from ten to fifteen inches without turning it.

Wherever plow-pans or hardpan conditions exist, heavy, single-standard or multiple chisels (or "subbers" as they are called) are used to fracture this sub-surface element.

So thoroughly sound is this practice that many leading orchardists and agricultural operators have discontinued entirely the plowing of their land. They have discovered that by the use of ample tractive power and the necessary deep tillage implements they secure not only greater yields from the same soils, but also a very great saving in time, for more ground may be prepared—and better—by effective "subbing."

"Petaluma Girl" Reminds Us of Egg Day

THE attractive young lady who adorns this week's cover was selected to pose for the official Petaluma Egg Day poster. She is Miss Frances V. Studdert, daughter of City Assessor J. T. Studdert, and she joins with several thousand enthusiastic fellow boosters in extending an invitation to the forthcoming egg carnival of the "World's Egg Basket."

August 18 has been chosen as the day for worshiping at Lady Biddy's shrine, this annual event being an important feature synchronizing with the Sonoma County Fair, which will be held from August 15 to 19, inclusive.

Never before in the history of the "Poultry Kingdom" have such extensive preparations been made for the celebration. Primarily, it is designed to stimulate public interest in the poultry industry and to increase the consumption of eggs. Petaluma believes its annual celebration will have considerable influence upon poultrymen's organizations throughout the country and encourage them to continue their publicity campaigns.

This year the program will include a parade, a poultry and egg show (to include more than 2000 White Leghorn entries), athletic contests, a children's entertainment and educational events.

The total annual valuation of Petaluma's poultry products is said to exceed $18,000,000. Pretty Miss Studdert as "Queen" will "rule" for a day over a great and rich domain!

Tanning Rabbit Hides

IN answer to numerous inquiries as to whether rabbit skins are worth saving, I will say that the right kinds have considerable value. The American Blue rabbit has the best fur, but Himalaya, Red and White New Zealand and even Flemish Giant hides have a market value, although the latter are more suitable for auto robes than garments, on account of their unattractive color. Skins from young rabbits are worth little, the best ones being those taken from animals six to eight months of age.

Skins which are to be tanned should be as free from fat as possible. They are dried by stretching over a wire frame or a board shaped like a toy ironing board and left where the flies cannot get at them. After a few days the hides are washed and then soaked in a solution composed of one ounce of sulphuric acid, one quart of salt and one gallon of water. Keep the liquid in a stone or glass jar. Never use a metal or wood container.

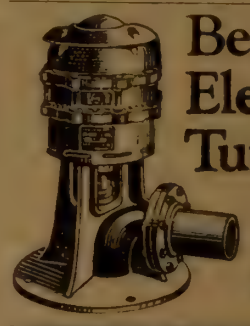
After the skins have soaked in this solution for three weeks or longer, wash them thoroughly in warm soapsuds. The less grease there is left in the hides the nicer they will tan. Rinse off the soapsuds and hang the skins in the shade to dry, after wringing them out as dry as possible.

Just as soon as the skins begin to harden, stretch, rub, beat and manipulate them in any other way and as long as you have time and patience—the longer the better. Be careful not to let the hides become hard before working them.

Instructions for making rabbit fur garments will be given in a future paper.—ELLEN GREEN.

HOLSTEIN ASSOCIATION ANNOUNCES AWARDS

The Holstein-Friesian Association of America, through F. L. Houghton, secretary, recently announced the following prizes offered for the season of 1923: California State Fair, Sacramento; California National Livestock Show, and Southern California Fair, Riverside, each 20 per cent cash to be paid on the general classification.



Bean Electric Turbine

Sizes: 6, 7, 8, 10, 12 and 15 inches

Before you dig a new well, try your old one with a Bean Electric Turbine. Small wells do big work with this highly efficient pump. No bearings in the discharge column, hence no lubrication troubles and no oil in the water to spoil the domestic supply. Furnished complete with starter (both motor and starter are permanently grounded.) Low first cost and low cost of upkeep.

Send the coupon.

BEAN SPRAY PUMP CO.

101 W. Julian St., SAN JOSE, CAL.

BEAN SPRAY PUMP CO.
101 W. Julian Street, San Jose, Cal.
Please send me your new pump catalog with information on the Bean Electric Turbine.
Name _____
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SPERRY SURELAY MEANS MORE EGGS -ask your dealer

From Nothing to $15,000 in Four Years

The Remarkable True, Personal Story of a Successful Woman Poultry Raiser as Told by Herself

By FRANCES J. THOMAS

FOUR years ago I was left a widow at the age of 19. After paying all expenses I was able to keep my car, but had no money left. My parents owned and lived on a good sized ranch. Of course, I went home, but I didn't want to be dependent upon them.

I had a good high school education, also business training, but preferred not to go to the city to work. Therefore I determined to see what I could do on the ranch.

I borrowed one hundred dollars with which to make my start with chickens. I then placed my order for 500 White Leghorn baby chicks. A special reduction was made on this number and I paid $50 for them.

My father and I together fixed up an old building to use as the brooder house. We put fine sand all over the floor and boarded up all the cracks. I purchased a 500-chick kerosene brooder for $19.50.

My chicks arrived March 29. When they came there were 16 dead ones, which was rather a large number for the short distance they had traveled. We put them into the brooder house and stretched wire netting all around the brooder at a distance of 12 inches. This was to keep the chicks from getting too far away from the brooder. The first feed I gave the chicks was sour milk, and I kept this before them all the time. They picked around in the sand and got a good deal of grit. The next day I gave them chick feed of a reliable brand.

RAIN UPSETS PLANS

I had purchased chicken wire and intended to have a small pen ready for them in a few days, but there came a much needed rain and I was obliged to keep the chicks indoors until they were 14 days old.

When the babies were ten days old I had 449 left. I then started giving them chick mash and water. (Up to this time they had had no water—only the milk and chick feed.) When they were 14 days old I put them into a nice grassy pen. They were certainly happy then. They got lots of sunshine and all they could eat. I still kept the sour milk before them all the time, as well as plenty of fresh water and feed. At night I put them back into their brooder house, but it was no longer necessary to keep them confined with the netting.

HAS GREAT EXPECTATIONS

My plan was to sell the broilers and keep the pullets. I expected to raise 450 chickens, but I had had no experience whatever and I soon learned, that I couldn't count on so many.

By the last of May my chicks were large and healthy. I had lost a few more, bringing the number down to 435. This, I believe, was a very good start. On June 2 I sold 225 broilers. They brought me on the average of $1.15 each. This totaled $258.75 and I had 210 nice pullets left. I had fed the whole flock $14.85 worth of prepared feed and burned 59 gallons of oil, which cost me $11.26. The total expense came to $100.61. I paid back the $100 I had borrowed with 75 cents interest, thus paying $101.36 out of $258.75. This left me $157.39.

I changed the feeding plan for the pullets with the intention of having them lay at six months. However, I didn't want them to lay before then as they are likely not to amount to much as layers if their energy is used too soon for producing eggs.

I opened an account with a good feed store and by the end of September my bill was $20.25. I ordered lumber from a nearby mill with the understanding that I was not to settle the account until the following fall, but pay 7 per cent interest. I had built a chicken house large enough for 800 hens. The lumber and labor for this amounted to $375. The lumber was $185. I also had built a brooder house to accommodate 2000 chicks. We had the old building torn down and used the old lumber, buying enough new to complete it.

The brooder house was divided into three sections—one small section for the 500-chick brooder, and two large sections for 1000-chick brooders. This building was 48 feet square, with proper ventilation and light. The partitions were only high enough to keep the chicks from flying over. I found this way of dividing the sections considerably cheaper than making walls and more satisfactory. Labor for this building cost me $100 and materials were $125. I now had a lumber bill for $310 on which I was to pay interest. The labor for the two buildings amounted to $290. I borrowed this money and paid for the labor, paying 6 per cent interest for the money.

September first I moved my pullets into their new dwelling. I got the first egg September 10. The pullets soon demonstrated their ability. By the last of September there were sixty-eight laying. The egg record for September was: September 10, 2; 11th, 2; 12th, 4; 13th, 12; 15th, 22; 16th, 35; 17th, 48; 19th, 50; 20th, 47; 21st, 56; 22d, 61; 23d, 68; 24th, 62; 25th, 68; 28th, 66; 29th, 68; 30th, 68. I sold 714 eggs at 30 cents per dozen, making the total $17.85. The following month my feed bill was $28.50 and I had gathered 2575 eggs which I sold for $64.35.

At the end of the month I paid for the feed for the last two months and had left $15.60, which I added to my bank account to buy chicks and brooders the following spring. I then had $172.99 for this purpose.

GOOD WINTER RETURNS

During the month of November I averaged 125 eggs each day. These brought me $140.60. My expenses were climbing though, as I had learned I was not feeding my hens for best production. Out of this amount I paid $39.25 for feed, leaving $101.35. Out of this I set aside $50 for personal use and brought my chicken fund up to $224.34. I paid the lumber company $200 and $1.85 interest. I gave them a new note for $110.

It was unnecessary to have the brooder house built until spring and I could have saved the interest on the money I borrowed—but I had much to learn. I thought I ought to get everything done as soon as possible. However, I had cut down my debt to $400 and had $24.34 towards next year's start.

In December I paid $50 for special feed to keep my hens laying as eggs were high. My profit for that month was $156.25. I had 165 hens laying regularly by that time.

In January we had our coldest weather and my egg record dropped.

My net profit was $106.25. I paid off the note to the lumber company and set aside another $50 for my own use. My bank account diminished to $125.56 but I owed only $290 with interest. My profit for February was $110.

I ordered 2000 baby chicks in December to be delivered the last of March and paid a deposit of $75, the balance of $225 to be paid on delivery.

In March my hens seemed to put forth their best efforts, but eggs were getting cheaper. My profit was $81.70, although there were 170 hens laying and I had sold more eggs than any previous month.

I purchased two 1000-chick incubators, paying $23.50 each. I also paid $20.50 for two drums of kerosene. The chicks came on March 30 and I paid the balance on them, leaving $49.76 for feed and supplies.

PROFIT VARIES WITH PRICES

My layers were proving themselves of great value, the net profit for April being $72.50. There were only three idle hens in the flock of 210, but eggs were down to 25 cents. In May eggs were 30 cents and my profit came up to $95.

In June I had 1600 young chickens. Nine hundred and twenty-five of these I sold for broilers for $950 and had 650 nice pullets left. The feed for these chickens had cost $65. I was determined to keep going until I had 2000 laying hens.

In May I got 500 chicks from a nearby hatchery, paying $65 for them. I used the 500-chick brooders to hover them. Their feed cost me $15.25.

After paying my note of $290 with $13.05 interest and allowing for my personal expenses I had $500 left. In June I made a net profit of $86.35 from eggs.

In July my hens brought me $85 and in August $89.45. The first of August I sold 265 broilers and had left 137 pullets. The broilers brought me $275. This was net. The weather was getting so warm that I had used only what kerosene I had on hand.

In September eggs began to increase in price and my net profit was $100.25.

Around the first of September my pullets began to lay. By the end of October 400 of them were laying. During the month of October I paid $135 for feed and made a net profit of $300.

I could crowd the 137 pullets into the one chicken house, so decided to wait a few months before building another house. I hired a boy to clean the chicken house every week, for which I paid him $3.50. The other members of the family helped me gather the eggs.

In November, 1920, we gathered 20,700 eggs. My bank account was swelling by leaps. I now had 690 laying hens.

In January my later pullets began to lay. By the last of February there were 100 laying. The time had gone by so rapidly and so pleasantly I scarcely could believe I could be making so much money.

BUYS 2500 MORE CHICKS

In January, 1921, I placed my order for 2500 chicks. I already had all equipment necessary; therefore feed and oil were all I had to buy. I used three drums of oil in the brooders to raise these chicks.

The hens continued to lay regularly. Their eggs were of nice size and shape. In June I again sold the broilers and kept the pullets. I had raised 2000 of the baby chicks. The broilers sold for $1225 and I had left 800 pullets. I had built another large chicken house which cost me $575. The last of June my bank account totaled $4000. I had 997 hens and 800 pullets.

By the first of the year, 1922, I had 1000 laying hens and my net profit for January was $500. In March I sold 600 culls for $650 and I then had only ninety hens that were not laying and they showed promising signs.

The last of March I again secured 2500 baby chicks. Out of this bunch of chicks I sold 1000 broilers for $1050 and kept 950 pullets.

Last January I had 2247 hens; 2000 of them are laying now. I have chicken house room for 2800 hens. I have done so well and I like the work so well I have now determined to increase my flock to 5000. Of course I haven't done all the work alone. Other members of the family also have put in a great deal of their time, but we have all been well paid. My net profit is nearing $10,000.

BANK ACCOUNT SWELLS

I have 2500 baby chicks now and will sell the broilers in June. My bank account totals $7600 and I have chickens valued at $5000, besides the 2500 baby chicks. My houses and pens are valued at $2000, including the brooder house, which contains equipment valued at $75.

Considering that four years ago I started with nothing, I feel that I have accomplished something worth while. I have found something to occupy my time that pays attractive profits.

Although my experience has been in California, I think anyone anywhere can do as well if not afraid of work. Sometimes it hasn't been easy to give the chickens the proper care, but I feel that it is worth a great effort to have good healthy laying hens.

I could make more by selling hatching eggs and I intend to select my best hens for that purpose, keeping them in a separate pen, of course. This fall I expect to sell some of the oldest hens. They will be sold as first class laying hens and will command a good price. I am also planning on another large chicken house next fall.

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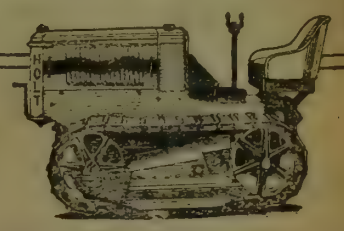

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Livestock to Stop Hay Hauling

That's Perris Valley's Plan, and P. A. Langdon Says It Pays Big Profits

By WM. REYNOLDS BUTLER

ON a recent trip by stage from Riverside to Perris we were fairly crowded off the road by a constant stream of trucks and trailers laden with baled alfalfa hay. "Where is all this stuff coming from?" I asked the driver. "From Perris Valley," he replied. "And those farmers down there have been hauling out hay and grain for over a quarter of a century. Believe me, they'd better cut it out or go bankrupt."

At the Farm Bureau office in Riverside Mrs. Clark McEuen, associate editor of the Farm Bureau Monthly, told me to look up Ed Talbott, farmer-president of Perris Chamber of Commerce. When I located Talbott he, too, pointed to a string of trucks piled high with

bales of alfalfa. "We're trying to head off that business here in Perris Valley," he said. "It costs too much to supply water for alfalfa for the price we get for hay. We are preaching more livestock, and cotton looks like a better bet than alfalfa as a cash crop. If you want a good story of how one of us stepped over in the profit column with livestock, go see F. A. Langdon, one mile east of town."

HOGS ADVERTISE RANCH

It was an easy matter to locate the Langdon Ranch, for Talbott told me I would recognize it by the big hog barns and by "belted" sows and pigs "swarming" over the pasture near the highway. When I met Mr. Langdon I congratulated him on his location along the highway and remarked that the Hampshires in the pastures made an impressive advertising feature.

"I have been in California forty years," said Langdon. "I farmed 800 acres in Kern County, raising alfalfa and selling it off as hay. Years of such farming convinced me there was not enough profit in such a practice, and all the time fertility and humus were leaving the farm. Eight years ago I bought this place of about 190 acres here in Perris Valley.

It had been farmed for years as I had farmed in Kern County, so when I made my start here it was as I had farmed in Kern County, so when I made my start here it was to be livestock and diversification. We are fortunate in having a good 145-foot well and a complete irrigation system for the entire ranch and I think I get by with the minimum expense for water. However, I figure by feeding these crops to pure-bred Hampshire hogs and pure-bred milking Shorthorn cows, I come nearer getting the high dollar off this place than if I sold the crops off the land.

STARTS WITH HAMPSHIRES

"During the Panama-Pacific Exposition I became interested in Hampshire hogs. I bought the entire herd of Walter Gatton who had the prize herd at the exposition. He showed Sioux Queen, grand champion sow, over all breeds at the show. The whole Gatton herd comprised 150 head and we took the layout. That was starting on a big scale, but we made money on them right along. Langdon's Choice, one of our good boars, sold for $750 and another pig sired by this hog and out of Sioux Queen sold for $500. During the top price times we had 1000 head of 'Hamps' on the place. Those good times are gone. They couldn't last. During the depression we have cut down to forty or fifty sows. These raise two litters a year. Our sows are averaging seven pigs to the litter at weaning time.

"Only the very choicest pigs are developed as breeders. There is always a market for good ones at fair prices even in dull days. The bulk of our pig crop is turned off at an average weight of seventy pounds, as feeders. We will continue to breed up our stuff and are making money on this end of the farm business. Later, when the pure-bred business comes back we will still have good ones to sell. Our first show herd went to Sacramento to the 1916 State Fair. We won most of the prizes on Hampshires, among them grand champion boar on Goldmine. We have won consistently at the Los Angeles and Riverside shows every year. What we need is a bigger show circuit in this State. It costs too much to fit up stuff for only a few fairs, as we do now. I'll never make the State Fair again as it is too big a risk to make the trip across the desert."

Mr. Langdon has not vaccinated during the past two years, as he follows strict sanitary precautions against diseases and feels Perris Valley is "clean territory." During the past two years he has cut out tankage, as he feels he is getting good results on ground barley, alfalfa and mineral mixture. His young stuff has the stretch, scale, bone and quality denoting proper development on such a ration.

LIKES MILKING SHORTHORNS

Although Mr. Langdon is enthusiastic over Hampshire hogs as profit makers, he is more enthused over his success in the past few years with a small herd of milking Shorthorn cows. In 1919 he bought three registered cows and a bull at a sale in Phoenix, Ariz. Since that time the herd has grown to

fourteen females. They are a uniform lot and are good producers. He is planning on enlarging this farm enterprise at once and joining the cow testing association. Mrs. Langdon separates the cream and churns with the aid of electric motor. Her butter finds a ready market at good, steady prices. The skim milk and buttermilk is fed to pigs and chickens.

In 1921 Langdon tried fifteen acres of long staple cotton of the Durango variety. It yielded one-half bale to the acre and the price was thirteen cents. Last year he planted nineteen acres of Acala cotton which yielded a bale to the acre and sold for twenty-five cents a pound. This year he is planting forty acres to Acala. The cotton is ginned at Perris.

Before going to Perris the Langdons lived for twelve years in Los Angeles and Pasadena where Mr. Langdon was engaged in road contracting. Mr. and Mrs. Langdon have three daughters and a son. The son and a daughter live with them on the farm at Perris. The son was running the tractor preparing a seed bed for cotton. He has, as his sideline, a small flock of breeding ewes. The Langdons are happy on the farm. They have had their fling at both city and farm life and the farm's their choice.

Beautiful Highways Community Pride

(Continued from Page 2)

ments, and to stretch the funds as far as possible the entire community turns out for a day or two, donating the labor. The result is a good job, well done.

There are two institutions which stand ready and willing to help such enterprising communities. They are the County Forestry Board and the State Forestry Board. Neither of these organizations will come to your district and coax you to partake of their wares, for they are called upon to the point of overtaxation now. The point is someone else is getting your share. Why not you and your community?

PLANTING IS NOT ALL

The securing and planting of trees along the highways is not all. They must have care for at least a time until established. Then, as they become acclimated to their new environment, we look upon them with pride to know that we have been instrumental in dotting our roads with beauty and shade for the weary wayfarer.

Not long does such a feeling remain with us, however, for shortly our pride is found to be getting too close to a set of wires. The tops are cut out or the branches shaved from one side, or some other grotesque figure is made from our beautiful tree. It may be noted that "our" trees are not the only ones to be transformed from things of beauty to things hideous. Some of the beautiful oaks are also chiseled out to accommodate the modern conveniences. Trees that cannot be replaced by money, trees that have taken years of time to produce, trees that are becoming all too few, are set upon and maltreated. Far better that they be removed entirely than to remain a living monument to our heartlessness.

So, whenever possible, let us save trees and guard them from all the elements that beset them. Also let us plant wherever possible, either as an individual or as a community.

Another roadside emblem in many communities is the discarded tin can. Old cans, baby buggies, bed springs, bottles and other household equipment are all well in their proper place, but on the highway they scarcely fill a need. Land owners and the traveling public see nothing artistic about them. Many California beauty spots have been made unsightly by selfish individuals.

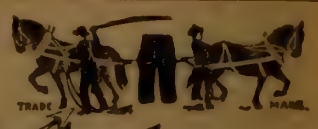
Rest Cure for Poll Evil

POLL evil in a horse is supposed to be incurable, except by a veterinarian at excessive cost. A neighbor's mare, however, recovered from the disease by resting and eating green feed. Her head last fall was badly affected with the ailment and the owner bought a young mare from me to take her place, turning his diseased animal over to me to give to a neighboring cattle man for coyote bait. For some reason she was not killed, but turned out to pasture. Her head cleared up, then broke out a little bit, healed again quickly, broke out a very little once more, then healed permanently. We are working her whenever needed.

A similar case occurred about twenty years ago. A truck operator had a fine draft horse afflicted with a quitter. Veterinary treatment was considered too costly, therefore the animal was given to my brother, who was working for the truckman. The horse was then turned over to a man who put the animal in a muddy pasture and soon the horse was well. The U. S. Department of Agriculture says that quitter and poll evil are the same disease, though located in different places.—TULARE FARMER.

PROHIBITION HELPS DAIRYMEN

The per capita consumption of milk in the United States has increased 14 per cent since prohibition went into effect.



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A Million Dollar Dream That's Coming True

Puts Over Big Idea

THIS is a story of inspiration mixed with perspiration. After nearly fourteen years of the hardest kind of work, Jackson James has sold to practical financiers his dream of a great fruit ranch. It is largely upon his plan for solving the labor problem that his associates are banking for the success of the project. And now the erstwhile city clerical man is stepping into the limelight as one of Northern California's big producers. —*The Editor.*

By ALBERT J. MASON

SEVERAL years of office work and business life in the city convinced Jackson James that he was cut out to be a farmer. But unlike many who desert the bright lights for the out-of-doors, he did not yearn for a two-acre chicken farm.

Rather, James visualized broad acres planted to orchards, managed by efficient business methods and producing crops that would run into imposing figures. He chose as the scene of his operations two tracts near the Sacramento River in Glenn County, comprising about 1900 acres.

That was some fourteen years ago, and his ambitious plan is not yet entirely realized. But the sight of more than 400 acres, now planted to prunes and peaches, should convince even the most skeptical that this young man means business.

Some observers call James a dreamer, but this is to be regarded as a compliment, since evidently he makes his dreams come true. Only recently he has completed the incorporation of his project, secured the necessary financial support, and started the construction of improvements which will make it one of the show places of the Sacramento Valley. Probably 400 acres more will be planted next year.

When he tackled his big job, James did not have much capital and therefore leased part of the land for five years. With a donkey engine and a husky crew he cleared and leveled for his first orchards. The river bottom soil is deep and fertile. In their fourth year these trees yielded a heavy crop.

MODERN EQUIPMENT USED

One and one-half miles of cement irrigating pipe has been laid and a new pumping plant is being installed. Three tractors are used, a 12-foot weed cutter being the favorite implement, supplemented by the disc-harrow.

James believes in clean cultivation, and his orchards present a pleasing appearance with their long, straight rows. Each new planting co-ordinates with those set previously. Long rows mean less tractor turns and greater efficiency, James points out. To this end, also, he advocates specializing on certain products.

"But don't you think it advisable to diversify?" he was asked.

"No, I don't," was James' decisive answer. "We might grow cash crops that would help carry through the young orchards, but my observation has been that the man who tries to do several things at once fails with at least one of them.

"Usually the main crop is neglected for the cash crop and in the long run the orchard suffers. We are concentrating on the production of prunes and superior drying peaches. That's enough to keep us busy, and we get such quick returns on this rich soil that it is comparatively easy to carry a young orchard until it produces an income."

Long pruning, in Mr. James' estimation, is one important factor in securing large and early yields of prunes. "The tree may be likened to a manufacturing plant," he pointed out. "The orchard expense is practically fixed. But the larger the bearing area and the greater the mass of foliage, the more manufactured product the leaves will turn out." This grower emphasizes, moreover, the importance of using the best nursery stock. Cultural operations, in fact, are trivial compared with this factor, he maintains.

"We would willingly pay 40 cents for pedigreed stock even though we could get ordinary stuff for 10 cents," he asserts. As a matter of fact most of the trees planted were raised on the ranch. Mr. James has an arrangement with a Chico nursery, whereby they furnish trees at wholesale in return for a nominal rental for the land. The roots then are accustomed to the soil and transplanting results in practically no shock or setback. "In fact," says the owner, "they don't know they've been moved, and I attribute the rapid growth of our trees partly to this plan of raising the very best stock right on our own ranch."

It is planned to use wire for bracing the trees as props often cause serious breakage, in Mr. James' opinion.

Some fruit men, no doubt, will express surprise that this Glenn County grower is planting such a large acreage of drying peaches. He believes, however, this plan is justified by existing conditions. "Peaches," he points out, "should bear a heavy crop the third year in this section. That means quick returns. Furthermore, the dried peach has advanced from the boarding house class into good society, and I believe will find increasing demand in America, even though foreign buying is limited.

"Another thing—the expansion of the grape industry in the San Joaquin Valley has displaced peach orchards to a large extent. True, I planted peaches against the advice of my friends and even some bankers—but time will tell whether I am right. The market price is the best test of any fruit."

One advantage of the James plan is that his combination of prune and peach varieties creates a long harvest season. The Elberta peaches ripen early in August, followed by the Muirs and Lovells and finally the prunes, in October.

This, it is believed, will simplify the labor problem. This one factor, in fact, has engaged more of Mr. James' attention than any other question. Upon its solution his entire plan of operation centers.

"I believe," says James, "the only way to get and keep good help is to make living conditions on the ranch such that the right sort of men and women will be attracted. We cannot expect to compete with the cities and have high class help, without furnishing better accommodations than are found on most ranches. And we cannot expect to succeed at large-scale fruit growing unless we do have good help and plenty of it.

"Our plan calls for the construction of the most modern bunk houses, with showers, recreation rooms and every convenience. We shall have a swimming pool, tennis courts, radio, dance floor and other diversions.

"For light work, such as thinning and cutting, we shall employ young women who will live with carefully-selected chaperons in attractive, modern dormitories. We expect to get many school and college girls and by raising the standard of intelligence above that of ordinary ranch help, we feel sure of better-than-the-average service.

"With house employees, foremen, subforemen, chaperons and all classes of labor, we expect to have nearly 500 persons on the ranches during the busy season, when we reach our maximum production. A skeleton crew of twenty or thirty men will be required."

It has been estimated that with prunes and peaches at 5 cents a pound, the James project eventually will yield a gross return of 10 per cent on two and one-half million dollars.

The "big idea" is working out at last, but it has been far from easy. During much of the time, while struggling to develop his ranch properties, James has worked as cashier and accountant in a country mercantile establishment.

Not many office men have the courage to break away from their desks and do what he has done. Some of his best friends have felt at times that he was attempting almost an impossible task. But now that his project is "over the top" at last, even those who smiled at his enthusiasm are pointing with community pride to the big achievement of Jackson James.

River bottom lands yield luscious fruit.

Long, straight rows and clean tractor cultivation are characteristic of this 400-acre Glenn County peach and prune orchard. Trees are long pruned.

Jackson James (right) and his manager

Timber in background shows kind of native growth cleared for planting James orchards.

AGRICULTURAL CAMERAGRAPHS

At the left is a scene snapped at the famous Adohr Stock Farms during a recent Guernsey Fiesta. Those inspecting "Inspiration of Edgemoor" are: (left to right) Wm. G. McAdoo, E. L. Westover, Pacific Coast representative of the American Guernsey Cattle Club and M. H. Adamson, owner of Adohr Farms.

Below is shown J. D. Bixby, Sr., Associate Editor of ORCHARD and FARM, with the palm leaf sunshade he has erected on the south side of his home.

This young chap blames his overall troubles on the farmers, whose tractors he repairs in a Fresno County garage. "When I did automobile work," he complained to the Levi Strauss Co., who manufactured the nether garments, "I used to get real service out of overalls. But now see what happens? I've only used this pair three years." After 36 months' service the overalls weighed twice as much as when sold. Some patches!

At the left is shown Miss Lydia Weld, Antelope Valley ranch owner and operator, with a blanket made to her order from wool produced on her ranch. Miss Weld has marketed considerable of her wool crop in the form of blankets, and has found this plan a remunerative one.

Not many years ago the corn planter was more or less of a curiosity in California.. Today, with the increase in number of silos and the expanding acreage of "maize," such scenes as this are more common. The good draft team, too, although seen more frequently in the "corn belt," is replacing light horses on many California farms where tractors have not done away with teams entirely.

This neat little market place, with hinged front which may be locked at night, adorns the roadside on a busy highway. How much better it looks than some of the ramshackle sheds which some dealers have erected along our beautiful roads! Perhaps the time is coming when the construction of ugly eyesores near the highways will be prevented by law.

ORCHARD and FARM

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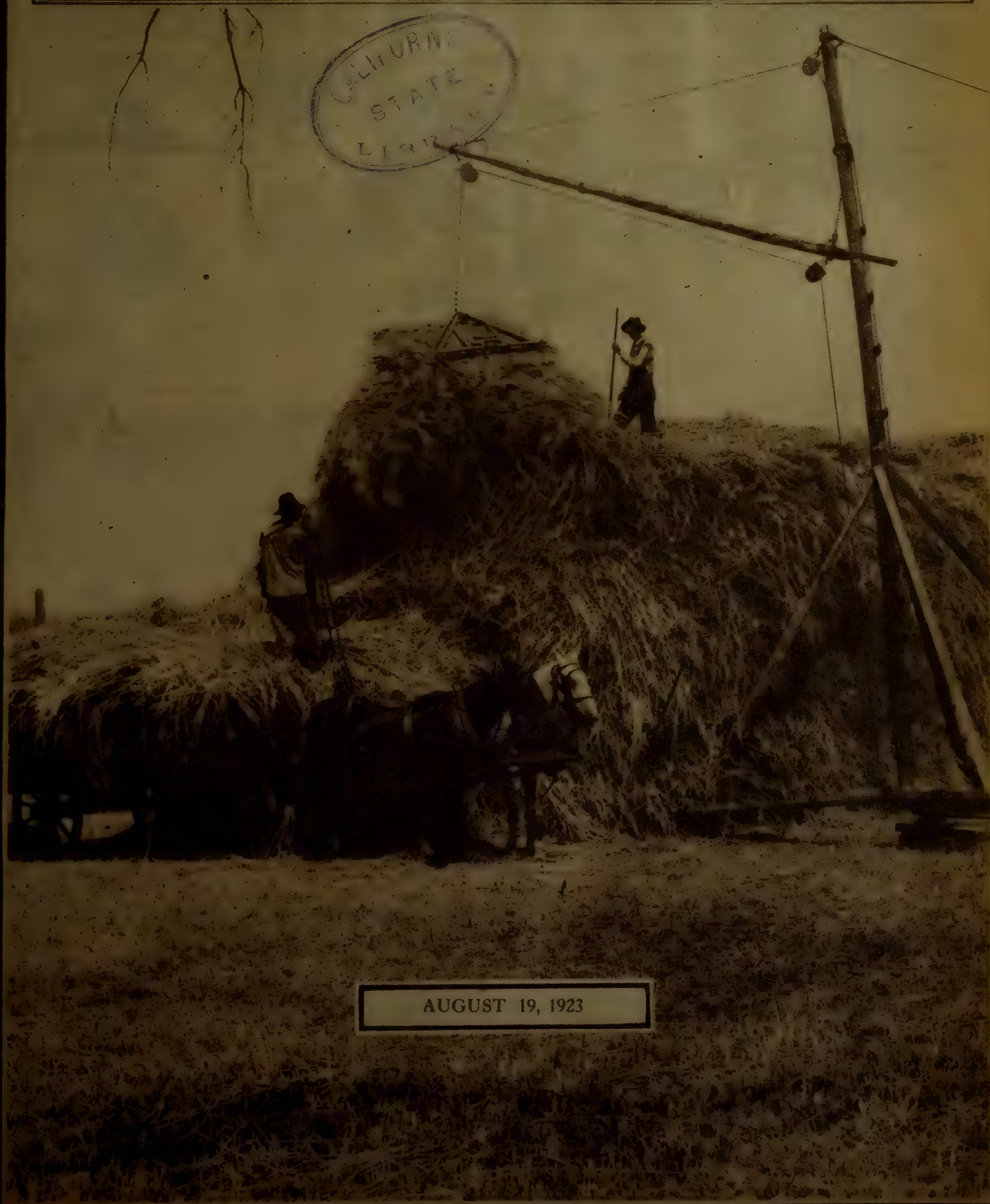

AUGUST 19, 1923

Teaching Fifty City Boys Practical Farming

By O. H. BARNHILL

Assistant Editor of ORCHARD and FARM

THOSE who are disturbed by the large and growing number of country boys who are leaving the farm for the city would be refreshed and encouraged by the sight of the fifty lads who are studying practical farming at Inglewood, a suburb of Los Angeles. None of the boys comes from a farm, although a few live on small tracts.

Why are these youths studying agriculture, when a great city close by offers so many other attractive careers?

R. K. Lloyde, supervisor of agriculture in the Inglewood Union High School, considered the question a moment. "Some of the boys have decided that farming offers superior advantages to city work," he explained. "Others take the course for the purpose of finding out what farm work is like and if they are suited to it. The idea of getting out on a real farm and working with cows, pigs and chickens, after being cooped up in a classroom all day, has a strong attraction for a healthy boy."

Yes, they have a real farm at Inglewood, right in the city, only three blocks from the high school, to which it is connected with a paved street. There are only ten acres in this miniature ranch, but the visitor is surprised to see what a complete farm can be made out of that amount of land. Instead of specialty farming, which would appeal to only one class of students, the aim has been to develop a general farm, where all branches of agriculture are followed and taught.

SELL SURPLUS ALFALFA

There are two alfalfa patches of two acres each. The last crop had just been sold from one field for $60, the hay bringing $20 a ton in the field. Sufficient forage is retained to feed a horse and two head of cattle, together with a small amount for other purposes.

There is a vegetable garden, family orchard of mixed fruits, a small tract for growing various crops, chicken yard and stock corrals. The boys put up all the small buildings and have the foundation laid for a ten-cow dairy barn, which they will build this fall.

A good-sized barn shelters the cow and horse, feed and farm machinery. There is a small tractor, plow, mower, hay rake, soil packer, cultivators, incubators and feed grinder. The latter is a great convenience and furnishes a valuable object lesson, showing how easily stock feed may be made more palatable and digestible.

One room is fitted up for class work, the aim being to unite theory with practice as closely as possible. Other and larger classrooms at the high school are used exclusively for teaching scientific agriculture. The laboratory tests and demonstrations constituting a prominent and vital part of the instruction.

Milk is tested for butterfat with a Babcock machine, while soils are analyzed to show their constituent parts. Gas, water and electricity are conducted to each student's table. In looking over such complete equipment, one is reminded of the statement that the work now being done by some high schools is equal to that performed by colleges twenty-five years ago.

LEARN TRACTOR REPAIRING

"We have $50,000 invested in land and equipment for teaching agriculture," stated Professor Lloyde. "In addition, there is a large machine shop where practical instruction is given in repairing tractors and other farm tools. The four big auto buses used by the school to transport pupils from the outlying districts—Hawthorne, El Segundo, Lawndale, Burnside and Lennox—are all repaired in the school shop."

But let us get back to the farm and take another look at this interesting little agricultural kingdom. Professor Lloyde lives on the place and so does a man who attends to the many odd jobs which it is unnecessary for the students to perform. There is a large lath house for plant propagation, also cold frames and hotbeds.

A beautiful blooded Guernsey cow is doing her part towards tempting the boys to choose the profession of dairying. A fine Guernsey bull paws dirt in a pen surrounded with a tight board fence, while in a neighboring yard there are two large Berkshire sows, two gilts and a boar, all thoroughbreds, which is the only kind of livestock kept on the high school farm. Another sow is raising a splendid litter of long-bodied, pug-nosed pigs. The family horse vies with the tractor in furnishing motive power.

MOTOR GIVES GOOD SERVICE

An eight-inch centrifugal pump run by a 35-horsepower electric motor lifts well water seventy-five feet for irrigation purposes and also to fill the high school swimming pool twice a week. In accomplishing the latter, 91,000 gallons of water is emptied into the tank in three and one-half hours. The motor has been in use seven years and has never needed any repairs.

Yes, of course, there are chickens; what would a farm be without them? While not in the record-making business, Professor Lloyde said that each of their eighty White Leghorn hens laid $5 worth of eggs last year, on an average. The high school cafeteria used most of the eggs, this being one of the profitable ways in which the various branches of the institution co-operates.

One hundred and forty fine looking pullets are right on their toes to beat the record of their predecessors. Some were already beginning to lay at the tender age of four months, but precocity was being discouraged by a diet of bran and ground bone.

Paul Green, son of the high school principal, has a thrifty bunch of pullets, for which he had just built a house adjoining his small garage, the two buildings being constructed together with a door between. Although small, the chicken house was put up according to approved principles, even to the indirect ventilation behind the roost.

This pullet project is a sample of the supplemental work which some of the students perform at home. "The advantage of this kind of practice," explained Professor Lloyde, "lies in the cultivation of individual responsibility. If the work was all done at the high school farm the boys would be tempted to neglect their stock or plants, believing the resident caretaker would not permit their property to suffer.

"Our pig projects are especially interesting and profitable. We overcome the common obstacle of students' lack of capital by leasing pigs to project workers. We set a uniform price of $8 for the best two-months-old pigs, $6 for the poorest and $7 for the average.

"By the terms of the contract the boys agree to take good care of their stock. Close personal supervision enables us to see whether or not they are carrying out classroom instructions. In case a pig dies the boy stands the loss, if it was his fault; if not, the school loses. Where the boy was only partly to blame, an adjustment is made. Recently a boy fed peach peelings to his pig, which choked on a pit. The trouble was quickly discovered and the animal at once converted into pork, thus avoiding loss."

One of the boys chose flower growing for his project. Cut flowers are sold during the blooming season; then the seeds saved and put up in packets for customers.

As might be expected, the kind of farm work which has the strongest appeal for the boys is driving the tractor. Before they are permitted to do this, however, they are required to learn how to harness and hitch up a horse and plow by hand, the latter teaching the proper adjustment of this implement. Likewise, a student is not allowed to ride the mower until he thoroughly understands the machine, the names of the various parts and how to sharpen a sickle.

"Country boys have a great advantage over their city cousins in studying agriculture," Professor Lloyde pointed out. "The latter do not even know the names of many things with which the former are familiar, which necessitates the learning of what might be termed 'farm language.'"

PUPILS GIVE FARM PLAY

One of the stunts pulled off for the interest and entertainment of the agricultural students was the giving of a farm play in the spacious high school auditorium. All kinds of animals, as well as hay and farming implements, were brought upon the stage to make the play more realistic.

Professor Lloyde teaches three double-period classes daily, personally supervises the farm work and pupils' home projects, assists in training the debating teams and superintends the teaching of agriculture in the grade schools. A number of his pupils are succeeding in various lines of farming. His work, measured by results, is considered a splendid example of what can be accomplished by unusual ability and industry in teaching agriculture in the city.

Harvesting alfalfa at high school farm.

Lloyde is a master teacher of farming.

Driving the tractor is the farm job which boys like better than any other. The students on the disc furnish live weight.

A practical lesson in irrigation. An electric pumping plant furnishes an abundant supply of water.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
AUGUST 19, 1923

California Has Discovered an Apple Gold Mine

Humboldt County Produces Wonderful New Varieties--State Recognizes Plant Breeder's Work--What It Means to Horticultural Industry

By GEORGE P. WELDON

Pomologist, Chaffey Junior College of Agriculture. Contributing Editor of ORCHARD and FARM

THE title of this article was suggested by Albert F. Etter of Ettersburg, Humboldt County, who in a letter to the writer some time ago said in connection with his work of originating new apple varieties from seed: "It looks as though a real apple gold mine has been discovered."

Some of the products of this hypothetical gold mine have been inspected and sampled from time to time by the writer, who therefore feels competent to present certain interesting facts regarding their origin and value.

PROFESSOR WELDON

There are three possible ways in which new varieties of apples and other fruits may originate. In the first place the seeds of any variety may be sown and trees grown from them. When seed is used that came from an orchard in which there are two or more varieties, however, it is generally impossible to know which of the varieties furnished the male element in pollination.

In the case of any variety of fruit there are as many possible pollination combinations as there are varieties in the orchard.

THE SEEDLING METHOD

Thus it can be seen that the creation of new varieties may be simply a process of growing seedling trees by choosing the seed of a certain variety, in which case the female parent will be known; or new varieties may result from sowing seed without any knowledge of where it was produced, in which case neither parent will be known. Again accidental growth from seeds of unknown origin that have found a favorable place to thrive, may produce new types. In any one of these cases, the character of fruit may suggest certain relationships.

Another way in which new varieties may originate is by mutations or "sports." By mutation is meant a departure in the bud of a tree, from the general type, which results in changed tissue and different fruit.

WHAT ABOUT MUTATIONS?

Mutations occur by chance, and can be propagated by budding or grafting. In any orchard there is a possibility that a branch may be found which bears fruit entirely different from the other branches of the tree. When such are discovered they may be worth propagating; on the other hand the fruit of the mutant may be inferior to the variety from which it came, in which case its propagation would not be desirable, of course.

The third method, which requires the application of well known scientific principles of plant breeding, may be termed artificial crossing to distinguish it from open or natural crossing as it takes place in the orchard. This method is valuable in that both parents of the hybrid are known.

The propagator may select any variety which he may desire, for the female parent. By emasculation (removal of stamens) of the blossoms, before fertilization takes place, and protection by enclosing in tight paper bags, the possibility of natural pollination is eliminated. When the emasculated blossom is in proper condition to be fertilized, the pollen or male element is gathered from a tree which is to be the male parent and is applied to the stigma of the emasculated blossom by means of a camel's hair brush. The bag, which is taken off only long enough to perform this work of pollination, is again tied about the hand pollinated blossoms and left until the fruit has set.

Etter in his work with apples has used the first method of originating varieties. In doing so he has recognized the fact that certain apples which possess some eminently desirable characters when used as the female parent, impart some of those characters to the offspring. For example, he has used with very great success a little French "crab," known as Reinette ananas. This crabapple is high in flavor and possesses remarkable keeping qualities. A large percentage of seedlings grown from it proved to possess these same characters, but most of them were large, having inherited size from the male parent.

During the early part of November, 1922, the writer received a collection of thirty-nine new seedling varieties, most of which had fruited for the first time. It was this collection that suggested to Etter the term "Apple Gold Mine." This lot of apples proved to be very interesting and remarkable, for they represented a selection from a total number of 100 seedlings grown from the seed of Reinette ananas, the little French crab previously mentioned.

There were apples in the collection that were as large as Rome Beauty or Winter Banana; there were apples which were almost white in color with a beautiful smooth skin; there were apples of so deep a red they were almost black; there were others that were streaked with red and still more that presented other beautiful color combinations. The shape was just as variable as the color.

Naturally one would be interested in testing the quality of such a collection, and the reader can be assured that in this case of thirty-nine new varieties, which had never been named, and which had grown under ideal conditions for best development in apples, the task was most pleasant.

Above—Smaller apple in "Reinette ananas." Others were grown from its seed. Right—Same small apple with two of its large offspring. Below—All these fine specimens were propagated from seeds of the little crabapple.

PROMISING SPECIMENS FOUND

Contrary to the old idea that it is only among thousands of seedlings that one can expect to find a fruit possessing any particular merit, there were in this collection three that were rated best in quality; three that were rated very good, and one that was rated good. Several proved to be sweet apples of promising commercial value.

While only this single collection of apples has been mentioned, it represents a very small part of Mr. Etter's creations. He has fruited many thousands of seedlings, a number of which possess quality and general promise.

STATE COMMITTEE INVESTIGATES

In November, 1921, fruit growers in the annual State convention, Los Angeles, instructed Director of Agriculture, G. H. Hecke, to appoint a committee to investigate the work of Mr. Etter. The committee had that pleasure on June 28 and 29, 1922, and recommended in their report to Mr. Hecke, which was read at the State Fruit Growers' convention in Sacramento, that some one representing either the University of California, the State Department of Agriculture or the U. S. Department of Agriculture, be chosen to make a close study of Mr. Etter's creations and to provide for trial planting of the most promising things in different parts of the State in order that their adaptability to different conditions might be determined.

Mr. Etter is favorable to the plan, as his varied duties prevent as close attention to his apple breeding work, as he would like to give it. The writer is impressed with the possibility of finding in Mr. Etter's wonderful collection of seedlings varieties of far greater importance than anything that is now being grown in the State.

This Is the Season for Profitable Poultry Culling

Many Factors Must Be Considered—How to Choose the Heavy Layers

By W. J. DRYDEN

THE time of applying the standard tests is the most important item of the entire culling program. July, August and September are regarded as the principle culling months, and many poultrymen who cull at this season, when eggs are cheap, will not repeat the process in the winter.

Hens which have started to molt in July are the "long molters," or those which stopped laying in order to molt. To be more exact, they go into a molt because they have stopped laying, while the November molters usually are the late and short period molters, or the hens which fill the egg baskets.

The molting test alone, however, is not sufficient to determine the non-layers, nor is it safe to depend upon any one culling method. One is rather safe, though, in picking out the early molters and checking them off as poor layers.

The early layer produces the eggs. Pullets which are hatched in April and start to lay the first part of November, all other conditions being favorable, if properly bred for high egg production, will average around the 200-egg mark, while the December layers will average something like 40 eggs less. Those that start after January might as well be marketed. The date at which the birds start to lay can be determined either by use of trap nests or by handling methods.

APPLYING "HABIT" TEST

In a small flock, the "habit test" is as satisfactory as any to follow, providing the keeper is with the chickens enough to know their individual actions. The hen which is a heavy feeder, the first to work in the morning and the last to roost at night, is the hen which has worn off her toe nails.

She not only has secured enough food for body maintenance, but also has taken into her body enough food to be manufactured into eggs, which makes her profitable to the owner. The good layers are active and alert during the entire day, while the poor layers are quiet and never seem hungry. The habit system of culling is of considerable value, especially when used in connection with the other tests.

In culling by handling methods, the general features of the hens are first the considerations. The eye should be bright and prominent, indicating good health. The comb of the high producer in full laying will be full and of a bright red and will be waxy and flexible; the same will be true of the wattles.

The hen which is laying will have a pale beak, eye-ring, ear lobes, face, skin and shanks. The pigment or color is absorbed by the yolk of the eggs and the workers will have a "bleached out" color. This test does not mean that the hen is or is not a good layer, but it indicates whether the hen is laying at the present time.

The toe nails and the tail feathers usually are good indications of heavy production. The active bird which is the hard worker and good producer will have worn her toe nails down by hunting for feed, while the slacker will still have her long pointed nails to prove that she lacks the stamnia necessary to make her worth keeping in the flock. The hen which has worn off her tail feathers as well has done so by going in and out of the nest.

Some of the tests that can be applied to a milk cow also can be applied to the hen. She should have good depth and breadth. Her breast bone should be long and there should be plenty of width to the body in order to take care of the laying organs. As in the dairy cow, we look for fineness in lines, and head and neck of the hen must be fine and very feminine, not thick or coarse.

INDICATIONS OF CAPACITY

The fat around the abdomen of the laying hen is soft and pliable, as in the case of the high producing dairy cow's udder. Room in the abdomen is of the first consideration. The vent of a hen in heavy-laying condition will be pale, large, full and moist. The pelvic bones will have a wide spread. These bones, in the heavy layer, are straight and flexible, with very little fat around them. In order to permit the passage of the egg, they must show a spread of at least "three fingers." The hen with only one or two finger spread cannot be laying heavily.

In the digestive or abdomen capacity test, a good layer will measure four fingers, while a poor one will have a two finger capacity. A hen, in order to have a heavy laying capacity, must have room for the large amount of food she must (Continued on Page 10)

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

DEHYDRATING A "DRY" PRODUCT.

A few years ago had any one suggested the possibility of dehydrating walnuts—a non-perishable crop—the idea probably would have been considered ridiculous. But at a recent walnut field day, dehydration was one of the principal topics discussed. "The world do move!"

FARMERS CAN'T PAY WAGES.

It is estimated that there are 9000 Pennsylvania farms lying idle this year, because the owners cannot afford to pay the wages which workmen are getting in the city. Town people cannot understand this, considering the high prices they pay for farm produce. Only one-third of this money goes to the farmer, however, dealers getting most of the remainder. If this proportion were reversed, producers would have plenty of money with which to pay good wages.

Farmers of the United States last year received seven and one-half billion dollars for their crops, not including cotton, tobacco and products of animals, while distributors received fourteen and one-half billion dollars of the $22,500,000,000 which the public paid. The railroads got the other half billion.

RAINS CAUSE HEAVY FRUIT LOSSES.

If it is true that "Misery loves company," California fruit growers who are unable to obtain sufficient water for irrigation, despite much labor and expense, may find comfort in the recent experience of Oregon horticulturists, who lost immense quantities of fruit on account of rain damage. A veritable downpour July 5 cracked Lambert cherries, which were just ready for picking, so that even canners would not take the fruit. Many carloads of red raspberries, blackberries and loganberries also were ruined by the rain.

Half the loganberries of the State, however, were destined to rot on the vines, anyway, because growers were not sufficiently organized to market the crop. Not only do California growers seldom suffer loss of fruit on account of destructive rains during the harvest season, but also they are so well organized that a profitable market generally is found for all the fruit grown.

The Oregon Growers found a market for all the "Logans" grown by their members, and by opening up twenty-eight dehydrators, salvaged a good share of the cherry crop, thus furnishing a good object lesson on the value of organization and co-operation.

BANKERS ASSIST CO-OPERATION.

When, in 1908, the farmers of Denmark planned to build a cement mill to furnish cement at cost to themselves, bankers refused to finance the project, doubtless influenced by powerful manufacturers whose business would be interfered with by the new factory. The farmers thereupon organized their own bank, which is now the largest in Denmark, and proceeded to build the cement mill.

Leading banks of Portland a few years ago refused to finance an organization of Oregon poultrymen. A small bank took the account, which is now considered one of the most attractive handled by Portland financiers. The bankers who turned down the farmers' business later made strong efforts to obtain the account, according to one of the directors of the poultry association.

Oregon bankers have at last seen the light, and at their 1923 convention outlined a definite program for helping farmers organize co-operative marketing associations. Portland business men are raising a $300,000 fund for this purpose. "No longer can we afford," say they, "to ignore the fact that the movement toward collective marketing of farm crops is sweeping the country."

SHALL BUYERS CO-OPERATE?

A Government official is said to have recommended co-operative buying. It is estimated that 7,000,000 farmers belong to co-operative marketing associations. If the profits of collective buying were saved by farmers and added to those of collective selling it would go a long ways towards putting agriculture upon a permanently paying basis, it is contended by the advocates of this plan.

But is collective buying by farmers practical? They think so in England, where there are 1500 co-operative buying societies, with 4,500,000 members. The first of these associations was formed eighty years ago, and since that time their number and power constantly has increased. The Scottish branch operates the greatest wholesale store in the world.

The high cost of retailing admittedly is due in large part to the often unreasonable demands for service, for which all buyers pay more or less, whether or not they receive the accommodations. Farmers, as a rule, are willing to get along with the minimum amount of retailing service, and therefore should receive the lowest possible prices. Co-operative buying may enable them to obtain such prices. But many unfortunate failures emphasize the importance of caution and careful management in launching any enterprise of this character.

"What's New?"—Keeping Abreast of Agricultural Progress

Big Asparagus Planting

ONE million asparagus plants are to be set out on Grizzly Island, Solano County, next spring, as a result of successful tests conducted there by the Extension Service on a 10-acre plot this season.

Borrowing $100,000 a Day

THE Intermediate Credit Bank of Wichita, Kan., is loaning $100,000 a day to farmers, taking for security warehouse receipts for wheat at 75 per cent of the market value of the grain. A total of $600,000,000 of Government money is available for this purpose.

Sell Cold Pack Berries

A TON of strawberries put up by the cold pack method by the Happy Valley (Shasta County) Farm Bureau center in June were all sold at good prices. Plans are being made to build a small packing plant to take care of future surplus berry crops.

Produce Peach Pit Products

AFTER two years of experimenting, Dr. S. M. Woodbridge of San Bernardino has succeeded in manufacturing from peach pits on a commercial scale not only sodium benzoate and other chemicals produced by German chemists, but also toilet soap, washing powder, salad and cooking oil and nut meal for flavoring griddle cakes.

Holstein Prices Advance

THE 6216 registered Holsteins sold in California the first six months of the present year brought an average price of $249, which is $10 higher than last year's prices, but $88 lower than the average for the past seven years. The best stock sold at bargain prices, most of the animals which formerly went at $1500 going at less than $1000.

Collects Puncture Vines

THE winner in the recent Durham Farm Bureau center puncture vine contest was Carleton Crimmer, a 10-year-old boy who collected 25,750 plants. Carleton and the boy who won the prize for destroying the next highest number of puncture vines were engaged to continue during the summer the work of eradicating this pest.

Adopt Fruit Zone System

FARMERS in the vicinity of Galt (Sacramento County) have adopted the zone fruit system recommended by Farm Adviser Leonard, formerly of the United States Department of Agriculture. Experts employed by the Farm Bureau examined the land, which was afterwards mapped and marked with the names of those fruits best suited to each locality. Future plantings are to be made in accordance with these recommendations.

Taking Cyanide From Air

CYANIDE for fumigating orange trees is being extracted from the air in a million dollar plant in Los Angeles. Red spider, aphis, mealy bug and various other insects are killed by the fumes of cyanide, which is manufactured from atmospheric nitrogen. Owing to the increasing demand for cyanide, $4,000,000 additional capital may be invested in the plant of the Air Reduction Company, which is said to be the only one of the kind in the country.

Berry Growers Pay Fines

THREE Japanese strawberry growers of Gardena (Los Angeles County) this year were fined $50 each for deceptively packing fruit, which constituted a violation of the Fruit and Vegetable Standardization Act. "The world has certainly moved," remarked a Los Angeles green grocer, since the days when a farmer who was caught cheating berry customers with a dishonest pack treated the matter as a joke, saying that he had been taught to put his best foot forward and that people would be disappointed if they didn't find the biggest berries on top."

Yams Grow Too Large

A RECENT experiment in planting Alabama "yams" (or sweet potatoes) in the Coachella Valley of Riverside County succeeded from one standpoint and failed from another.

The yams grew rapidly and appeared to thrive under irrigation in the desert valley, but they attained such large size as to be unprofitable for marketing. Many of the tubers weighed four pounds, whereas the market demands a potato of the size suitable for one service; that is, not larger than one person can eat at a meal.

The yams were brought from Citronelle, Ala., where their production constitutes an important industry. It was thought their keeping qualities might be enhanced by growing under arid conditions of the Southwest. This, in fact, proved to be the case, samples having been kept in good condition ten days to two weeks longer than was possible with local "sweets."

But how to hold down the size—there's the rub! California's well-known and justly celebrated climate does have some drawbacks!

Form Hatchery Association

POULTRYMEN owning 7000 hens recently have organized an accredited hatchery association in Glenn County. A 50,000-egg incubator is to be installed and operated during the coming chick season. The following breeds are represented: White Leghorns, Anconas, Barred and White Plymouth Rocks, R. I. Reds and Black Minorcas.

Farm Bureau Packing Plant

THE Lindsay Farm Bureau Fruit Association has taken over the packing house of the Producers' Fruit Company and will pack oranges, lemons, grapes, pomegranates and deciduous fruits. The packing house has a frontage of 200 feet on the Southern Pacific track and is one of the largest and most complete in Tulare County. The Lindsay Farm Bureau already has a lime-sulphur spray plant in operation and is planning to own and operate a cold storage and a fertilizer mixing plant. Eleven hundred acres of fruit has been signed up, and T. E. Anderson, former manager of the Producers' plant at Lindsay, engaged as manager of the fruit packing business.

Attracting Wild Game Birds

THAT many farmers who are favorably situated may enjoy an unlimited supply of game birds in season is indicated by the experience of W. C. Rigg, known to hundreds of sportsmen as "Jack Snipe Billy."

On his ranch in the Hinkley Valley of the Mojave, Rigg has killed geese, curlews, jacksnipe, rails, avocets and every variety of ducks which were attracted to his irrigating reservoir by millet, hemp and Mexican June corn which he has planted. He has planned also to set out wild rice and celery, which will be sent him by Minnesota Indians, who gather it in September for immediate planting in order to furnish sprouts the following spring.

Farmers May Hold Wheat

THE Intermediate Credit Act, passed by Congress at its last session, makes it possible for farmers to obtain sufficient funds from the Government to hold wheat or any other similar crop for a rise in prices. Three-fourths the market value of the crop may be borrowed at 5½ per cent, the Government taking bonded warehouse receipts for security.

Any elevator or granary, even though it may belong to the producer and be located on the farm—may be used as a bonded warehouse, provided it is approved by a Government inspector and the keys turned over to the county agent.

The United States Treasury is authorized to issue to twelve intermediate credit banks $5,000,000 each, or a total of $60,000,000. These banks have the privilege of loaning farmers, on bonded warehouse receipts, ten times this amount, or a total of $600,000,000. It would require only one-fourth this amount to carry the 200,000,000 bushels of wheat, which is the estimated size of the present crop surplus, until such time as it may be sold to advantage.

"THEY SAY"

"I ENJOY your paper very much and think it is a great help to the farmers."—CHAS. G. STOOPS, Delhi, Cal.

"I get the ORCHARD and FARM with the San Francisco Examiner and like it much better than any other farm paper I have ever read."—F. O. HASELBAKER, Newman, Cal.

"I greatly enjoy reading the Agricultural supplement to your Sunday editions."—HAYES WEIDNER, Flagstaff, Ariz.

"I am a subscriber to your paper and an interested reader of all your farming articles. All of them splendid."—ERNEST MUELLER, 903 California street, Eureka.

"Am a regular reader of your weekly paper entitled "ORCHARD and FARM," and must say that it is very interesting reading."—F. SCHISEDER, Rt. 1, Box 119, Chico, Cal.

"I read ORCHARD and FARM regularly and find much good in its pages."—B. E. BROWN, Pescadero, Cal.

"May we congratulate you on the make-up and general merit of your publication. It is a credit to your organization and to the business you represent."—E. R. WAITE, Secretary Shawnee Oklahoma Board of Commerce.

"We take your California weekly and also get the Sunday section and read every line of it."—MRS. L. R. DOUGHERTY, R. R. No. 1, Compton, Calif.

"Having been a constant reader of ORCHARD and FARM since its birth, and being a Californian by birth myself, if I may be permitted to use the words of President Lincoln, I want to say that it is a paper of the people, by the people and for the people of CALIFORNIA. It has been the instrument by which I, like many others, have overcome many obstacles."—A. J. HALL, Route 1, Atwater, Calif.

How a Poultryman Solved Pressing Production Problems

Ten Thousand-Bird Operator Discusses Buying, Selling and Other Live Subjects

By O. H. BARNHILL

Assistant Editor of ORCHARD and FARM

"DO WE believe in co-operative marketing? I should say we we do!" emphatically affirmed George J. Richardson, who for 13 years has been in the chicken business at San Gabriel (Los Angeles County) and now has 10,000 hens. The plural pronoun included his brother Fred, who lives on an adjoining farm and is another big operator.

O. H. BARNHILL

"We had enough of selling on an open market before the poultry producers organized. The chief benefit of co-operative selling comes from the stabilizing influence which it exerts upon the market."

Mr. Richardson was asked to tell just what he meant by "stabilizing influence."

"When sellers are not organized," he explained, "they are apt to glut the market, resulting in a big drop in prices. A dealer who is caught with a large quality of eggs on hand must sell at the new price, which means to him a heavy loss. Experiences of this kind make a dealer cautious about buying. He will not take what he needs, nor pay what the stock is really worth, fearing a repetition of his unfortunate experience.

ORGANIZATION HELPS MARKET

"At present, when producers are organized, whenever the egg market drops to the lowest profitable price, say, 30 cents, our association puts the surplus into storage. The Producers now have more than a third of a million dollars' worth of eggs on hand. These goods will be fed to the market just as fast as it is in shape to absorb them. This gives dealers confidence, resulting in larger sales and better average prices.

"It is a mistake to think of a co-operative marketing concern as something which exists for the purpose of holding up prices and the public. The law of supply and demand renders it impossible to force the price to an unnatural level and hold it there. True, our association could boost egg prices a few cents, temporarily, but what would be the result? Idaho, Oregon and other outside producing areas immediately would flood our market, which would result in lower prices than before."

One would think the Richardsons would buy the immense amount of grain they feed direct of other farmers and thus save middlemen's profits. This, however, has proved impractical, because—as is explained—grain growers insist on being paid the dealer's profit, in addition to the producer's price.

FEED BUYING EXPERIENCE

"One year a neighbor raised a fine field of corn, only a few rods from my place," related Mr. Richardson. "I offered him the Los Angeles price for his crop. If he had accepted he would have been saved the expense of hauling the grain to the city. He refused to take less than the retail price, however, finally selling to dealers at $2 a ton less than the price I had offered him.

"This experience is typical of many we have had in trying to do business with other farmers, even when they are organized, as at one time were the grain growers in the vicinity of Ontario. They sent us good samples of grain, but their prices were always higher than the ones made me by city dealers. In order to cut out middlemen, farmers must meet dealers' prices.

"We buy our grain at harvest time, paying a Los Angeles dealer $1.50 a ton above the market, plus $1 for delivery, regardless of whether the grain goes through the warehouse or is brought to our farm direct from the field where grown. Experience has proved that this is the most economical way we can buy feed."

WHY POULTRYMEN FAIL

Mr. Richardson was asked why so many men fail in the poultry industry, while others—like himself—attain conspicuous success.

"The reasons are numerous," he replied. "Perhaps the commonest explanation is that the beginner's capital is exhausted before he learns the business sufficiently well to make it profitable. Some are unwilling to take advice, while others are too ready to adopt new methods.

"There are several systems of poultry management, any of which can be made a success if intelligently followed. No one can succeed, though, if he is continually changing his equipment and methods.

"A few years ago an expert engineer built up a fine poultry plant near here. The first year he failed in raising baby chicks, although he used a type of brooder which many large poultrymen are operating very successfully.

"Instead of learning from other egg men what his mistakes were and correcting them, this novice scrapped his brooder and bought another kind, his pride preventing him from seeking advice. Failure again resulted. This unfortunate experience was repeated five times, when the brooder accidentally caught fire and burned up, chicks and all. This was the last straw of discouragement, causing the would-be poultryman to quit the business in disgust."

An inquiry regarding the future of the egg industry in Southern California elicited from the San Gabriel poultryman the following:

COMPETITION IS INCREASING

"It is true that outside competition is increasing, as indicated by recent heavy shipments from Oregon and Idaho, but our location possesses advantages which will enable us to more than hold our own. Because of the success of co-operative marketing in California, egg producers in other States are getting together for the purpose of grading and shipping their product advantageously. Eggs sold in Idaho last spring for 18 cents a dozen, but such prices soon will be a thing of the past.

"Southern California poultrymen are close to one of the best egg markets in the world, and we have a mild, all-year-round climate which enables a hen to do her best at the least cost for food and shelter. In colder climates more expensive houses must be provided, while extra feed is needed to maintain bodily heat. Many places are very windy, which is bad for chickens.

"Here in the San Gabriel Valley we do not have intense, enervating heat, the summer temperature being considerably lower than it is 50 or even 25 miles east, while the cold, damp fogs of the coast are avoided. Nature adapts the feathery coat of a fowl to environment, to a certain extent. This fact was well illustrated by the behavior of hens brought from Gardena to Pomona to take part in the Farm Bureau egg laying contest, the coast hens being unable to endure the heat of the interior districts, going into moult in order to keep as cool as possible."

Grocers Lose Egg Money

GROCERS of the United States lose $25,000,000 annually in handling ungraded eggs, according to prominent members of the trade. Since dealers are compelled by law to grade their eggs, if the latter were branded with the seller's name it would be possible to procure a premium of at least 5 cents a dozen, it is believed, as this is done by some individual poultrymen.

"The average egg producer loses $200 a year by not grading his goods," asserts an official of the Retail Grocers' Association. "Dealers who buy their stock from the Pacific Poultry Producers' Association make instead of lose money in handling eggs."—W. J. D.

Actual photograph of yeast-fed birds on Fred H. Clark's California Ranch

Arthur Morrison of Arlington, N. Y., is raising these fine young birds on Fleischmann's Pure Dry Yeast

Letters tell what FLEISCHMANN'S PURE DRY YEAST is doing

for poultrymen everywhere

Letters are pouring in from all over America, telling of astounding results with Fleischmann's Pure Dry Yeast for poultry.

"Let me thank you once more," writes Harvey C. Wood of Bound Brook, N. J., "for introducing this life-saving element into our feeding program."

"I have never seen chicks feather so rapidly or develop such bone," writes E. C. Morris of Petaluma, Calif.; "this we attribute entirely to the addition of Fleischmann's Pure Dry Yeast."

"Have a hundred baby Reds two weeks old, fed yeast in the dry mash, and haven't seen a sign of white diarrhea," writes B. F. Bowman of Maryville, Kans. "All are very husky and active. Matured fowls look the best I've ever seen them."

"The results my figures show are phenomenal," writes Fred Clark of Cotati, California; "$184.55 net profit from 500 yeast-fed hens, getting one pound daily in the dry feed, as against $80.44 profit from the same number without yeast."

Use ½ lb. of Fleischmann's Pure Dry Yeast to every 100 lbs. of feed, in dry or wet mash.

Fleischmann's Pure Dry Yeast comes in 2½-pound cans, delivered. We pay postage or express. Mail the coupon today.

Fleischmann's Pure Dry Yeast can be profitably fed to all farm animals. Check on the coupon which booklet you want.

Caution: Don't be misled by imitations. Fleischmann's Pure Dry Yeast is *all* yeast—yeast in its most concentrated form. It contains no cornmeal or other fillers. To be sure of results, order Fleischmann's Pure Dry Yeast—using coupon below.

FLEISCHMANN'S PURE DRY YEAST

PRICES

1 to 10 cans $2.00 per can
10 to 20 cans 1.95 per can
25 to 40 cans 1.90 per can
Over 40 cans 1.80 per can

(Add 50c per can if in Canada. Other countries, prices on request.)

Any number of cans delivered direct to you, transportation charges prepaid.

THE FLEISCHMANN COMPANY, Dept. D-280, 941 Mission St., San Francisco, Calif., or 314 Bell St., Seattle, Wash., or 947 Maple Ave., Los Angeles, Calif.

Enclosed find $..... Please send me ..... 2½-pound cans of Fleischmann's Pure Dry Yeast, postage prepaid.

[ ] Send me your book on raising pigs, cattle and horses on yeast-fermented feeds.

[ ] Send me your book on raising poultry on yeast-fermented feeds.

Name .....

Street and Number .....

City ..... State .....

What Is the Matter With Purebreds?

Former Arizona University Official Discusses Economic Situation as Affecting Breeders of Registered Animals

THAT "intensive diversification" will solve Arizona's agricultural problems is the opinion of Dr. R. H. Williams, for nearly nine years head of the animal husbandry department of the University of Arizona, who is now in California.

"Arizona," said Dr. Williams, "is on the threshold of a new and interesting development, intensive cultivation of smaller tracts of land producing a great variety of crops. The Salt River Valley, for instance, might support thousands of families engaged in this form of agriculture, similar to many districts of California.

"Citrus fruits, cantaloupes, grapes, deciduous fruits and vegetables may eventually become more important than livestock, dairy products, hay, alfalfa and field crops.

"With the completion of the Colorado River projects, which is certain to come in time, new wealth by the millions will be created. Meanwhile an effort is being made to establish the dairy industry and others which gave way partially to the cotton craze. But, at that, cotton was one of the most profitable crops produced last year, particularly the short staple varieties."

Dr. Williams stated a number of Arizona cattlemen were turning to sheep, one man of 25 years' experience as a beef producer having announced his intentions of selling all his cattle and going in for mutton and wool production.

The former Arizona official decried the widespread "propaganda" which has resulted, he believes, in undue promotion of the purebred livestock industry. The disastrous slump in pure bred prices and the unfortunate condition of this branch of agriculture today he attributes to "overpromotion."

"Common sense shows," he asserted, "that not more than 5 per cent of the livestock in America ever will be registered. And while no one can question the value of improving our stock by means of purebred sires, the number of animals required for this purpose is comparatively limited. When the number of purebreds is increased beyond the limits of economic necessity, the females present a serious problem.

"Up to a certain point they may be bought and sold among breeders, but as long as they are held at the artificially high prices which have become established for pure breds, they cannot be raised commercially with profit. This applies particularly to beef cattle, because of their comparatively slow increase and turn-over."

The purebred livestock question, as Dr. Williams sees it, resolves itself into the problem of how far breeders can go in trading with each other. As the number of purebreds increase, we cannot expect to maintain breeters' prices, Williams insists, because the consuming public will refuse to pay interest on the investment.

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AT
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SEPTEMBER 1st to 9th

Greatest Livestock Show in West!

Agriculture, Horticulture, Poultry, Industry, Manufacturing, Mining, Farm Power and other Machinery.

State Public School Exhibit.

Horse Show.

Fast Harness and Running Races!

ENTERTAINMENT AMUSEMENT
Every Minute, Day and Evening.
THRILLS GALORE!
H. A. Jastro, Pres. Chas. W. Paine, Secy.

Kindness Cures Kicking

TOO many people think of a cow simply as a milk machine and the job of milking as a necessary evil. The cow recognizes this feeling and resents it, which is the cause of much trouble with cows.

An example of the difference between good and poor cow handling was noted on an adjoining ranch recently. The owner has picked up half a dozen cows, here and there. One was bought from a family that did not like cows. She knew it and became a bad kicker and did not give as much milk as she should.

The kicking cow was made a pet by her new owners. She soon became so good natured that she quit kicking and enjoys being petted. Her milk flow has increased. TULARE FARMER.

Feeds Horses Yeast

"HORSES in poor flesh or rundown condition are benefited by adding dry yeast to the dry feed," states a successful horseman. "For horses suffering from indigestion or impaction, yeast gives relief and restores the appetite when tonics and medicines fail. Some veterinarians use yeast regularly for such disorders.

"Thoroughbreds of worldwide fame are given yeast daily to regulate the digestive system and stimulate the appetite. For yearlings apparently lacking proper development for their age yeast is recommended, as more nutrition is extracted from the feed when yeast is used. The coat is very much improved and the general vitality of the animal is immediately built up and noticeable in three days after the first feeding.

"Use one tablespoonful in a dry feed at each feeding. For horses off feed and refusing to eat anything dissolve one tablespoonful of dry yeast in warm water and forcibly administer it. The animal will come back on feed in two days."

"Ninety per cent of stud horses die of constipation," says Mr. Strayer, trainer of Peter the Great, famous racehorse, "and only by feeding yeast was I able to save Peter the Great from the same malady. That was eight years ago and so far as I know it was the discovery of the value of yeast for horses. It saved him when all had given up hopes, and I used him for breeding purposes for four years afterwards. The rapidity with which the yeast functioned and the effect and change in the horse the next morning were hardly believable."

Concrete Mangers for Dairy Barns

By J. D. LONG

Division of Agricultural Engineering, University of California

DAIRYMEN who contemplate building or who are remodeling their dairy barns will be interested in the recent concrete manager standardization recommendation of the American Society of Agricultural Engineers. After careful consideration, the society approved four styles of managers. The two styles which are most popular and which are believed to be the best adapted to general California conditions are pictured herewith:

Manger "A" is for feeding both hay and grain, and manger "B" for grain only, the hay to be fed from the hay barn or the rack in the lot. The feed alley floor may be raised to the top of the manger in type "A" by those who prefer that construction as a means of lessening the labor of forking back into the manger the hay thrown over by the cows.

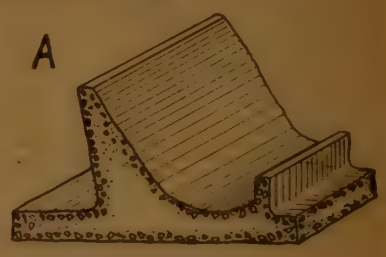
A device which will materially lessen this activity of the cows, however, is a one-half inch galvanized iron pipe running lengthwise and about six inches in from the top of the manger. Pipe fittings to carry this pipe should be placed when the concrete is poured, such fittings to enter the manger wall about three inches down from the top and run vertically down through the manger side for reinforcing. Such a device may be installed in old concrete mangers by drilling out the holes to install the fittings, spacing the fittings four or six feet along the manger.

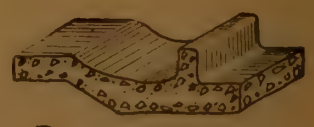
Plan "C" gives the dimensions for making a template for securing the correct curve for the manger. The plan gives the dimensions for both types of mangers, the 32-inch width being for type "A" and the 20-inch width for type "B."

Should the dairyman have high priced animals it is suggested that concrete walls be built in the manger between each set of stanchions, as they tend to prevent spread of disease by feed thrown from one animal to the other. For the same reason individual drinking bowls should be placed at each stanchion rather than running the water through the manger.

Any dairyman or other rancher who is having trouble with construction or farm building problems may write the Division of Agricultural Engineering, University of California, Davis, for advice and assistance. This service includes blue print plans of representative types of farm buildings designed for California conditions which may be borrowed free of cost from the Division of Agricultural Extension, University of California, Berkeley, by residents of the State.

A





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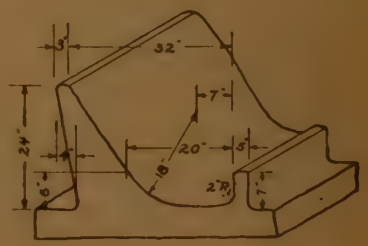

C

Goats Displace Cow

FOR a fruit ranch a few milk goats beat a family cow by a big margin, according to C. L. McMillan, superintendent of the Visalia Orchard Company, Tulare County. Goats are easy to keep and feed and when one or two are dry the others are giving milk, but when a cow is kept the family get little or no milk for at least a couple of months in the year in most cases.

Eight goats can be kept with the feed and care one cow will need. Provided goats have some grain, goats will get rid of a lot of roughage that a cow will not eat.

One of the best things about goats is that they can join the auto party on a trip to the mountains for a vacation and supply milk for the crowd. When the McMillans go camping a crate is tied on each runningboard and a nanny in full milk is put in each crate. A small sack of ground grain provides rich feed for quite a period, and the animals easily get enough rough fodder around the camp to keep them in good condition.

Many fruit growers do not keep a cow. They would find four or five milk goats a fine source of milk both at home and while camping in the hills.—TULARE FARMER.

TRACTOR TRACKS WIDENED

A Sacramento tractor and implement dealer has accommodated local bean growers by widening the tracks of a Small track-layer 18 inches to fit the rows.

TRESS Grows Hair Scientifically and SURELY

You may have tried a dozen other "tonics" and failed to stop dandruff, itching, falling hair, or scalp eczema, but you'll be more than agreeably surprised at the results obtained if you'll try TRESS. It not only eliminates these troubles, but IT GROWS NEW HAIR! Send 25 cents in coin or stamps for a large sample bottle, sufficient for 15 applications, or $1.50 for full-sized bottle and illustrated instruction folder on "How to Keep Your Hair Healthy and Grow New Hair." Address TRESS Laboratories, Dept. "O," P. O. Box 1370, Station "C," Los Angeles, Calif.

Agents and Canvassers: Send 25 cents for sample bottle and our Liberal Profit Offer to Agents. You can build up a permanent business. Address Dept. "C."

Iron in Comfort!

Do your ironing on your porch or in the shade of a tree with the *Coleman Self-Heating Iron.* Complete in itself. Saves your time, your strength, your clothes.

Coleman Self-Heating Iron

Does an average week's ironing on a few cents worth of fuel. Makes own gas from common motor gasoline. Clean and safe. Simple and easy to use. WRITE TODAY for Free circular and liberal introductory Offer. Address Desk OD-6

The Coleman Lamp Company
170 So. Los Angeles St., Los Angeles, California.

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BUNG-LO PAINT
A Real California Paint
Think of the price
2 Gallons for $2.70
We will also give
FREE
One gallon of trim, any color, with every 5-gallon trial order
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MOLASSES

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Is What Makes "Contented Cows" Contented!

Carnation Stock Farm, at Tolt, Washington, is only one of the many great Dairy Farms in this country where pure Hawaiian Feed Molasses is a part of the regular diet. It keeps "Contented Cows" contented—makes them give more milk—improves their health. Pure Hawaiian Feed Molasses will make *your cows "Contented," too,* for it stimulates the appetite. You, yourself, will be more contented because it increases the milk flow, while reducing feed bills.

It is imported direct from Hawaii and sold direct to you for practically one-half the cost of hay. You'll profit by using it.

TON PRICES—F. O. B. CROCKETT, OR LOS ANGELES HARBOR, CALIFORNIA. Write for delivered prices.

TANK CARS, $11.00 CARLOADS IN BARRELS, $20.00 L. C. L. IN BARRELS, $22.50

Booklet A4 describes how others are feeding Molasses with great success. Write for it. It's FREE.

613 First National Bank Bldg. W. H. YOUNG COMPANY *San Francisco*
23—91

Bee Notes

Without Stingers

By J. D. BIXBY SR.

KINZIE SUFFERS HEAVY LOSS Charles Kinzie of Arlington recently had the misfortune to lose his fine honey house by fire. Kinzie is one of the prominent bee keepers of Riverside County, and the house contained complete equipment for his work, as well as a very large collection of nectar-producing pressed flowers, showcases, honey samples, etc., the result of years of labor. For many years Kinzie has been a noted exhibitor of apiarian products at the county fairs, and his collection of plants will be especially missed.

J. D. BIXBY SR.
Contributing Editor

NEW CROP IS IN DEMAND Nearly all the small crop of new orange blossom honey already has been picked up by bottlers for retail use.

FRUIT CROP AFFECTS HONEY DEMAND—Abundance of fruit has a noticeable effect on the consumption of honey. When a State or section has a large fruit crop, much less honey is called for.

HONEY WITH A "KICK" Several would-be manufacturers of honey vinegar have found themselves in trouble when they bumped-up against the State liquor law. A $2000 bond is required from every vinegar maker.

WHAT IS PER CAPITA CONSUMPTION?—We have a pretty accurate idea of per capita consumption of sugar, but owing to the scattered manner of production, no per capita figures on honey. But whatever it is, no doubt it can be increased materially.

BEWARE THE BEE MOTH The bee moth will be at its worst for the next three months. If you cannot keep your spare combs on good, strong colonies, sulphur them at least once a month. Be very careful in using bi-sulphide of carbon for this purpose; it is very explosive. One of our neighbors had a disastrous fire.

WHITE CLOVER REGIONS PROMISE HEAVY CROP—The white clover regions east of the Rocky Mountains bid fair to harvest an excellent crop of clover honey, while owing to lack of winter rains, California will have one of the lightest crops in her history. Alfalfa and star thistle seem to be the only available sources of late honey, wild buckwheat being badly dried up.

VALUABLE NEW INVENTION PERFECTED—An electric wire embedder for fastening the foundation in wired frames recently has been invented by an Orange County apiarist. It is so practical and efficient that the A. I. Root Company will manufacture it and place it on the market soon. It is rapid and thorough in its work and equipped with a transformer so that it may be attached to the house light or the auto battery or any other common source of electricity.

LEAVE WEAK COLONIES ALONE In the midst of an extended drouth like the present is no time to tinker with colonies that are weak or below par from any cause. If diseased in any way, destroy the bees and melt up the combs. If merely weak, unite two or three, retaining the best queen and concentrating the stores for the better support of one colony. If a colony is found queenless, unite it with a normal colony. Don't waste time and money in the effort to introduce a new queen. Such attempts usually result in failure, even under the most favorable conditions.

NEW COMB FOUNDATION SUCCESSFUL—The 3-ply comb foundation recently offered to bee keepers bids fair to be an important saving in the use of natural beeswax. The central sheet is of cheap vegetable wax, on which is impressed the form of the base of the cell; it is covered on each side by a sheet of pure beeswax. No mineral wax of any kind is used in its construction.

The main effect of the invention was to obtain a sheet of foundation which would not stretch under normal heat conditions and would not need wiring. More than fifty experimental sheets, with bases of wood, metal, rubber and other substances, were listed before the selection of the present all-wax combination, which is so perfect that it is impossible to distinguish it from the natural beeswax foundation.

How Long Will the Farm Tractor Last?

A RECENT survey of the tractor situation involving 100 owners brought out much information of general interest. Thirty owners gave as the main reason for purchasing a tractor the fact that they could do quicker or better work in seed bed preparation. Nineteen bought tractors to save their men and horses from heavy work. Seventeen bought tractors as a source of cheap power; ten because they thought it would be a profitable investment. Four purchased tractors for public work or commercial power, and two for orchard cultivation alone.

The general average age of 100 machines was 3.6 years, distributed as follows: 16 were 1-year-old machines; 9 were 2 years old; 28 were 3 years old; 32 were 4 years old; 15 were 5 years old; 2 were 6 years old, and 6 were from 7 to 10 years old.

Each owner was asked how much longer he considered his tractor would last. This figure added to the number of years already operated furnished an estimate on the life of tractors. The average figure was seven years, which corresponds quite closely with all other investigations and indicates an average life of 6 to 8 years.

It will be noted that the average estimated life of the tractors studied was seven years. Therefore, the annual run-down or depreciation is about 15 per cent each year, based on the cost of the machine. Thus, a tractor costing $1000 will be charged with approximately $143 per year. As a matter of actual fact, much more than $143 is taken from the re-sale value by the first year's operation because the machine will then have to be offered as second hand; but over a period of years it has been found reasonable to take about 15 per cent of the cost at the end of each season for depreciation.

[Editor's Note—Records of tractor manufacturers show that many machines have been operated for from ten to twenty years.]

Of the various conclusions reached by the investigators, the following advantages of power farming are perhaps most interesting:

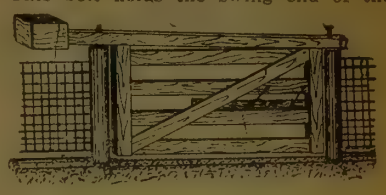
1. The number of work animals will be reduced.
2. There will be a saving of man labor.
3. The field work can be done at the most opportune time.
4. The number of acres of the principal crops may be increased.
5. More time will be available for live stock and cash crop enterprises.
6. The tractor may be used for custom work.

Livestock Gate

WE have a gate at the barnyard entrance to the stock lane that has done good service for several years.

It is balanced by a box of stones on the hinge end of a 4 by 4 inch wooden beam that extends fore and aft as shown in the drawing.

There is a double fastener to hold the gate shut. The long wooden bolt is suspended by wire hangers that lean towards a large mortise in the keeper-post, so the bolt swings into place of its own weight when the gate goes shut. This bolt holds the swing end of the



gate down when a tricky hog tries to lift it. The bottom hinge and the box of stones take care of the heel post.

When we have wild cattle or mules in the yard we put the iron pin through the forward end of the gate bar as shown. Because the hinge bolt is not plumb over the lower hinge, the gate swings open and stays open until we push it shut so we can drive the last of the bunch through without having to ride forward to open the gate and then hustle the stragglers.—HERBERT A. SHEARER.

MARGARINE MAKERS ORGANIZE Forty-five large industrial organizations, with hundreds of millions of dollars invested, now belong to the new Institute of Margarine Makers. The annual output of imitation butter in the United States is now 400,000,000 pounds.

The California White Leghorn Breeding Farms

SUPERIOR ENGLISH LEGHORNS—INTERNATIONALLY KNOWN

The World's Best

Write for mating list and learn why.

FALL CHICKS

ECKMAN & MILLIGAN, Lankershim, Cal.

Why tractor owners are standardizing on "Caterpillars"

Big operators of tractors are rapidly standardizing on "Caterpillar" power. The reasons are found not only in the proved performance, economy and dependability of "Caterpillar" Tractors but in the continued interest of the Holt organization in the owners of its products. Let one of these owners tell it in his own words:

"I have never dealt before with people who have manifested such an interest as that shown by your representatives. My principal trouble with other companies has been their lack of interest after their machine was sold and I have sustained substantial losses both in money and labor on account of poor service rendered by them."

There is only one "Caterpillar" —Holt builds it

CATERPILLAR Reg. U.S. Pat. Off.
HOLT
STOCKTON, CALIF.
PEORIA, ILL.

The Two-Ton "Caterpillar" Tractor T35, pictured here, is built for the most dependable field service. Its overhead valve and camshaft motor, 3 speed transmission, accurately controlling governor, special heat treated steels, complete enclosure from dust and dirt, force feed lubrication, assure satisfactory performance. This machine, like all Holt products, is backed by the most sincere factory service—the kind that makes you want to standardize on "Caterpillar" equipment.

Write at once for full information about the 2-Ton or about the larger "Caterpillar" Tractors, 40 h. p., 60 h. p. or the big power "75."

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PROFITABLE POULTRY and CO-OPERATIVE ELECTRIC HATCHERIES. Capacity, 250,000 chicks. 180-290 egg Leghorns, Anconas, Reds, Rocks, Minorcas, Wyandottes, Brahmas, Andalusians. (Ducks, turks.) Off every week. Also chicks from large 2-year hens for rapid growth into broilers, fryers, roasters, capons. Reduced booked ahead. "Never saw such vigor, rapid growth in chicks." 13 N. Fair Oaks, Pasadena. Mail only.

CERTIFIED WHITE LEGHORN QUALITY CHICKS for Summer and Fall months, from selected free-range, high egg producing breeding flocks, inspected and accredited by the Sonoma County Farm Bureau. Send for catalog and attractive prices. Safe delivery and full count guaranteed. MUST HATCH INCUBATOR CO., INC., 482 Seventh St., Petaluma, Calif.

CERTIFIED BABY CHICKS from inspected flocks. All hens have undergone rigid inspection; mated with males having authentic trapnest records of at least 200 eggs on the sides of both parents. Certified by Alameda County Poultry Breeders' Assn. Now booking orders for fall and spring deliv. Utility prices. Chanticleer Elec. Hatchery, Inc., Hayward, Cal.

WHITE LEGHORN baby chix from flocks mated to males having sire's dam record of 240 to 297 eggs per year. Full particulars and interesting literature on request. We are accredited by Sonoma County Farm Bureau. THE PIONEER HATCHERY, P. O. Box 176, Petaluma, Calif.

HANSON'S Pedigree S. C. White Leghorns. Over 240-egg flock average for 6 years. Over 221-egg flock average for 3 years. Unexcelled in production and stamina. Contest winners in two hemispheres. Send for interesting catalog. J. A. Hanson, Corvallis, Ore.

ORDER SUMMER AND FALL CHICKS now. They pay. White Leg., R. I. Reds, Barred Rocks. Safe arrival guaranteed. Send for circular. Fine lot of White Leg. pullets and breeding cockerels. Stubbe Poultry Ranch and Hatchery, Box 676, Palo Alto, Calif.

PETALUMA HATCHERY. Accredited by Sonoma County Farm Bureau. White Leghorn chicks every Monday and Thursday. If you want good fall layers get chicks in the fall. Guaranteed safe delivery. Free circular. L. W. CLARK, Petaluma, Calif.

W. LEGHORN Pullets of exceptionally fine quality from ten weeks to six months of age, at reasonable prices. Also chicks at reduced prices during fall months. WEIS FARM, P. O. Box 351 Petaluma, Calif.

BABY CHICKS—All kinds hatching each Monday. Ducklings, turkeys, hatching eggs. Pullets, pigeons, rabbits. FANCIERS' EXCHANGE, 849 S. Main St., Los Angeles.

THE WORLD'S four newest fowls—Spencer Turkens, Russian Orloffs, Jersey Black Giants and Australian Kiwis. Photo booklet free. Z. T. SPENCER, Rt. 1, Santa Cruz, Cal.

FREE BOOK, "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

TURKEYS, DUCKS AND GEESE

WILD BLOODED BREEDING TURKEYS—Toms, according to age and size, $15 and $25 each; hens, $8. Baby turks. JENKINS, The Veteran, R. 3, Box 148, Burbank, Calif.

FARM LAND FOR SALE

OUR BACK-TO-LAND PLAN. We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land, deep, rich, tried soil, complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and berry farming in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land; near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

REAL ESTATE—Sale or Exchange

FOR SALE or Exch.—All or part of 140 acres level garden land, agricultural dist. Suburban to Vancouver, B. C. City water, great future. Owner, C. Westenhaver, Eburne, B. C.

FARMS WANTED

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

LIVESTOCK—Guernseys

GUERNSEY BULLS for sale from California's first Federal Accredited Guernsey herd. Last test June 11. JAMES BROWN, Capitola, Calif.

LIVESTOCK—Sheep, Goats

PURE BRED TOGGENBURGS from recently imported stock. Heavy milkers. Raised under ideal conditions. Sure to please. Canyon Goat Ranch, Redlands, Calif.

FRUIT RANCHES FOR SALE

FIG ORCHARD—20 acres 6-year-old Calimyrnas in Forkner Tract, 6 miles north of Fresno. Deal with owner and save $150 per acre. L. J. MARIER, 265 Bush St., San Francisco.

HELP WANTED—Instruction

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REBUILT WINDMILLS, tanks, pumps, cylinders, surface irrigat. Pipe, all sizes, used 8, 9-in., cheap. New galv. tanks, all sizes. large used redwood tanks. DEMMITT CO., 120 N. Main. Yards, 816 Yale, Los Angeles.

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PAINT—BARN and ROOF—Highest quality, $1.00 per gal. Guaranteed 5 years. Milroy Works, 591 Palisade Ave., Jersey City, N. J.

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WALNUT BUDDING—15 yrs.' exp. at last a success. Try my new method, be convinced. Particulars and natural cut explaining method, $2. Refs. W. A. BARNETT, Vacaville.

Prize Fruit Grower

PAUL H. STEUDE, California's champion town lot farmer, who grows an immense quantity and variety of fruits, flowers and vegetables on one-seventh acre of land in Sacramento, is an old hand at horticultural work.

"Lee Lathrop, Ira Avery and myself called the meeting which resulted in the organization of the California Fruit Exchange, the largest concern of its kind in the world," writes Mr. Steude. "At that time we were all living at New Castle, Placer County.

"I had 370 boxes of fruit in the first car shipped by the Exchange. Although I was struggling to get a start on my ranch and had a crop mortgage on the fruit, I received nothing for the shipment and had to pay the freight. Talk about hard times! We had the real thing in those days.

"At the St. Louis World's Fair and the Lewis and Clarke Exposition at Portland I had the largest deciduous fruit exhibit of any California grower; also the largest plums at the Paris World's Fair and the Pan-American Exposition at Buffalo.

"My old friend, Frank Wiggins, of the Los Angeles Chamber of Commerce, used to exhibit the fruit I grew on my Placer County farm. I have also co-operated with Robert E. Jones, who is doing much to elevate the agricultural profession in California.

"The Sacramento Chamber of Commerce had 46 pictures of my place taken the other day. I gave them a large auto load of produce for exhibition purposes. Have 175 varieties of useful and ornamental plants growing on my lot, which is only 40 by 151 feet in size. The other day I gave away ten large bouquets of flowers for schoolhouse decoration and to my friends. Twenty more bouquets could be picked today.

"I sometimes think the Lord favors me more than some of my neighbors who are trying to grow things, yet I stay home and work, while they go joy riding, and say they haven't time to irrigate their gardens. We have too many automobile farmers nowadays and not enough of the kind who stay at home and attend to business."

New Caprifying Containers

OWNERS of young Calimyrna fig orchards in Tulare County frequently use paper sacks in caprifying their trees. When the season is over the sacks are unfit to be used again. Cartons used in grocery stores for pickles and similar goods can be bought for less than a cent each, while the paper bags cost nearly half as much. Compared to paper bags, cartons are easier to put up, look as if they will last several seasons, are much more convenient in every way, and the difference in cost between the two is small. Permanent wire baskets, however, may prove best in the long run. — TULARE FARMER.

CALIFORNIA TO SHELL ALMONDS

Taking advantage of the tariff on shelled almonds, the California Almond Growers' Exchange is for the first time entering the shelled almond market, which receives 80 per cent of the almond money spent in the United States.

Santa Clara Ships Fresh Fruit

CANNING prices for 1923 cherry crop in the Santa Clara Valley were so low that growers felt pretty blue. Canning and drying prices for apricots also were very unsatisfactory. Orchardists turned to fresh fruit shipments and carloads of cherries were sold in the East at higher prices than Santa Clara cherries ever before have brought. Verily, "Sweet are the uses of adversity."

Two men living side by side had each a few house-yard cherry trees. One man either gave his fruit to friends or sold it for a few cents a pound to get rid of it. The other picked 15 small lug boxes of fruit weighing 16 pounds each, and sent them to New York through a dealer. The car in which the fruit was shipped sold for less than some other cars, but the statement received from the shipper was very satisfactory, as follows:

Freight and refrigeration	$12.68
Loading	.45
Precooling	.75
Commission at 7%	4.10
Total expense	$17.98
Selling price	58.50
Net to grower	30.52

This small consignment netted 17 cents per pound. There were no packing charges, as the cherries were shipped loose in lug boxes. The cherries were Bings. The whole car sold for $5077.

The explanation of these high prices is found in the fact that Santa Clara cherries are large and of fine appearance and quality, much superior to earlier cherries that usually sell at a high price because they are early.

Moreover, instead of being picked a little green, in order to carry well, the fruit was gathered tree ripe, in ideal condition for eating, then pre-cooled and shipped by express under refrigeration, reaching the market quickly and in the best possible condition.

Low apricot prices also forced apricot growers to make fresh Eastern shipments. The only shipping apricots from California came from early districts, where the fruit is inferior to Santa Clara apricots, both in appearance and quality. Much of the apricot shipping was done by the Fruit Growers of California, a corporation composed of apricot growers of the central coast counties.

Arrangements were made for the shipment of 100 cars from Mountain View, 100 from Hollister and 200 from San Jose.

The advantages of these shipments were the superior quality of fruit, due to picking when ripe, pre-cooling and refrigerated cars, also to the fact that the apricots were large, beautiful and delicious. These California apricots arrived on the Eastern market at the same time Georgia peaches were being sold, the first time this ever occurred. Preliminary shipments of Oakley apricots, smaller and greener than Santa Clara fruit, netted growers $70 per ton.—D. J. WHITNEY.

Fighting Farm Thieves Effectively

IN ye olden days, when a farmer thought of thieves his mind turned to cattle rustlers, boys in a watermelon patch or a darkey looting a hen roost. The twentieth century California farmer is forced, however, to protect his orange and other orchards from hungry hoboes, his family car from auto thieves and his purebred poultry from lovers of fragrant fried chicken. Auto insurance takes care of his car, but farm crops are not always so protected.

A unique robber alarm is used by A. F. Rideout, Whittier avocado grower and nurseryman, to protect his luscious Lyons from those who are tempted to act on the suggestion that "stolen fruits are the sweetest." Cow and sheep bells are hung in trees where the fruit is especially large and plentiful. Strings are attached to the bells and run to strategic positions. The unexpected noise of the bells usually frightens the thieves away before they have done any damage.

George England, the big Inglewood poultryman, keeps a large white bull dog, of irritable disposition and irascible temper, to protect his valuable flocks at night. The sudden appearance in the darkness of this savage and ghostly appearing canine never fails to strike terror to the hearts of would-be chicken thieves.

Hoover Brothers of Pomona also use a dog to protect their hens and pigeons. The animal is chained to a long wire running along the front laying house, a ring enabling the chain to slip along the wire as the dog runs after the marauder.

The Richardson Egg Farm, San Gabriel, also use dogs to chase away chicken thieves, who are warned to "Beware of the Dog." Electric alarm bells connected with the doors of the poultry houses serve to give warning of the approach of robbers. The Mission View Poultrymen's Protective Association was organized by egg men in that region to combat chicken thieves.

Many orange groves are placarded with warnings against those who may be tempted to steal the beautiful golden globes of nectar. An Oregon melon grower keeps two old men, armed with shotguns, in his patch day and night during the harvest season. These guards are provided with tents, in which are found cooking and sleeping accommodations.—O. H. B.

Success in Sonoma

AN extra fine crop of Imperial prunes is ripening on the 32-acre orchard owned by J. F. Phares, in the Dry Creek district, Sonoma County. Fruit from this orchard sold for $400 a ton last year. Twenty-five tons of Zinfandel grapes brought $75 a ton. Mrs. Phares raised 70 fine turkeys last year and is doing her part of the ranch work.

The Phares' orchard and vineyard are located on what was formerly a part of the Ware-Galloway ranch, the remainder of which is owned by D. D. Wagner, superintendent of the Prune Growers' packing house at Geyserville. —K. R.

Tulare Walnuts Pay

THERE are few larger walnut orchards in the State than the Visalia Orchard Company's in the Kaweah delta section of Tulare County. The soil is a rich, moist, sandy loam, and walnuts are well suited to the situation. C. L. McMillan, superintendent, gives the average yield from mature trees, 12 to 15 years, at approximately a ton per acre.

Concords have been tried and found unsatisfactory, as the shells are too soft and the trees blight badly. Eurekas have not been tried long enough to prove their merit. The Mayette is too slow to bore. The Franquette is the favorite variety.

Quite a few of the trees have broken to pieces this summer with the weight of the crop and on account of stronger winds than usual. They broke at the crotch and mostly went to pieces. As the trees were beginning to crowd, the breaking down of a few gives more light and ground space for the rest, therefore Mr. McMillan hardly regrets the loss. For something over a year alfalfa has been grown in the orchard without giving any signs of either helping or hurting the trees. Big crops have been produced.—D. J. W.

Lemon Planting Mistakes

AN illustration of how necessary it is to know farming essentials is given by the experience of a small citrus grower in Tulare County. Lemons are the main crop. The owner was a new comer and contracted the planting work. Although Eureka is the standard lemon variety for this district, he took a chance at getting a summer crop by planting part of his orchard to Villa Franca. The variety has proved unsuitable to the county and that part of his orchard is not worth much.

The man who contracted to plant the place bought some of the other trees from a Jap nurseryman who used trifoliate seedlings, which dwarfed the trees on them so badly that that part of the orchard had to be pulled up after several years. The owner got the cost of the nursery stock back, but lost all the time and labor put on them.

If the standard variety for the county had been planted exclusively, instead of taking a chance at something better, and if the nursery stock had been bought from a reputable nurseryman, the whole place would now be producing well and a money maker.—TULARE FARMER.

BIG INCREASE IN GRAPE CROP

The 1923 California grape crop will be 4000 car loads larger than the 1922 crop, according to estimates made by the United States Department of Agriculture.

Farming Five Acres Intensively

City Man Makes Good Living on Small Tract and Enjoys Country Life—Berries Yield Big Crops

By O. H. BARNHILL

"THAT city man won't last long in the farming game," predicted the neighbors of L. E. Wallace when he started to develop a five-acre tract near Riverside a few years ago. "Why? Because he's not a real dirt farmer, but what you might call a 'book farmer.' He's got a lot of fine theories, but they won't work out in practice. Wait and see!"

And so they waited, the real dirt farmers who were engaged in similar work. At the end of two years, Wallace was the only one who was making all his living on his acreage, the others being forced to supplement their agricultural activities with working for wages. A few years later a local paper devoted two columns to a description of the farming methods of erstwhile urbanite, whose place was said to be "The best paying five-acre ranch in Riverside County."

Mr. Wallace, who is now cultivating a tract of similar size in Los Angeles County, was asked where he obtained his agricultural ideas.

"From a man at San Diego who was demonstrating the possibilities of small tract farming," he replied. "Good use also was made of farm papers, agricultural bulletins and the experience of successful growers who were operating under similar conditions. Farm work was approached with an open mind, unhindered by prejudices or preconceived ideas. My mottoes are, Diversify, Be intense, Make every move count."

GIVES UP SEDENTARY WORK

Because of failing health, Wallace was forced to give up sedentary work eight years ago. He left the office of deputy surveyor of Los Angeles County, where he did much valuable map making and other similar work. A five-acre tract near San Diego was farmed only eight months, at the end of which time the land had to be sold, because of financial complications over which the owner had no control.

Riverside County weather proved too hot for the Wallace family which three years ago located on a five-acre tract bordering Huntington Drive, between Arcadia and Monrovia. Almost constantly cool breezes blow from the ocean up the San Gabriel Valley into a nearby mountain canyon.

The new neighbors repeated the predictions of the old ones, with variations. "He might have succeeded in Riverside County, but he can't do it here, because his land is no good. A man who tries to make a living farming five acres of sandy soil, lacking in humus and nitrogen, and only two feet deep, underlaid with loose rocks—which hold water like a sieve—is foreordained to failure."

Pessimistic persons likewise pointed to the rubbish which deeply covered one acre of the newcomer's land. It would cost more to move this junk, they declared, than the land was worth. The former surveyor knew something of the value of rights-of-way, however. Seeing the city dads of Monrovia, who were responsible for the rubbish, Wallace arranged to have the latter removed in exchange for a small strip of ground which might at some future time be used for street purposes.

TRANSFORMS RAW LAND

After three years, history is repeating itself and nearby residents are beginning to marvel at the transformation which has been wrought upon one of the most unpromising pieces of land in that district, although the work of improvement was halted when only well begun, due to an accident which Mr. Wallace suffered a year and a half ago. He is still "running on one bell," marking time, as it were, until his full strength returns.

Just how would you, gentle reader, go about developing a five-acre tract, under similar circumstances? Would you be led astray by the siren song of the bonanza crop enthusiast, who paints in glowing colors the possible profits from poultry, prunes or persimmons? Wallace is one of these canny Scotch individuals who is thoroughly sold to the slogan, "Don't put all your eggs in one basket."

Water for irrigation first was made available. Although the land is located on the very bank of the beautiful Santa Anita River, the city of Arcadia long ago appropriated all the water, which is sold at very reasonable rates. Instead of bothering with the services of a zanjero every time water was wanted, Wallace decided it would pay better to put in a meter, which cost $85.

CONCRETE WATER PIPES PAY

Another unusual procedure was to displace the ordinary iron pipe with a 10-inch concrete main. This makes it possible to let the water slowly trickle from concrete distribution jars, as in field irrigation, instead of pouring at high pressure through a small metal pipe. The latter method is apt to wash the soil badly. The entire irrigation system cost $850.

Although fruit and berries were to be the main money crop, a barn, corral, hen house and chicken yards were built, in addition to dwelling house and garage. While there was no fancy construction, everything was made substantial, the floors of the outbuildings being of concrete and the fence posts set in the same material. A milk cow, chickens, ducks and other animals give the place the appearance of a real farm.

Having the land, water and buildings, fertilizer was the next thing to provide. Wallace found this problem very simple, since plenty of cow manure at $4.50 a ton furnished the solution. No other fertilizer is used.

BERRIES PROVE PROFITABLE

When the Riverside place was sold the owner reserved the right to dig up enough berry plants to set out a patch on his Monrovia tract. The buyer of the Riverside tract probably would not have sold the plants, which most fruit growers consider a waste product, but they would have cost Wallace real money. This little deal is a good illustration of the way in which the former town man watches every corner around which a dollar may be found rolling. "A farmer never makes anything working with his hands alone," he observed. "He must use his head."

Berries, tree fruits, nuts, vegetables and nursery stock have all proved good money makers. "Is there money in berries?" Wallace seemed surprised at the question. "Why, we'll pick between $400 and $500 worth of them from an acre of young vines this year. We are selling $75 worth a week from eight rows of raspberries and blackberries, half of them planted only a year ago last winter. The production begins and ends with $25 a week, lasting six weeks.

"The Crandal blackberry is the best berry we have found," continued Wallace, in reply to a variety question. "The bushes bear enormous crops and are easy to handle. We train them up in tree form, so they won't require trellising. The new canes first are headed back to induce branching. The laterals later are shortened, to make them stocky. Sometimes the crop is so heavy we put a board under the bushes, with a prop nailed at either end.

TESTING NEW VARIETIES

"We also grow the Cory Thornless and the Himalaya. The latter is the kind amateurs begin with, because it grows so vigorously—all you need to do is to stick the plants in the ground. The fruit is not first-class, however, being mainly valuable for jam, while the vines grow so coarse and rampant that they are hard to control. The Cory is a large, fine berry, but is too soft for shipping and when the weather is very hot they are apt to dry up on the vines. The St. Regis Everbearing red raspberry bears almost continuous crops of good fruit."

The La France is a new everbearing raspberry of great promise being tested. The Progressive Everbearing strawberry also is considered very valuable. From 200 plants set last winter 4½ quarts of berries were being gathered every other day. A new plant which had started at the end of a runner was already fruiting, five months after the parent plant was set. This is the record for precocious production, so far as the writer is aware.

Instead of planting strawberries in a row and letting the water run in a ditch alongside, Wallace puts them in beds about 10 feet wide and makes the water zigzag back and forth between the plants, which results in thoroughly soaking the soil.

In nursery rows there are grape cuttings, young fig seedlings and various other plants. "We have an advantage over San Joaquin Valley growers," Wallace explained, "because all grape vines imported from that district have to be dipped, which kills a good many."

HOW PRODUCTS ARE SOLD

In a lath house many potted plants await customers. "People stop to buy berries and remain to look at the flowers, many of which find customers in this manner," related Wallace. "The fruit business helps sell nursery stock and vegetables. Our location on a main traveled road is a great help in marketing. We never have to hunt for buyers or deliver fruit. All that is necessary is to put out a sign and be ready with the goods."

A young orchard of mixed fruits and nuts is being developed, with vegetables grown between the rows. Asparagus and rhubarb are among the permanent and profitable garden plantings.

Here are some examples of taking advantage of even the smallest opportunities: Several switches were picked up under a weeping willow tree which a neighbor had been pruning and the cuttings planted. Next year there will be some beautiful young trees to sell. Sprouts coming up around a syringa bush will be dug up, transpanted and later sold. Surplus blackberry plants were set close together in a small bed, from which a great number of young plants are dug every fall, none being allowed to grow into bushes the following season. Many plants also are dug between rows of fruiting trees.

HIRES NO OUTSIDE HELP

There is no expense for hired help, all the work being done in the family, the other members of which find country life pleasant, with its many activities and duties.

In contrast to Wallace's successful methods, a neighbor vainly is endeavoring to make money growing oranges, although the location is unsuited to citrus fruits. The expense of his grove last year was said to be $125; receipts, $17.

"Glenorchy Garden and Nursery," reads a large and handsome sign in front of the Wallace place. This and many well painted variety signs are evidence of the proprietor's skill with brush and pencil.

A number of large oak trees excited the visitor's curiosity, because they appeared to be an exception to the Wallace rule that every growing thing should earn money. Attention was directed to a curved roadway, boarded with beautiful shrubs and flowers, and other landscape work.

"Our plantings have been made with a view to accommodating a possible wealthy buyer who might take a fancy to our place and wish to buy it for a country estate," explained Wallace. "Meanwhile, we are sitting tight, enjoying life and making money."

SUGAR BEETS IN ARIZONA

Test plots of sugar beets are being grown in Cochise County, Ariz., this year. A total of 165 acres has been planted.

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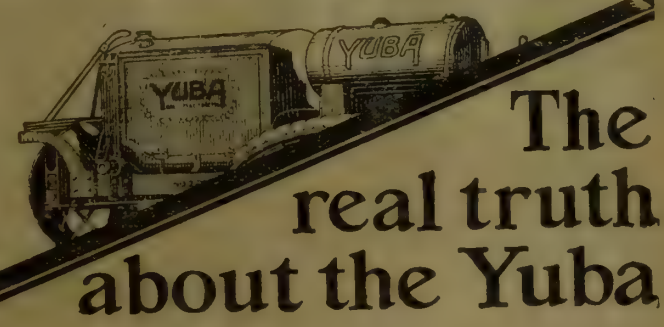

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Formal Lawn and Back Yard Jungle

[Editor's Note—This is one of a series of articles prepared especially for this magazine by Mr. Cornell, a widely known authority.]

By RALPH D. CORNELL

Master in Landscape Gardening

STRANGELY enough, the average business man who is accustomed to applying system and logic to his work seems to drop these attributes entirely when it comes to planning the treatment of his home grounds.

Instead of wondering, helplessly, "what in tarnation to plant" and where to plant it, he may solve his problem readily by means of straightforward analysis and a little study and planning.

RALPH D. CORNELL

The average city or small suburban home is of a standard type evolved as the result of our accepted system of lot subdivision and the customary laws of control for building setback and location. We have, therefore, the narrow front yard, the house filling most of the lateral space of lot, the back yard a mysterious jungle!

The front yard, by its location, is of greatest concern to the general public, and is often the cause of much mental suffering to the few passers-by who are sufficiently sensitive to respond to the good or bad planting. Obviously this very limited, rectangular space can be naught but formal, with the house behind it, straight sidewalk in front and a rigid property line encroaching upon it from either side.

Naturalistic planting is delightful and should be encouraged. It requires a finer sense of aesthetic balance and skill than the more obvious and symmetrical type of formal planting, but it also requires a greater area that will permit at least a partial disassociation from the rigid lines and right angles of architecture and limited enclosure. The mountain cannot be brought to Mohammed. Granting this formality of shape and setting, should we not make the planting consistent?

Because our front yards are commonly open to the street and chiefly viewed from the street, they should be planted with that view in mind. Where space permits a front yard that is walled or otherwise screened from the public highway, it is highly desirable to take advantage of such possibility, but this article is not concerned with that particular problem.

FORMALITY USUALLY NECESSARY

Straight thinking will tell us that the front yard, under consideration, generally will evolve into a formal lawn. Planting there will be of shrubs and flowers, and maybe trees, but it should be made with a recognition for the formality of outline and restriction of space. This planting generally is best if not too geometrically symmetrical. The outlines of the shrubbery may be in curving lines rather than straight, but the effect is inevitably artificial and more or less formal.

The shrubs should be placed in masses, with accents of a different kind of plant where such accent is needed, such as the corners of the yard, or at the entrance to the house. Consideration should be given to the size they will attain, so that they may not grow too large for their position. The harmony and grouping of the different plant varieties should be studied. Rules are dangerous to give, but thoughtful consideration will lessen the chances of misinterpretation.

In choosing plants for this front yard, do not buy the plants first and consider their locations afterward. Do not go shopping for queer or attractive things and then wonder where to put them, with the result that you acquire a plant museum instead of an attractive grouping.

On the contrary, study well your problem, determine the size and the color and the texture of the different plants that will be necessary to give the effect you have decided upon, and then ask your nurseryman to tell you what plants will best suit your needs. Few women shop at random for odd and freakish bits, from which later to attempt the creation of an attractive gown, and yet many of them go at the planting of their front yards in just that way—and the men also, for that matter.

By the time the formal lawn of the front yard is properly growing and fringed with appropriate shrubbery, many a planter of the home grounds has permitted his back yard to conduct itself most wilfully and inartistically. Instead of becoming the holy of holies in his gardening, as it might well be, it becomes the bugbear of horrors, and conceals much that is sinful behind its guileful air of indifference. It is a dark, dank jungle.

Jungles vary, however, throughout the world, so that, if it must be a jungle, let it be an orderly one. Many people glean genuine pleasure from rampant masses of foliage and luxuriant growth, and there is no reason why this pleasure should be denied them. Fruit trees, vines, flowers—the many things common to a back yard—all may be included. These arrangement will determine their appearance.

The simple inclusion of a neat walk, terminating with a gate, a seat or some other garden feature in the garden plan, often will drag the back yard from the depths of despair into the light of consciousness and understanding. A tiny pool, a wall fountain or niche, a bird bath or gazing globe may, if properly placed, furnish just the bit of color and interest that is needed to MAKE the garden. Flower beds and color will brighten all their surroundings and create pleasure for those who behold, while neatness, above all else, is essential.

In the planting of trees and other heavy foliage masses, do not place them monotonously and unthinkingly. Do not cast a uniform gloom or shadow over the entire back yard nor permit it to writhe in the tortures of unbroken sunlight. Plan your plant groupings so that they will create an interesting play of light and shadow—so that they will give interesting relief of high foliage masses in contrast to low, flat open spaces. Avoid monotony. Harmony, carried to an extreme, becomes monotony—hence another danger in setting absolute rules for any procedure in garden making.

THE UTILITY FACTOR

The back yard usually is called upon to serve certain utilitarian functions. It may have a drying space, vegetable area or garage court. So far as these things are essential, they should be recognized. Where the space will permit, these different units should be recognized as distinct from one another, and should be kept segregated. The dividing boundaries may be no more than a vine-covered fence or lattice, a hedge or a strip of planting, but they serve their function.

Recognizing the unity of these different elements, one must not carry the idea to the point that will chop their design into fragmentary bits—a danger in the other extreme. Here again is where the matter of judgment, of straight thinking, enters in to save the design.

The landscape architect is trained to an appreciation of these values, but the home gardener may do much to help himself, by a careful weighing of his problems. Logic often will tell him that certain things can or cannot be done. He should attempt to visualize his formal lawn and back yard jungle, as they should be, and then work toward that end.

Above—Good spacing of trees in formal front lawn, but foundation planting against house is weak and inadequate. When vines in foreground have grown sufficiently to cover fence, the suggestion of a barrier will be pleasing.

Left—Excellent example of tasteful and restrained planting for the tiny, formal front yard. Tall trees at left behind house would help the picture by creating a background and skyline of foliage.

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Preliminary Yield Tables for Second-Growth Redwood.....361

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The Department of Agriculture of the State of California publishes an interesting bulletin which will be furnished free by writing to Sacramento:

The California Grape Situation.....38

Summer Poultry Culling—Dryden

(Continued from Page 3)

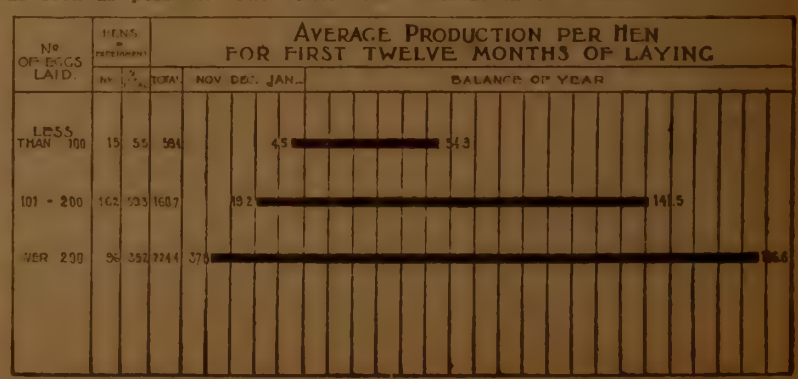
digest as well as space in which to manufacture the eggs.

If culling is done during July, August and the first half of September little differentiation need be made between the slackers and the heavy layers, which are not laying at the time the test is made. Later on in the year the heavy layers will take their rest and take a short time for a molt and the color will begin to return to the shanks, beak and skin. The pubic bones also will contract slightly when the hen stops laying.

Unless the entire flock has been thrown into a molt by change in either management or feed, it is safe to say that any hen which starts her molt before September will not be a good investment and should be disposed of as soon as possible. The better the layer, the later she should molt.

The poultryman will cull his flock if he desires to make a bigger financial success of his business. The birds which do not pay for their feed, care and housing consume profits which are made from the better birds, and must be done away with if the poultryman expects to compete to the best advantage under present conditions.

Not only will thorough culling increase profits for the present season, but it will pay even more in the improvement of the flock from year to year by resulting in the keeping of birds having the combination of fertility and vigor. The chicks raised from hens which have been properly culled will be better and stronger and are certain to make better production records in the future.



OREGON EXPERIMENT STATION

What Do We Know About Walnut Varieties?

By EUGENE S. KELLOGG

Santa Barbara County Horticultural Commissioner

UNLIKE most California fruits, the walnut has not been popularized by standardization of the pack. The bulk of the crop is the product of seedling trees, most of which are of the Santa Barbara soft-shell type. Of recent years, it is true, standard varieties have been planted, and budding has become more general; but even these standard plantings have been largely of the above-named kinds.

The Soft Shell was originated in Santa Barbara County in the early seventies by the late Joseph Sexton, through chance cross-pollination of hard shell and paper shell trees. The seedling trees grown from this original crossing were very vigorous, and the fruit quite uniform in size and shape. However, it was soon realized that certain individual trees were more desirable than others growing under the same conditions.

Trees budded or grafted from these desirable trees showed the same superior qualities as the parents from which they were taken. Accordingly these desirable trees were given names and became established as recognized varieties of merit. Such were the Placentia, Perfection, El Monte, Chase, Prolific, and others.

The Persian or Kaghazi type was introduced early into California and one seedling of this sort, probably cross-pollinated with hard shell pollen, has become known as the Eureka, a type of nut somewhat intermediate between the Soft Shell and the French.

As a general statement, it may be said the Soft Shell types are always to be recommended for the Coast counties of Southern California. Leading varieties of this type are the Placentia and Eyrhardt.

In the interior valleys and foothill sections the Concord and Eureka are to be recommended, while the Franquette should be used in localities of late spring frost.

There are growing on the Russell Rowe property at Goleta, over 20 varieties and local seedlings. This planting is made of Northern and Eastern Blacks grafted over, the work having been undertaken in 1918 and completed in 1921. While yet early for any definite information regarding the ultimate value of the several varieties and seedlings, certain ones are of considerable interest. There is great variation, particularly in the seedlings, in production, vigor, quality of nut, and other characteristics.

In some cases the behavior of the grafted tree is quite different from that of the parent tree and also different from the same tree grown in other localities. It is shown quite clearly that one variety of walnut may be admirably adapted to one section, while of little value in another, even though the climatic, soil and cultural conditions seem quite similar.

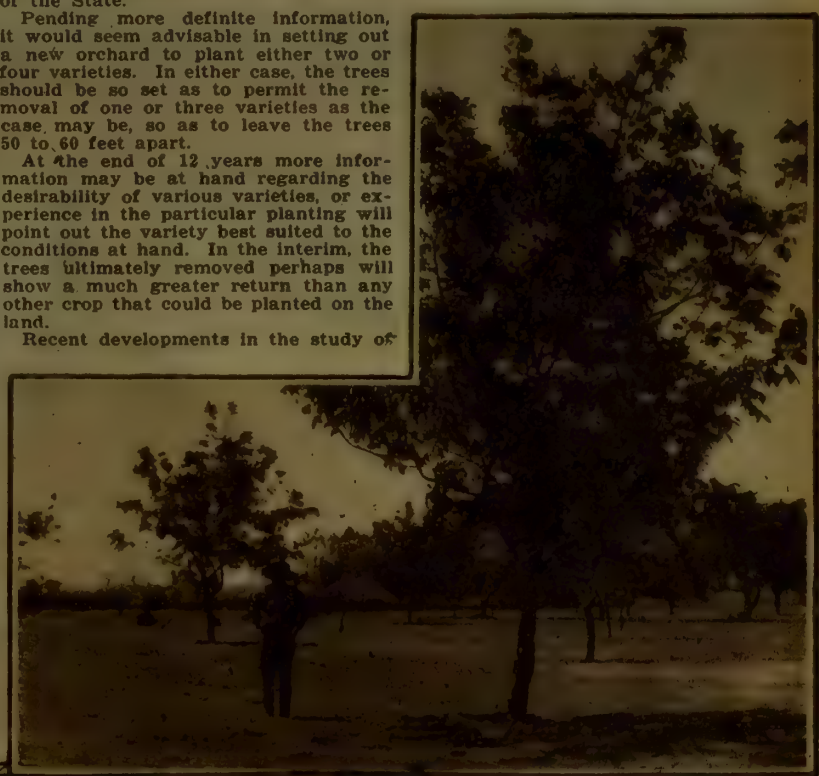
Seeing the value to be derived from a variety plot similar to the one grown by Mr. Rowe, the members of the Santa Barbara County Walnut Growers' Association at their annual meeting authorized and requested their board of directors to purchase a suitable plot of land in the Goleta Valley for the purpose of testing out various varieties of walnuts, and also the behavior of these varieties on various root stocks.

In order to finance the project, it was planned to interplant the trees of the permanent varieties with nursery stock. This stock was to be sold and, in addition, would assure members of obtaining trees of the best varieties grown in the immediate vicinity where they were to be planted. However, due to a number of difficulties in the matter of reorganizing, in order to take over this line of work, the plan has not yet been put into operation. This is a project which should be considered by all walnut growing sections of the State.

Pending more definite information, it would seem advisable in setting out a new orchard to plant either two or four varieties. In either case, the trees should be so set as to permit the removal of one or three varieties as the case may be, so as to leave the trees 50 to 60 feet apart.

At the end of 12 years more information may be at hand regarding the desirability of various varieties, or experience in the particular planting will point out the variety best suited to the conditions at hand. In the interim, the trees ultimately removed perhaps will show a much greater return than any other crop that could be planted on the land.

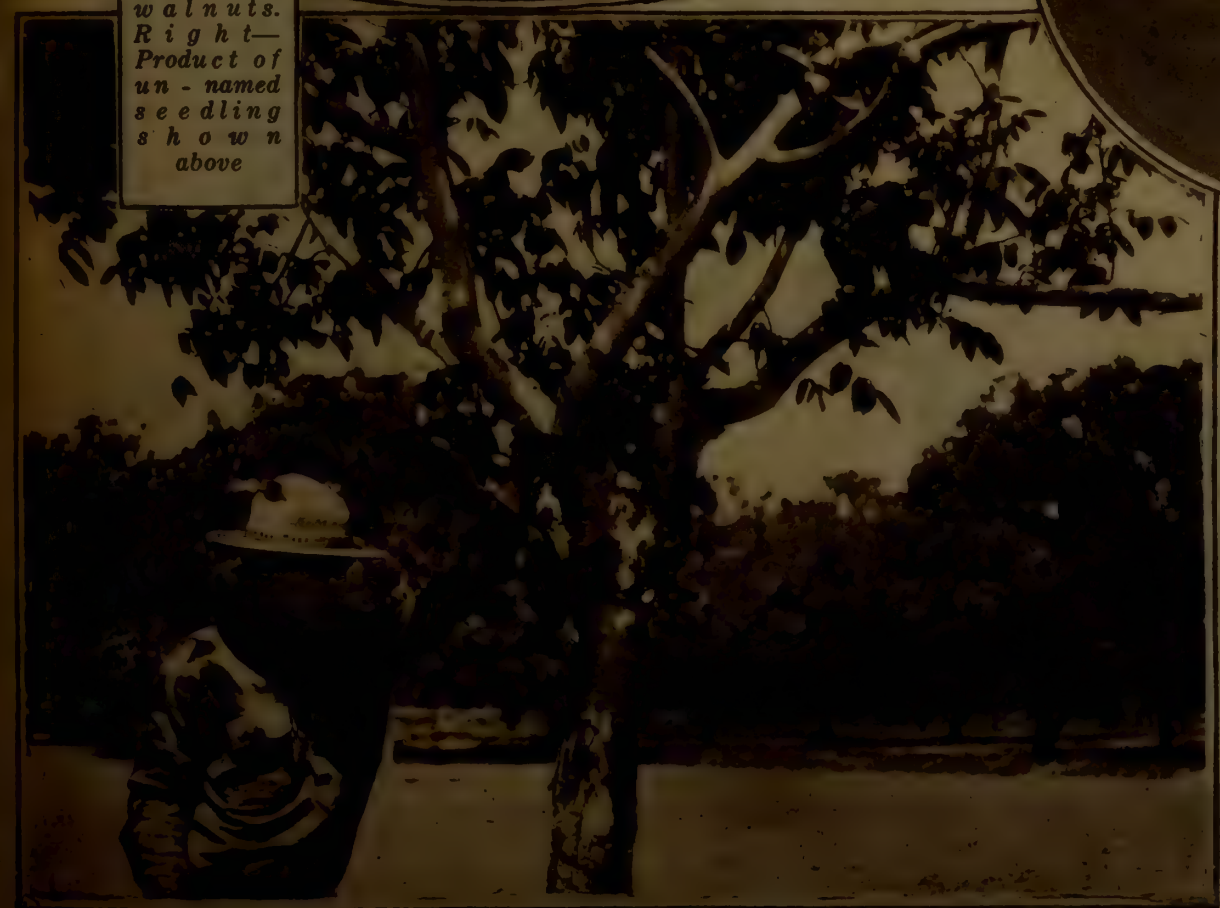
Recent developments in the study of walnut varieties are of considerable interest. During the past season the greater portion of the planting in Northern and Central California was made up on the Payne variety. This undoubtedly is the most precocious of any type known; in fact, it yields so heavily that undoubtedly it would require very special pruning in order to attain sufficient and proper wood growth. It seems particularly useful, even in Southern California as an interplant or for top working on old trees, the period of usefulness of which is somewhat limited.



Here is shown un-named tree which yielded fine nuts shown in pile at center of three groups.

Left—Eyrhardt walnuts. Right—Product of un-named seedling shown above

Typical high quality Pride of Ventura nuts. This variety outyields ordinary softshells.



Mr. Kellogg, with "close-up" of tree shown at top, showing how successfully seedling was top-worked onto other stock.

"Pride of Ventura" is a variety which has come but recently into general notice. This unquestionably is one of the most desirable of the new sorts from Southern California, provided it will grow in other localities as it does near Saticoy in Ventura County. The tree is a vigorous grower and heavy yielder of nuts of high quality.

The nut somewhat resembles that of the Eureka, but the tree when grown near the coast, seems to be much more precocious. Bearing a tonnage comparable to varieties of the best Soft Shell type, but surpassing them in quality, this tree should yield a much greater net return per acre.

The foliation date is possibly 10 days later than the other Soft Shells, a fact that undoubtedly will render the variety less susceptible to attacks of blight. It is stated also the harvest season is quite short, the harvesting beginning after but ending before that of the other varieties of the same type.

Unquestionably there is a tremendous unplanted acreage in California which will produce walnuts of good quality. It appears the chief limiting factor is the occurrence of early fall frosts, and particularly late spring frosts. But in view of the fact that there are varieties the foliation date of which cover a period from February to June, a variety can be found which will suit nearly any condition.

AGRIPHOTOGRAPHS

Novel Hen House

THE laying house shown at the left has covered yards to protect the fowls from hawks. It was designed by W. S. Freeman and constructed on his farm near Hayward (Alameda County). It contains five rooms, each 20x20 feet, and is of "semi-monitor" type, with a back pitch of 12 feet and front pitch of 8.

The building is equipped with automatic drinking fountains, hoppers that hold eight bags of mash and other conveniences so arranged that one man can care for 1000 hens in an hour and twenty minutes. This includes daily cleaning of dropping boards, feeding, cleaning water founts and collecting eggs.

The nests are under the dropping boards, entered from the rear and opened from the front. Windows low down in the rear wall provide light on the floor. Ventilation is afforded by means of windows between the "pitches" of the roof, which are controlled with ropes from within. Oyster shell is used for nesting material.—W. J. D.

Elephants Pull Circus Farm Machines

AN elephant drawing a plow! An improbable farm sight, particularly in the United States, and impracticable even were it possible, the average farmer would declare. On the ordinary farm, of course, the farmer's surmise would be correct, but on the 550-acre Wallace circus farm, as it is called, near Peru, Ind., it is an entirely different story.

On this farm elephants do pull plows as well as manure spreaders and other implements, and they make the going easy even with the heaviest loads through any kind of slush, mud or quagmire, according to the International Harvester Company.

The Wallace farm was established by the late B. E. Wallace, founder of the Carl Hagenbeck-Wallace circus, and is now being used as winter quarters for the John Robinson and Sells-Floto circusses and to raise a part of the great quantity of feed needed for the hay and grain-eating animals

Harold Sykes, son of a Tehama farmer, lost the use of both legs and was sentenced to spend the remainder of his life in a wheel chair. He earns an honest living through the manufacture of trout flies. Any fisherman will do well to secure his stock from Sykes. Address Red Bluff, Cal.

College Cow Breaks State Records

THIS University Farm bred Holstein heifer, California Pietertje Bloom Mead, recently completed a year's record for milk and butter fat production that is unique in the annals of dairy cows developed in agricultural college herds.

Her record of 28,000 pounds of milk, yielding 1004 pounds of butter fat in one year, gives this California heifer the distinction of being the only college Holstein to occupy a place among the so-called class leaders of the breed. The new record gives her fourth place in the world list of junior four-year-old Holsteins—no other college cow being within twenty places of the world's record for her age.

"Mead" holds first place among college cows, both as a two-year-old where her record of 19,985.5 pounds of milk and 722.27 pounds of butter fat is the high record, and as a four-year-old, in which class she leads her closest competitor by more than two hundred and thirty pounds.

The University cow's new record of 1004.60 pounds of butter fat is the highest record yet to have been made in California by a cow of less than mature age. In fact, the records of only nine mature California cows exceed that of this heifer, which is the State record of her age.

ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

AUGUST 26, 1923

He Has Gone Into Partnership With Nature

By ALBERT J. MASON

CALIFORNIA has a great many "made-to-order" ranches, but this article concerns one which, like Topsy, "jest growed."

And yet that statement isn't exactly fair to its owners, W. S. Guilford and W. P. Dwyer, because they have put a great deal of thought and planning and valuable time into it.

But when we say it is "self-made," we mean that it is paying its own way, having been fairly wrested from the virgin soil and timbered wilderness of the Sacramento River bottoms in Glenn County and developed with the greatest economy in all departments.

Butte City Ranch has no expensive buildings, no ornate equipment, no department managers, no perfumed, beribboned livestock, no artificially symmetrical trees and no unnecessary frills. It is in no sense of the word a "show place." But it pays! Even the purebred hogs have shown a profit during recent "hard times" and that, as every breeder knows, is "saying something."

Guilford says he has developed some of his methods through observation and deduction and some through sheer economy.

UTILITY, NOT BEAUTY

He admits the prune and pear trees would look better to some persons if they were pruned according to the accepted methods, but they bear tremendous crops without any pruning to speak of and therefore produce greater returns at less expense.

He admits also that the purebred Shorthorns might look a bit more attractive if they were maintained in a neat, white barn in charge of a high-priced herdsman who kept them curled and manicured, but points out they would not be any more valuable for breeding purposes and certainly would not be as hardy or profitable as when allowed the run of lush, wooded pastures.

Guilford confesses, likewise, that the Berkshire hogs would present a more appealing sight if they had some of the fine equipment he would like to give them. "But," he asks, "am I not better off than the fellow with too much overhead, whose hogs are losing money hand over fist?" And echo, together with your inquisitive correspondent, answers, "Why?" If Guilford lets the sows make beds of leaves and farrow in the woods, who can say he is making a mistake—as long as the litters are large and the strain is constantly being improved?

The flock of purebred Shropshire sheep, although it includes some of the finest blood in America, is managed with the regular ranch help and finds much of its sustenance in orchards which other fruit growers would cultivate until free of every vestige of grass and weeds. (Guilford cultivates the older prune orchards in order to facilitate picking, but *(Continued on Page 9)*

The man with the hoe is "Guil" himself, in working togs. He makes a regular practice of upsetting theory and precedent.

W. S. ("Bill") Guilford, who writes the "Home Farm Happenings" column for ORCHARD and FARM and operates one of the most interesting ranches in California.

This five-year-old tree is a good example of the growth attained on river-bottom land. Pruning is not for prune trees, in Guilford's estimation!

The pure-bred Shropshires spend much of their time on pasture in the pear orchard, which is not cultivated. Note development of unpruned trees.

Shetland ponies are an interesting and profitable product of "Butte City Ranch."

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
AUGUST 26, 1923

How a Rural School Provided Hot Noon Lunch

Opening of Fall Term Focuses Attention on Nutrition Problems—A Fine Example of Parent-Teacher Co-operation in Santa Cruz Community

By ANNE McCORMICK
Home Demonstration Agent, Agricultural Extension Service

FROM the "Three R's" of the little red school house to the modern broad conception of rural education is a long step forward. In the present-day country school, health and hygiene are placed on a par with "book learning."

The hot noon lunch is regarded as one of the most important factors in building better bodies along with alert minds. The Live Oak School (Santa Cruz County) affords an outstanding example of the application of this principle. Of the 123 children who attended last term, about 100 stayed at school for lunch.

A year ago the Parent-Teachers' Association and the Home Department of the Farm Center became interested in giving these children a hot lunch, but not until February of this year were plans fully made and carried out. A joint committee of four members from the two organizations made a survey of the entire school district early in the year to determine the interest in the hot lunch and to secure the co-operation of each family. Almost without exception the parents stated they believed a hot lunch would be beneficial.

SUPPLIES ARRANGED FOR

After the survey was made, the committee met with the Home Demonstration agent and details were worked out for securing supplies and equipment, and serving the meal.

The equipment purchased, consisting of four aluminum pitchers, four ladles, one large kettle, paring knife and whip, was secured through the aid of the Red Cross nurse from funds obtained by the sale of Christmas stamps. Miss Teffertiller, who lives across the road from the school, was secured to prepare the lunch in her home and in this way the necessity for purchasing a stove was avoided.

Each child brings from home each day his own cup and spoon in order to eliminate dish-washing at school and to avoid infection, which might arise from the use of common cups.

It was decided to have the hot lunch for four days of the week in the form of an appetizing and nutritious soup. The purpose of the hot lunch is to supplement the lunch from home, to add palatability and to stimulate the appetite. A weekly program for the hot lunch was worked out as follows: Monday, cocoa; Tuesday, bean soup (made with milk); Wednesday, vegetable soup; Thursday, rice tomato soup; Friday, vegetable soup.

Sometimes other soups or chowders replace those named, but on the whole this program is followed rather closely. Spinach, chopped fine, has been added to the vegetable soups along with other ingredients.

It was a bit difficult at first to get all children to take the milk soups and to eat all the vegetables in the soup. No child was allowed to discuss what he liked and disliked, as the committee felt that part of the value of the hot lunch was in training the child to eat those foods most necessary for growth and development. Eating the soup has not been compulsory, but in nearly every case, after the habit had been established, a second cup was requested as long as the supply held out.

The food needed is purchased once a week by a member of the committee. Milk, vegetables and certain other supplies are bought from residents of the school district. The children pay three cents a day for the hot lunch and from the first the project has been self-supporting.

Each Monday morning the fifteen cents for the week is handed to the teacher. After all expenses were paid, the books (kept by one of the committee) showed a balance of $5 for the month of March. The April expenses were $38.90, divided as follows: Groceries, $15.85; meat, $7.15; fuel, 90c; cook, $15. Added to this, $8 was paid on aluminum kettles purchased, making a total expense for the month of April of $46.90. The children paid in during the month $53.11 and after expenses were paid $6.21 remained on hand.

From the surplus for the two months the committee purchased two 28-quart aluminum kettles, which are being paid for as the extra funds permit. The very best of supplies and equipment have been purchased. Each week the expenses are balanced by the committee member in charge.

The opening day of the hot lunch work the committee assisted the Red Cross nurse in weighing the children and all the 123 pupils were weighed by 11 a. m. without confusion or interruption of school work. The children since have been weighed the first Monday of each month. Weight charts have been made up for children who are 7 per cent or more underweight, and a large chart hung in the hallway to show the stars won by the children who are gaining each month and who have corrected or improved physical defects.

Real results in the form of better health and increased weight have followed the serving of hot noon lunch at the Live Oak school. The children remain seated for twenty minutes.

BETTER HEALTH HABITS

The children remain seated for twenty minutes while eating. The lunch from home is spread out neatly on the desk on a clean napkin or paper. One of the older children passes up and down the aisles with the pitcher of soup or cocoa and fills the cup on each desk.

The first day of serving, the Home Demonstration agent showed the children what should come from home in the lunch box and this demonstration was repeated before the mothers at the time of the February Home Department meeting. The mothers were told what foods were needed by growing children, and emphasis was placed on the child's breakfast and supper as well as the lunch at school.

Sixteen mothers stated they would co-operate by helping the children put into practice better food and health habits in the home. One mother since has reported that she and the father decided also to follow out the "rules of the Health Game." A copy of these health rules, together with the weekly program for the hot lunch, was given to each mother in order that she might send the proper food from home in the lunch box to supplement the hot lunch.

NUTRITION TALKS GIVEN

In order to make the hot lunch work part of a general health program, the Farm Center and P.-T. A. requested that the Home Demonstration agent give a series of nutrition talks at the monthly meetings of the Live Oak Farm Center. Aside from these nutrition lectures the agent has given classroom talks and has helped the children to know what foods are needed for best physical development. Visits have been made to the homes of underweight children and their diet and health habits checked over with the parents.

Much of the credit for the success of the hot lunch work belongs to the unusually efficient and energetic committee in charge. Although the lunch work was started only last term, it is on a permanent basis. The object of the work, as stated in the written project which is being followed, is "To help every child in the Live Oak Farm Center to become as nearly physically normal as it is possible for that child to be." The progress already made in this direction is indeed encouraging.

Important New Chapters in History of Date Industry

Many Puzzling Problems Solved and Prospects for Future Seem Bright

By ROBERT W. HODGSON
Agricultural Extension Service University of California

THE establishment of the date industry in the United States has required the most exacting research work on the part of Federal and State scientists and the greatest patience and co-operation on the part of private experimenters. A crop concerning which little exact knowledge was available had to be started under new and unusual conditions.

ROBERT W. HODGSON

Thus far the story has not been completed and every few years sees the addition of another chapter, as the successful results of scientific research are recorded.

Although scarcity 25 years old, the date industry has become firmly established in the arid Southwest and bids fair within a few years to rival in importance some of the old and well-established horticultural industries known for generations.

The year 1922 witnessed the production in California of some 300,000 pounds of dates, valued at approximately $150,000. Although trial plantings of dates were made in Southern California as early as 1876, definite promotion of date culture was not undertaken by the U. S. Department of Agriculture until 1900, at which time a large importation of some of the standard high-class varieties from Algeria was made. These were planted largely at Tempe, Ariz., where experimental gardens were established. A little later a second station was established at Mecca, Cal., and in 1907 the Indio Date Experiment Station was opened in the Coachella Valley.

VARIETY QUESTION IMPORTANT

The question of varieties is still engaging the attention of Department of Agriculture specialists who have come to the general conclusion that the date industry of the new world will be based largely on the famous Deglet Noor and the Saidy, the former being genrally considered the finest of all varieties, and the latter, a very superior sort from Egypt. Considerable experimentation also is being done on the matter of producing new types which may be especially adapted to the conditions in the Salt River, Imperial and Coachella Valleys.

That the date tree would thrive and bear fruit in satisfactory quantities was long ago established and constitutes one of the first chapters in the history of this young industry. The overcoming of the difficult problem of satisfactorily ripening the fruits accomplished in 1910 was perhaps the second chapter in the story, added to more recently by the development of a very satisfactory method of increasing the quantity of first-grade fruit by enclosing the entire fruit bunches in tough paper bags which serve to equalize temperature and moisture conditions so as to assure ripening and superior quality.

A chapter which was not written until quite recently is that referring to satisfactory methods of establishing the young off-shoots. It can not be denied that this difficulty thus far has constituted the greatest problem in limiting the expansion of the new industry. It has not been an uncommon experience to lose from 50 to 80 per cent of the off-shoots after planting them in the field.

Some years ago, it was believed this problem had been solved, when it was discovered that by increasing the atmospheric humidity, superior results in the rooting of the young off-shoots could be obtained.

More recently, however, methods of rooting the off-shoots satisfactorily have been developed which now insure saving from 50 to 80 per cent of them, even though exposed to severe climatic conditions prior to planting.

OFF-SHOOT PROBLEM SOLVED

The most recent development of all has consisted of investigations at the Arizona Experiment Station in rooting the off-shoots while still attached to the parent trees, by which practically 100 per cent of the off-shoots have been transplanted successfully. The method is a comparatively simple one and consists of banking up the soil about the trunk of the parent tree so as to cover thoroughly the point at which the off-shoots arise. The soil is kept moist and within a few weeks the off-shoots develop rootlets. A little later the off-shoots are removed from the parent tree and are transplanted to the field.

Where off-shoots arise at a point some distance up the trunk, a supporting framework is built about their base, filled with soil and kept moist. "Marcottage" is the technical term used by the scientists in describing the process.

Perhaps the most recent chapter in this interesting story is the introduction in the fall of 1922 of some 7000 off-shoots of the Saidy variety which are now being rooted by growers under contract with the Government. It is expected at least 50 per cent of these off-shoots will be established, which will constitute a big stimulus to the industry. The importance of this introduction may be realized when it is pointed out that altogether in the history of the industry not over 10,000 off-shoots of this variety have been imported.

It now appears that at least enough chapters have been written to insure a steady growth to this new and valuable industry. Those familiar with it look forward to a rapid expansion in both acreage and production in the next ten years. Without doubt, new problems requiring solution will arise, but it is also equally certain that with the experience already accumulated, any new difficulties will be overcome successfully.

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Pithy Paragraphs

STARVING OUT COMPETITORS?

The suit which the Government recently brought against the International Harvester Company, charging that goods are being sold at excessively low prices for the purpose of starving out competitors, will be watched with unusual interest by farmers. The price of farm machinery and one of the chief arguments against monopolies are both involved. The theory upon which the Government is proceeding is that a trust, combine or monopoly is acting in restraint of trade when it forces a competitor out of business by selling at ruinously low prices and then afterwards charges higher prices than before, in order to make back losses of the campaign. President Legge of the Harvester Company points out that several years ago the Government sued the corporation for holding up prices—as much as to say, "What is a manufacturer to do?"

LONG PRUNING BEFORE THE COURT

The long pruning system now is on trial before the court of practical growers and there are many who blame it for poor quality fruit, as well as other troubles.

Perhaps it has not done all that was expected of it, but it is not fair to condemn long pruning for results which may have been due to a number of causes.

It is true, unfortunately, that many growers upon securing a good crop give all the credit to a certain fertilizer or a certain spray or a certain pruning system; vice versa, poor results may be blamed upon any one of these things. This is not right.

Let us accept no theory for more than its face value, but let us make sure of that value before passing final judgment.

IMPORTANT POLLINATION DISCOVERIES

That fruit varieties which are self-sterile under certain soil and climatic conditions may become self-fertile and produce good crops without cross-pollination under different conditions has been demonstrated to the satisfaction of horticultural authorities.

As a general rule, however, it is unsafe for any grower to plant a solid block of any one variety of fruit. "Shy bearing," in many cases due to lack of pollenization, is an outgrowth of unnatural conditions. The old "family orchard" of the East, as a rule, bore heavy crops.

But as the fruit business became specialized, the best varieties from the family orchard were chosen for solid planting—frequently far away from other fruits. It is no wonder, in the light of present knowledge, that many commercial orchards proved shy or non-bearers.

Important work has been and is being done by California horticulturists in determining what fruits should be planted together under varying conditions. The prospective planter would do well to consult all sources of information, including the University, horticultural and extension officials, nurserymen and successful producers, before deciding for himself the all-important varietal question. For upon the correct decision may depend the success of his project.

DAIRYMAN IS IN LIMELIGHT AGAIN

Had a bomb exploded in the midst of his milking barn, the average California dairyman could not have been more surprised than he was upon reading the recent report of Prof. R. E. Adams of the University on cost of milk production.

Professor Adams showed that of 246 typical California dairymen more than 50 per cent produced milk at a loss. Feed and labor were given as the two principal items of cost.

It was generally believed that the dairy industry on the whole in this State was upon a substantial, paying basis. That this is the case in fact is still maintained by certain officials of dairy organizations, who state that Mr. Adams' report "consists of generalities and is not a fair presentation of the facts."

As a matter of fact, many dairymen who keep "boarder" cows and who do not manage their affairs in a business-like manner are losing money without knowing it. But whether this indicates present milk prices are too low is another question. If 50 per cent of the dairymen are making money, why are the other 50 per cent losing money? And if half are losing, should milk prices be adjusted in order to put them on the right side of the ledger?

Thinking dairymen want to maintain retail prices at as low a level as possible consistent with a fair profit. They know nothing will reduce consumption as quickly as high prices. And they know how reluctant is the public to resume consumption of a product which it has boycotted.

Looks more like a question of education than price-fixing, doesn't it? If Professor Adams' report opens the eyes of unprogressive dairymen it will have accomplished much good. Where there's smoke, there's usually some fire.

"What's New?"—Keeping Abreast of Agricultural Progress

Shipping Record Fruit Crop

UP TO the latter part of July nearly three times as many California cherries, apricots, peaches, plums, pears and grapes were shipped as during the same period last year, the figures being 6870, as compared to 2514 carloads. Low prices ruled, but new markets were developed.

Farm Machinery Too Cheap?

THE International Harvester Company recently has had a suit filed against it by the Federal Government, the charge being that of selling farm machinery too cheap, according to Alexander Legge, president of the company. Eleven years ago the Government sued the same concern for charging exhorbitant prices for its goods.

Feed Hogs and Lambs Wheat

WHEAT at present prices is a more economical feed for hogs and lambs than Eastern corn and barley, according to H. A. Lindgren, Oregon Extension Service livestock specialist. "In order to obtain the best results in feeding wheat to hogs, the grain should be ground and tankage added," advises Professor Lindgren. "Wheat is worth as much as corn for hog feed and equals barley as a feed for lambs."

Harvesting Burr Clover

A MACHINE for harvesting burr clover has been invented by A. F. Ruff, Rock Hill, S. C., farmer. The device has a capacity of 200 pounds per hour and gathers more seed than 100 hand workers. The seeds are sucked up through cast iron slides and blown into a wire-covered hayrack pulled by the tractor which operates the machine. The latter will work equally well with crimson and red clover, the inventor claims.

Mr. Ruff has 450 acres in burr clover and is said to be the largest grower and shipper of burr clover seed in the world. The price ranges from $1 to $1.50 per bushel and the yield from 100 to 500 pounds per acre.

Dusting Wins in Oregon

THE great superiority of dusting grain with copper carbonate, soaking the seed in bluestone, to prevent smut, has been conclusively proved in Oregon, according to H. P. Barss, State plant pathologist, who recommends a Statewide campaign to teach farmers the new method. "Only three-fourths as much dusted seed is needed as that which has been soaked in chemicals," declares Professor Barss, who points out the copper dust protects the seed from soil molds. Early ordering of copper sulphate, either individually or collectively, is recommended.

Fair Premiums and Purses

THE State Fair's change in policy regarding premiums and purses during the past quarter century is well illustrated by the difference between the amounts apportioned for these two purposes in 1899 and 1923. In the first named year $40,000 in racing money was hung up for horsemen, while only $10,000 was offered for livestock premiums. This year $40,000 in prizes will be given away, while the racing purses amount to only $15,000.

"California's purebred livestock industry virtually has been developed within the span of a generation," states Charles W. Paine, secretary of the State Fair. "The annual exhibition at Sacramento has been the most potent factor in encouraging the livestock industry of the State."

New Agricultural College

SOUTHERN CALIFORNIA wants an agricultural college, according to a resolution adopted by Farm Bureau representatives from the five counties south of Tehachapi, at a recent San Diego meeting. The popular demand for agricultural instruction in this section is indicated by the large number of farm students at Berkeley, Davis and Corvallis. It was pointed out that many of the agricultural problems of Southern California are different from those in other parts of the State.

A committee of thirteen was appointed to urge the establishment of a branch of the California College of Agriculture in the southern part of the State, to be managed in connection with the southern branch of the University of California, although not necessarily on the same campus.

Ships Dewberries East

WHEN F. H. Nusbickel, well-known citrus orchardist and nurseryman of Glendora, started in business, he rented thirteen acres of land, eight of which was in early dewberries. Consigning to Los Angeles commission dealers proved unprofitable. In search of an outside market, Nusbickel procured a list of grocers and other fresh fruit retailers in Arizona and adjoining States. The financial rating of these merchants was obtained from a credit association.

Difficulty was encountered in getting Jap laborers to pack berries honestly. In order to take up the slack of settling, a box of berries was scattered over the top of each tray, after the boxes were filled. This extra good measure made a hit with both dealers and consumers.

A ready market was found for the crop at twice the price Los Angeles dealers paid. Berries were shipped as far east as Chicago. Many went to Colorado Springs.

Early fertilization was found essential to heavy bearing. Dairy manure was applied in the fall and at blossoming time a little nitrate of soda was added.

Good cultural and marketing methods turned the berry patch, which was a liability, into an asset.

Plan Date Exposition

A DATE exposition is to be held in connection with the Riverside County Fair, October 9-13. An interesting feature will be an exhibit showing old-world methods of handling dates. Natives from Asia and Africa will assist in putting on the show. Coachella Valley growers will arrange the exhibition and furnish decorations for the fair, which is to have a distinctly Egyptian motif.

Texas Sheep Eating Wheat

FOR the first time in years, Texas sheep are being fattened on wheat, of which the second grade is cheaper than Indian corn or kaffir, while the food value is higher. The amount of wheat in mills and elevators of the United States July 1 was 36,458,000 bushels, although the U. S. Department of Agriculture's preliminary estimate was 25,758,000 bushels.

Cause of Off Color Peaches

A SURVEY undertaken by the writer, to determine the cause of "red flesh" in this year's crop of Ontario (Southern Tuscan) peaches brought out the following facts: The condition is seasonal and should not be regarded by growers as a reason for removing trees. The four principal contributing factors are: (1) Delay in opening of canneries; (2) not enough pickings by the grower; (3) climatic conditions, including lack of soil moisture; (4) light crop.—G. P. WELDON.

Favor Fruit Sugar Test

THE plan of stamping each box of fresh deciduous fruit sold with the percentage of sugar which the contents test is favored by W. A. Sherman of the United States Standardization Bureau; G. M. Hecke, California State Department of Agriculture; J. A. Teagarden, head of the Auburn Fruit Growers' Exchange, and other prominent authorities.

It is believed that this method would tend to prevent the picking and shipping of green fruit, especially plums. The sugar test has been tried with cantaloupes with gratifying success, says Sherman, and is being tried with Gravenstein apples in the Sebastopol district. Director Hecke has offered the facilities of his department in working out the problems connected with applying the test to other horticultural products.

Dairy Calves Sell Well

TILLAMOOK COUNTY, ORE., dairymen have developed an unusually successful plan of selling calves. Formerly in that section many calves were killed at birth, the local veal market being unable to absorb the supply.

A testing association, which in the last two years increased its membership from 1100 to 3000, advertised calves sired by purebred bulls and from cows testing 300 pounds or more of butterfat. The price for calves one to two weeks old was $12, f. o. b. Tillamook.

The number of orders received for the different breeds was as follows: Guernsey, 800; Holstein, 516; Jersey, 389. All the Guernsey calves were sold before they were born. An effort is being made to supply the demand for Guernsey calves in car lots.

W. D. Pine, county agent, and Paul Fitzpatrick were largely responsible for the success of the calf-selling campaign.

Ben Gonnadowit Says

Provin' that I'm a victim o' circumstances, a thief broke into my chicken house an' stole six hens last night when th' burglar alarm was out o' order. If he'd waited jest one more night I'd have had it fixed most likely.

Yep! Seems like when a feller is down an' out, his troubles only multiply. Jest as I was stallin' off a bill collector yestiddy, Jud Smith drove up an handed me a check fer $50 t' pay fer some hay I sold him!

Prob'ly next winter, I'll wish I had that hay 'er my cows, but seems like I always have t' sell crops when th' market's low an' then buy feed when prices are high!

But I'm gonna try t' establish some credit, soon's th' new bank is opened. A feller kin often do better where he ain't so well acquainted!

Well, I gotta get my own dinner t'night. Wife hurt her arm carryin' wood fer th' cook stove, while cannin' fruit, which shows th' foolishness of false economy. Et she'd buy canned fruit an' order coal, like I told her to, she wouldn't have sech accidents. Like as not I'll have indigestion f'm eatin' my own cookin', be laid up all day t'morrow, an' not be able to go fishin'. Seems like trouble comes in bunches!

'Hooverizing' Hens and Pigeons

Pomona Poultrymen Building Up Bird Breeding Business on Scientific Basis—Why White Hens Win

By O. H. BARNHILL

IT IS a well-known fact that commercial poultry production has been reduced almost to an exact science. It is also true that some poultrymen are a good deal more scientific than others. The hit-and-miss method is still popular with some chicken men, while others like to proceed according to certain principles which have been worked out in advance with almost mathematical accuracy.

L. R. Hoover, Pomona poultryman, belongs to the latter class. It may be that he has scientific blood in his veins, as his father is an instructor in Pomona College and Herbert Hoover, Secretary of Commerce, is a distant relative. However that may be, Hoover's methods are so successful that he obtained an average price of 18 cents for his baby chicks last year and expects to get 20 cents the coming season, although many hatchers sell for 10 to 12 cents.

"The extra money we get for our stock is not all profit," explained Mr. Hoover. "Our prices are made possible largely because of trapnesting, which costs $2 per hen. It doesn't take many eggs, however, to pay the few cents additional cost of chicks from heavy laying hens, leaving the additional production pure velvet; a fact which poultrymen are beginning to realize."

MODIFIES WEEKS SYSTEM

The laying houses for trap-nested hens are similar to those designed by Charles Weeks, Owensmouth poultry colonizer. Instead of having double-front sheds opening to the east and west, however, Hoover's houses face south, to get the full benefit of the sun during the winter and also to afford protection from the western winds, which are the prevailing kind in Southern California.

The mash boxes are fastened with hinges, to permit of their being lifted out and filled without entering the building. For green feed, a small trough extends along the south side of the sheds near the ground. A narrow opening in the wall above permits the hens to poke their heads through and eat their fill of succulent forage.

Water constantly drips from a tap at the corner of each room into galvanized iron boxes, which are cleaned out frequently. One shed is divided into rooms six feet square, having three nests and designed to shelter 10 hens, while the other has compartments eight feet square, which are large enough for 20 hens and have five nests each. Pens the width of the rooms and 35 feet long extend back of the sheds.

PARTITIONS PREVENT DRAFTS

The large sheds for non-trapnested stock have the rooms divided by board partitions, with openings four feet wide on the south side. The purpose of the partitions is to prevent drafts. For the same reason there are no openings in the north wall above the roosts, as this is not considered a good plan, even when the air is kept close to the roof by boarding up the lower side of the rafters.

Mr. Hoover was asked what he considered the minimum egg production of a California hen.

"The average for the State is 10 dozen," he replied. "Some of my neighbors who have been producing eggs commercially for years do not get much more than this and they are making money, else they wouldn't remain in the business. It is necessary, however, to have the production spread out pretty well over the year, in order to make money on a 10-dozen hen.

"Commercial poultrymen of California average 144 eggs per hen. We do not keep any that lay less than 165 eggs in a year and our entire flock last year averaged 190. Our males are from 225-egg hens. We divide our breeders into two classes: those which lay 200 eggs or more in a year and those with records of 175 to 199 eggs."

CLASSIFIES BREEDING STOCK

In order to facilitate intelligent breeding, all the hens in a pen are closely related, being either sisters, half sisters or close cousins. Cocks are classified in a similar manner, to prevent inbreeding. The pens are numbered and each egg marked with both the pen number and the number of the hen from which it came.

Chicks are identified by "toe punching," although it is the web between the toes in which holes are made. By placing the holes in different positions it is possible to identify 60 chicks with one kind of mark.

White Leghorns are bred exclusively, the entire flock numbering about 2000 birds. When questioned regarding the danger of the meat breeds supplanting the egg varieties of chickens in California, Hoover replied:

"That is the least of my worries. The price of chickens for meat is bound to be kept down to an unprofitable figure in California, because of the heavy importations of chickens from the Middle West, where they are considered largely a waste product, because much of the feed they consume would otherwise be lost.

WINTER COCKERELS SELL WELL

"Cockerels hatched in the fall and winter bring good prices, because they do not have to compete with imported chicken meat. The heavy breeds have a distinct advantage at that season, because while all kinds of chickens make about the same gain for a given quantity of food up to a 1¼ pounds, there is quite a difference in favor of the meat breeds in three or four-pound broilers and roasters.

"A heavy hen will eat about 10 per cent more than a Leghorn; she requires more space and more exercise; she is more apt to get 'broody,' which is an expensive habit; and, as a rule, she lays less eggs.

"A few California customers prefer brown eggs, but the demand for them is limited, most buyers preferring white eggs. Boston is the only large egg market which pays a premium for brown eggs."

WILL ACCREDIT HATCHERIES

Mr. Hoover is much interested in the Farm Bureau's accredited hatcheries project, which was started in Southern California July 1 and which provides for the inspection of all chicks sold after December 1. E. C. Hogsett, chairman of the poultry department of the Los Angeles County Farm Bureau, was the prime mover in the enterprise, which Hoover considers a step in the right direction.

"We have not yet decided whether to have our hatchery accredited," he stated. "While official inspection and certification will be an undeniable advantage to the poultryman who does not trapnest his hens, it is not clear that it will pay trapnesters who exercise especial care with their breeding operations.

"If the latter were placed in a class which clearly would indicate the superiority of their stock, then certification undoubtedly would prove profitable; otherwise there is danger of their being dragged down to pull the other fellows up."

DEVELOPING PIGEON PLANT

The Hoover Brothers' poultry plant, which is located in a 10-acre peach orchard a mile southeast of Pomona, is unique in that both chickens and pigeons are kept. The latter are in charge of R. M. Hoover, who organized the carrier pigeon department of the U. S. Army at Camp Kearny during the late war, afterwards serving overseas.

There are 600 pigeons in the Hoover "loft," including 100 which last year won 170 prizes in various shows. Some of the best birds are valued at $25 each. In addition to fancy tumblers and pouters, a large quantity of squab stock is kept; White and Silver Kings and Red Carneaux. The White Kings are considered a little the best bird.

"Pigeons are away ahead of chickens when it comes to large and sure profits," asserted Mr. Hoover, who since February has been acting as one of the field men for the Southern California Poultry Producers' Association. "A pair of pigeons will in one year produce seven pairs of squabs, at a total cost of $3, exclusive of labor. At the low price of 50 cents a pound, this would leave $4 for labor and profit.

"Pigeons are much easier to raise than chickens. They hatch and care for their young and are not subject to disease or insect pests. They are given grain and medicated grit twice a day, requiring little else in the way of care.

"Squabs bring 60 to 65 cents a pound, dressed, at the age of one month, when they all average one pound each, or a little less—10 to 13 pounds per dozen.

"The chief hindrance to the expansion of the pigeon industry is the high cost of breeding stock. Mated pairs cost $5 to $7.50 each. Young, unmated birds, six to eight weeks old, bring $15 to $20 a dozen. As an indication of the demand for breeding stock, one Southern California pigeon grower who had 4000 birds, was tempted by high prices to sell all but 400 for breeding stock. We expect to increase our flock to 2000.

Scientific management and good business judgment have contributed to the success of L. R. Hoover, Pomona poultryman. He receives high prices for his products—and the accompanying article tells why.

Poultry House Pointers

IT IS difficult to construct a chicken shed which will admit enough sunlight in the winter and not too much in the summer. On the largest egg farm in California the amount of sunshine admitted to the laying houses is regulated by means of a swinging shade projecting outward from the south wall.

This shade is made of three 12-inch boards in sections 16 feet long and bolted in the middle to projecting 2x4 supports. Strong cords are fastened to the upper and lower edges of each section, which makes it possible for the operator to stand on the ground and swing the shades in the desired position.

When the boards slope down and out, like a roof, the hot summer sun is excluded; when the upper edge is thrown out, so the sun strikes the shade edgewise, it admits the maximum amount of sunshine, which is needed in the winter time.

COD LIVER OIL FOR CHICKS

Medicinal cod liver oil fed in small amounts to young chickens has proven of value in aiding them to get rid of many of their troubles. This oil is rich in vitamines and aids materially in building up chick vitality.—W. J. D.

FISH MEAL FOR HOGS

That fish meal is as valuable for hog feed as tankage is said to have been demonstrated by recent experiments.

HOME FARM HAPPENINGS

By ONE OF US

KILLING OUT TUMBLE WEEDS. There is a healthy and troublesome invasion of tumble weed in some parts of our young alfalfa meadow. John cut and burned the weeds, then irrigated the alfalfa and is going to disc and harrow the checks as soon as the soil can be worked; then harrow and rake out the roots, burn them and work in some more alfalfa seed, with another irrigation.

GETTING RID OF PEAR BLIGHT. Pear blight is with us yet, but since the hot weather came it has been very much less active. We have been over the orchard seven times now and have found very little diseased wood the last two times.

It's mighty hard to find a workman who will be religiously careful about disinfecting the tools and cuts. The secret of preventing "come-backs" depends to a great extent on thoroughness of disinfection.

"NO MORE WORMS," VOWS JOHN Every time John sees a worm in a pear he says:

"Damn it! That's just pure carelessness. If we had hit that blossom with a good dose of arsenic, Mr. Worm would never be there. Next year I'll bet there won't be a single wormy pear in the orchard."

As it is, there are mighty few. The most satisfactory spraying we do is for coddling moth in pears. If we get a good film of arsenic on the fruit and leaves the larvae hatching from the eggs laid by the moth get plenty of poison to kill them. Like all spraying, it is just a matter of doing a thorough job.

HANDLING HOGS IN HOT WEATHER—This is the time of the year we keep most of our hogs shut up, because it is easier to do that than keep them out of the orchards. After the fruit is off the trees the hogs have the "run of the place." Ordinary fences keep sheep and cattle pretty well in place, but we have some brood sows that know how much leverage a hog's snout and neck can bring to bear on a fence, and these we shut in a corral in the barnyard.

Hogs were intended by nature to wallow in water or mud holes in summer. Evaporation of moisture from their skin keeps them cool as nothing else can, and to be kept in a dry lot or pasture in the intensely hot weather of our interior valleys is working a hardship on the hog. Wherever we have hogs in summer we try to provide water for them to get into.

WHEN TO SHEAR THE LAMBS. "The best way to handle a bunch of lambs is to shear them as soon as the foxtail gets bad," says Hugh Garnett, one of the most extensive sheep growers in the Sacramento Valley.

"Lambs will not do well when their wool is full of burrs and stickers and seeds. The best way to shear them is with a machine. 'Blades' will not do as clean a job."

Of course a good many early Sacramento Valley lambs are marketed before the foxtail and similar plants ripen, but there always are late lambs to be 'carried over' and the ewe lambs kept to put back in the flock.

Foxtail time is over, but next year all of our lambs will be sheared as soon as foxtail beards harden, even if we have to buy a machine to do it, although machine shearing outfits do not like to "set up" for small jobs if they can get bigger ones to perform.

HUNGRY AND THIRSTY FRUIT TREES.—Riding through one of the best orchard sections of the State recently and carefully observing the condition of the orchards, I was most forcibly impressed with this fact:

Thousands of trees are both hungry and thirsty.

To make big paying crops much more water is required and more fertility must either be liberated from the soil or applied artificially.

You can tell a hungry and thirsty tree as far as you can see it by its distressed look—same as a poorly nourished human or a half-starved calf. The leaves of such trees are small and dry and yellow; even the bark is tight and dry.

When we get back home after seeing such orchards and note the big, thick, fat leaves; the abundance of new growth coming all over the trees; the rich, dark green leaf color, and the glossy, elastic bark, we say:

"Well, trees, you are mighty lucky to be growing in the Sacramento River bottom."—W. S. GUILFORD.

A BIG DAIRY

with

Stock and Equipment

CUTRIGHT SALE
on terms that are better than
LEASING OR RENTING.

All the money and time that a tenant spends for rent and improvements on a place that he does not own is gone forever.

...ut to find the right man or men who really know the dairy business and are capable of running a big ranch.

I can make a deal so that all the money a renter generally pays out can be applied on the purchase of one of the best dairy ranches in California.

400 acres, about sixty miles from San Francisco, of which 150 acres are bottom land, another 150 acres fine pasture, and 100 acres slightly rolling; no hills. Free gravity water from river slough for irrigation. Soil is rich peat and sediment.

Buildings and equipment are complete: fine large modern house, foreman's house, bunk houses, hay barns, shade and corrals; extra big dairy barn; silos, separator and cooling plant; work horses and all farming tools.

About 150 head grade Holstein stock: two strings now milking and more cows coming in fresh.

This ranch is earning more than $600 a month now. It is being run by city men with a hired manager. If a dairyman should live on the place and manage it himself he could increase the herd of cows and the production of crops from the land and make the earnings much larger.

It is a going ranch now and on a paying basis, but its value can be doubled in a short time.

The ranch could not be duplicated today for $125,000, but it will be sold for a much lower figure than that. An offer of $90,000 would take it.

A first payment of $15,000 must be made. The owner wants cash, but might consider some trade. Or if a man already has a herd of cows, the owner might take some good security for $15,000.

After that, small yearly payments can be made which would never be more than a man would have to pay out if he were renting a dairy ranch.

It just needs a good man with the ability to manage a big property and make it pay out. It's a great chance for somebody.

I will be glad to give further information and show the ranch at any time.

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Gasoline Fire? Don't Run Away

Commonsense Pointers That May Help You Save Your Valuable Automobile

By A. H. HOFFMAN

Agricultural Engineering Division, University of California

NOWHERE and at no time are knowledge and a cool head more at a premium than when fire reaches gasoline. Every year automobiles and trucks by the hundreds are burned up while their owners stand helplessly looking on.

In the great majority of such cases knowledge of how gasoline burns is all that is lacking; even though there may be no device labeled "Fire Extinguisher" at hand, the merest glance around would reveal abundance of material to accomplish the same purpose.

This lack of knowledge of how gasoline burns or explodes is what puts fear into the average man and makes him stand at what he considers a safe distance while he watches his car or truck go up in smoke.

Fortunately, gasoline alone is not only non-explosive, but will not even burn unless it is first evaporated and the vapor is in contact with the oxygen of the air. The writer repeatedly has caused an electric spark to pass between the very closely spaced points of a spark plug placed inverted and submerged in a quart milk bottle filled with gasoline. The spark showed bright and was sharply snapping, but no ignition of the gasoline resulted.

The same spark made to pass while the plug was held in the mixed gasoline vapor and air above the liquid gasoline at the top of the bottle promptly caused a slight explosion, followed by a surface burning of the gasoline vapor which, while slow at first, became more rapid as the heat generated caused a quicker vaporization of the fuel.

Closing the mouth of the bottle with the palm of the hand cut off the oxygen supply and in a second extinguished the fire. If the fire had been permitted to burn until the unequal heating had cracked the bottle and permitted the gasoline to flow out, a large surface area would have been exposed to the air, making possible a very rapid increase of the fire. Even then, however, the application of anything that would serve to exclude the air from the fluid gasoline would have smothered the flames.

INTERESTING EXPERIMENTS

With the same quart bottle half full of gasoline, a lighted match applied to the mouth ignited the one pint of mixed air and gasoline vapor, causing a stronger explosion and a slight after burning at the surface of the gasoline, which was easily put out because it was difficult for air to get in fast enough to keep the fire going. With the bottle emptied of gasoline, but still wet, the explosion was much stronger, but not enough to endanger the bottle so long as the mouth was not covered.

Similarly with a gasoline tank the more nearly empty the tank, the greater will be the volume of mixed gasoline vapor and air and the stronger will be the explosion if fire gets to it. Also, the smaller the opening relative to the volume of the mixture the more powerful the explosion.

Of course, it is never altogether safe, to say the least, to hold a lighted match to the mouth of a large gasoline tank whether full or empty, because, even if the tank did not burst, there might be enough gasoline and oil-soaked wood upholstering, etc., in the neighborhood to result in a larger fire than anticipated; however, if from any cause the gasoline in or about a carburetor catches fire, it is silly to run away for fear the fire may run along the copper tube and ignite the tankful at the rear of the car.

It is absolutely impossible for the copper tube full of gasoline to act as a fuse and carry the fire. Even if the gasoline tank is under the cowl or under the front seat, there is little danger of its contents being ignited from a carburetor fire unless it is allowed to burn for several minutes.

If the screw cap is in position on the gas tank the walls of the tank must be almost red hot above the liquid surface line before the fuel inside the tank will be set on fire. Hence, it is perfectly safe to fight the carburetor fire before it has had time to heat up things.

SMOTHER THE FLAMES

The first thing to do, of course, is to close the valve in the pipe line between tank and carburetor. The next is to smother the fire. Pouring on water is worse than useless, because it will simply float the lighter gasoline and oil to the surface and make it burn more freely. A wetted cloth or bag, however, is effective and may be used. Anything that will not itself burn very rapidly will do to shut off the air supply from the burning gasoline. Wool does not burn so fast as cotton; hence, a woolen coat, overcoat, laprobe, rug or blanket may be the handiest thing to push up tightly around and over the burning fuel. If wool is not at hand, cotton fabric of any kind, if fairly thick, will answer.

Road dust, sand, even sugar, salt or flour, wheat, barley or other threshed grain; in fact, anything that will stop or greatly slow down the flow of air will do the business. Usually a small carburetor fire, if put out promptly, will not do enough injury to the machine to prevent ready starting after things have cooled down enough to permit turning on the gasoline again.

Members of party of prominent automotive officials who are touring Coast. Left to right—Howard F. Aney, Robert W. Lea, J. L. Jones, George N. Peek.

Prominent Implement Men Tour Coast

Eastern Manufacturer and Party Find Agricultural Situation Best in California

AGRICULTURAL conditions generally are on the mend, in spite of the present situation of the American wheat farmer, in the opinion of George N. Peek, president of the Moline Plow Company, who is making a tour of the Pacific Coast.

"We hear a great deal, of course, about hard times in those sections which are devoted principally to grain growing, but, as a matter of fact, the Nation appears to be on a very sound basis, agriculturally," stated the well-known manufacturer. "In the South, better cotton prices and greater diversification have combined to restore a good measure of prosperity. The corn situation in the middle West is favorable, with hogs bringing good prices.

"Dairying continues to bring steady cash returns and consequent prosperity to milk producing sections throughout the country. And here in California unquestionably the producers are still in better shape than in any other State. In this State, of course, as well as others, conditions are spotted, and we find certain classes of farmers complaining, but after a trip over most of the farming districts, I am convinced that we have just about recovered from the terrible slump which struck the farmers, fruit growers and stockmen in 1920."

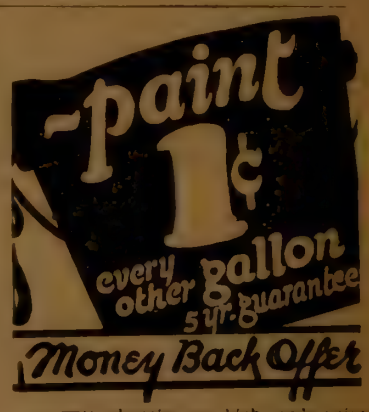
Accompanying Mr. Peek are Robert W. Lea, general manager of the Stephens Motor Car Company, a subsidiary of the Moline organization; Howard F. Aney, sales manager of the Fordson implement division of the Moline Company; J. L. Jones, Western division manager, with headquarters at Stockton, Cal., and other widely known implement and tractor men.

"We regard the Pacific Coast, and particularly California, as the best potential tractor and implement market in America," asserted Jones. "Here the farms and orchards are more nearly motorized than anywhere else in the world.

"In the East and Middle West, feed for work animals is cheap, and the farmer, when not using his horses, turns them out on green pasture. In California, on the other hand, high-priced land and shortage of pasture are important factors in increasing the popularity of power farming.

"Another thing: The average Eastern general farmer raises corn and therefore must do more cultivating than any other kind of work. For this purpose he may prefer to keep horses, and therefore uses them for other processes as well.

"Add to these conditions the general prosperity of California and you have an ideal condition, from the viewpoint of the manufacturer and distributor of farm machinery."



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By HELEN TEMPLE

CALIFORNIA FALL GARDENS.

Our fall gardens are so beautiful at this time of year that we scarcely can realize the amount of garden work to be accomplished before winter comes. "But California has no winter," some one argues. Perhaps not, according to our Eastern cousins, but we need only watch the signs of the weather and the habits of plant life to realize that here, too, we have winter. The garden, then, either droops on straggly, past-bloomed stems or gathers new strength for a spring of loveliness. Our fall garden work prepares for the spring awakening.

HELEN TEMPLE

BULBS TO BE STARTED NOW.

Of all the flowers, the most beautiful are produced by bulbs. An ugly little brown bulb, set out now, will send out a bloom of the most exquisite beauty in just a few short months. The iris, with its short-lived, but attractive, flowers; the narcissus, sweet-scented and lasting—these, with a half dozen others, may be set out this month. Freesias, gladioli, tulips, hyacinths, callas and ranunculi may be planted.

If you wish to lift and store the bulbs each year, they may be planted as close together as the distance of twice their diameter.

However, bulbs which are to be left in the ground for several years must be set at a distance of five or six times their diameter in order to avoid crowding.

There is a great difference of opinion in planting bulbs. A busy housewife has little time to "bother" with the lifting of bulbs each year. She usually lets them alone until the bulbs fairly "rise" out of the ground for lack of space. The blossoms are very good for a few years; then crowding spoils them. Another housewife, who is a gardener at heart, carefully lifts and stores the bulbs, which can be handled in this manner. Needless to say, her flowers are always beautiful. However, a happy medium may be struck if the bulbs are lifted and reset, or stored, every third year; that is, provided they are not planted too close together at first.

BULBS AGAINST SHRUBBERY.

Bulbs that grow against a background of shrubbery should be planted at a distance apart which will allow them to stay in the ground several years. Lilies are among our finest bulbous plants to leave in the ground year after year. They do not benefit by shifting; in fact, they make the finest display after five or six years' growth. Shrubbery, well chosen, with a border of bulbous plants and a well-kept lawn adds a 50 per cent value in dollars and cents to a place, either large or small. Bulbous flowers usually are very bright and distinct in coloring. Choose harmonizing colors, and insist upon named varieties. Do not plant a jumble of bulbs just because they are cheap.

VIOLETS AND SWEET PEAS.

While it is rather late to start a violet bed, the hardier varieties, such as the Princess of Wales and the Marie Louise, will do well if set out now. The Princess of Wales is especially adapted to the Coast region, while the Marie Louise succeeds best in the mild interior. I have found violets well established before winter when started this month. During the cool months they grow a strong root system; then when early spring comes they are ready for a long season of blooming. Use a rather rich soil, into which a small quantity of lime has been mixed three or four weeks before planting—and provide good drainage.

Sweet peas, planted in the milder sections of the State at this time, are always fairly successful. A handsome bouquet of sweet peas in mid-winter in Southern California may be assured by sowing seeds at this time of the year. Work the soil deep before planting. If your soil is heavy, add coarse, well-rotted horse manure to lighten it, or, if it is already too light, a liberal application of decomposed cow manure will give it body. Sweet peas succeed best in a fairly rich, well-worked, friable soil.

EUCALYPTUS AND CYPRESS WIND-BREAKS.—While the majority of us will buy "baby" trees, all ready to set out in the hedge or windbreak, some of us will grow our own, which, I must hasten to add, is not as difficult as one might think. This is the best time to start the seeds at the interesting task of making little trees, which will be ready to set out in the early spring.

A shallow box with drainage holes in the bottom provides an excellent seed box. A layer of coarse sand or gravel should be used in the bottom of the box to allow the surplus water to drain off rapidly. Use equal parts of old leaf mold, garden loam and sand, thoroughly mixed, for seed-box soil, and keep the boxes moist. Protect the boxes from extreme weather with muslin-covered frames.

Eucalyptus is used so commonly throughout California for wind-breaks, or roadway planting, that we almost fail to realize how truly magnificent it is, especially when it is planted for a long wind-break or along a driveway. Then, too, eucalyptus is one of the standbys as a fuel, blue gum being most commonly planted for this purpose, as it grows so rapidly.

Between Carpinteria and Santa Barbara a large grove of eucalyptus is growing for fuel purposes only, on soil that would not produce other crops.

The manna and red gum are very good for driveway planting, while the Robusta is covered with big clusters of white flowers in the fall and winter. Robusta is especially desirable to plant in soil that does not drain off readily, and it is also a boon to beekeepers, being in full bloom when other honey-making flowers are scarce.

PERENNIALS FOR NEXT YEAR'S FLOWERING.—Continue the sowing of perennials for next year's flowers, such as perennial poppies, Canterbury bells, forget-me-nots, daisies, digitalis, gaillardia and coreopsis. When they are planted in the fall they will be ready to bloom next year. We have found that a fall-planted perennial will bloom almost as quickly as the perennial planted the spring before.

TULIPS IN CALIFORNIA.

Tulips of the most wonderful varieties grow wild in California, and we have succeeded in raising beautiful tulips imported from Holland, but these foreign tulips will not permit neglect. We must lift and store them each year. A gardener of my acquaintance left tulip bulbs in the ground after they had finished their season. Later it was discovered that every bulb had disappeared. They had declined to be treated like their wild native cousins.

In Holland the growers plant their tulips in the fall, after carefully grading the bulbs. Each year the tulip bulb graduates into a higher grade; for instance, the smallest grade (or fourths) automatically become thirds. If we give away or sell the largest bulbs, soon our tulip beds are practically a failure.

Soil for tulips must be well worked for best results. The better the soil, the better the flowers. However, I have seen wonderful tulips grown in all sorts of soil when the ground had been properly worked before planting. The largest specimens, to my knowledge, were grown last year in virgin soil near a group of large oak trees in the Ojai Valley. The soil was very friable and rich. I have heard many gardeners say, "Soil isn't as important as the care you give it," but we must admit the possibilities of a rich, friable bed.

CYCLAMEN AT THIS SEASON.

The Cyclamen usually is repotted and started on its round of growing at this time of the year.

Do not cover the bulb; just set it half way in the soil and be sure the soil is firm. Water well and keep it in filtered sunshine. Use sifted leaf mold and sand for best results. Garden loam may be substituted for leaf mold if it is rich or mixed with old manure.

The Cyclamen does not like the heat nor dampness. The finest blossoms always are found on the well-cared-for plants in the greenhouse or cool room. The Cyclamen, like all plants, I have found will produce very large blossoms if half the buds are destroyed, but, in my estimation, the plant is much prettier if it is just overloaded with medium-sized and smaller blossoms.

Fleischmann's Pure Dry Yeast takes the place of green feed

Don't bother growing chard or sprouting oats—Feed Fleischmann's Pure Dry Yeast in the dry or wet mash

Caution: Do not be misled by imitations. Fleischmann's Pure Dry Yeast is *all* yeast — yeast in its most concentrated form. It contains no cornmeal or other filler. To be sure of results, order Fleischmann's Pure Dry Yeast — using coupon below.

Every poultryman knows the value of green range to young stock and layers,

For—Avoiding leg weakness in chicks and putting signs of health and vitality in the growing stock.

For—Producing strong and hatchable chicks from the breeders.

For—Increasing egg production. Instinctively the hen craves these vitals of green. The yolk yellows quickly to the color of butter, as she transfers these vitals into store for nature's chick.

When the laying birds eat no greed feed, their eggs have light yolks and weak germs. When they do eat green feed, their eggs have rich golden yolks and strong, hatchable germs. These are the guiding signs for the keen observer who would better his hatches.

Fleischmann's Pure Dry Yeast contains the most concentrated form of these vitamines found in green grass.

1 lb. a day to every 100 lbs. of dry mash,
or
1 lb. a day to every 1000 hens or 2000 chicks,
or
dissolve in the drinking water or milk.

Fleischmann's Pure Dry Yeast will cure white diarrhea, increase fertility and hatchability and egg production. May be fed in either dry or wet mash.

The increased productivity of the bird more than pays for the price of the yeast. Sturdiness in the hatch, marked absence of disease, and increased vigor of the growing pullets are all assured through the feeding of Fleischmann's Pure Dry Yeast. The cost of this vital food accessory is trivial in comparison with its results.

Send for these booklets

Fleischmann's Pure Dry Yeast can be profitably used for all farm animals. Check on the coupon which booklet you want.

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Advertisements must reach us 15 days before date of publication. Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

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PROFITABLE POULTRY and CO-OPERATIVE ELECTRIC HATCHERIES. Capacity 250,000 chicks. 180-290 egg Leghorns, Anconas, Reds, Rocks, Minorcas, Wyandottes, Brahmas, Andalusians (Ducks, Turks) Off every week. Also chicks from large 2-year hens for rapid growth into broilers, fryers, roasters, capons. Reduced hatches ahead. "Never saw such vigor, rapid growth, in chicks." 12 N. Fair Oaks, Pasadena. Madonly.

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ORDER SUMMER AND FALL CHICKS now. They pay. White Leg., R. I. Reds, Barred Rocks. Safe arrival guaranteed. Send for circular. Fine lot of White Leg. pullets and breeding cockerels. Stubbs Poultry Ranch and Hatchery, Box 67C, Palo Alto, Calif.

S. C. WHITE LEGHORN baby chicks from 2 and 3 year old vigorous hens, mated to cockerels from trapnested stock. Order now for September and later delivery. FRASER'S HATCHERY, Box 371, Hawthorne, Calif. 12 New Jersey Ave.

PETALUMA HATCHERY. Accredited by Sonoma County Farm Bureau. White Leghorn chicks every Monday and Thursday. If you want good laying pullets get chicks in the fall. Guaranteed safe delivery. Free circular. L. W. CLARK, Petaluma, Calif.

BABY CHICKS. All kinds hatching each Monday. Ducklings, turkeys, hatching eggs. Pullets, pigeons, rabbits. FANCIERS EXCHANGE, 640 S. Main St., Los Angeles.

FREE BOOK. "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

TURKEYS, DUCKS AND GEESE

WILD BLOODED BREEDING TURKEYS.—Toms, according to age and size, $15 and $25 each; hens, $8. Baby turks. JENKINS, The Veteran, R. 3, Box 148, Burbank, Calif.

FARM LAND FOR SALE

OUR BACK-TO-LAND PLAN.—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water; thorough drainage; rail, water and highway transportation. Write owners. SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and berry farming in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land; near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

FARMS WANTED

CASH BUYERS want western farms. Describe and state lowest price. R. A. McNOWN, 267 Wilkinson Bldg., Omaha, Neb.

WANT to hear from owner having farm for sale, give particulars and lowest price. JOHN J. BLACK, Chippewa Falls, Wis.

FRUIT RANCHES FOR SALE

FIG ORCHARD 20 acres, 4-year old Calimrnas in Fortner Tract, 6 miles north of Fresno. Deal with owner and save $150 per acre. L. J. Marier, 265 Bush St., San Francisco.

TANKS, PIPE AND WINDMILLS

REBUILT WINDMILLS, tanks, pumps, cylinders, surface irrigat. Pipe, all sizes, used 8-in. cheap. New galv. tanks, all sizes. Large used redwood tanks. DEMMITT CO., 126 N. Main, Yards 816 Yale, Los Angeles.

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HEMSTITCHING, picoting attach. Fits any sewing mach. Does beautiful wk. Attract premiums free with orders. Write for this deal. B. Kraftt, Box 806-OF, San Francisco.

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PAINT BARN and ROOF. Highest quality, $1.00 per gal. Guaranteed 5 years. Milroy Works, 581 Palisade Ave., Jersey City, N. J.

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Over 50 varieties. Grown on decomposed peat land same as Holland. Kissed by the Fog of the Pacific Ocean.

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F. J. CONRAD, Proprietor.

PRICE LIST of Spring Flowering Bulbs now ready. Anemones, Daffodils, etc. PAUL R. HICHBORN, Bulb Grower, Seabright, Cal.

State Fair Looms

LESS than a week will elapse before the opening of the California State Fair, Sacramento, and thousands of visitors from all parts of the State are expected to throng the grounds during the big event, September 1 to 9.

The livestock exhibit, according to Secretary Paine, will exceed all expectations, and, despite unsettled conditions in the breeding business, will bring out a most representative showing in all classes.

The utility idea, however, will be emphasized as never before. For example, a special prize has been added for fat cattle. In the fat cattle class, No. 444, carload lots of spayed and freemartin heifers will divide $710 in the premiums. Besides, the Virden Packing Company will award a special silver cup for the carload lot scoring the highest.

ANNUAL HEREFORD SALE

One of the livestock features will be the annual Hereford sale by the Hereford Association of California on Wednesday, September 5th. This sale will draw not only all the big packers of the State, but also many smaller slaughterers, as well as representatives from the big hotels of San Francisco, Los Angeles, Oakland and elsewhere, who will attend this auction to buy prime stock. The Herefords that will make up this sale are selected as the best specimens in the many herds found in California.

Novel amusement features will be inaugurated this year. One will be the delivery by pony express of a letter from Governor Arthur M. Hyde of Missouri to Governor Friend W. Richardson of California, which will be relayed from St. Joseph, Mo., to Sacramento by daring riders as in the old pioneer days.

The letter will be delivered to the chief executive of California at the State Fair grandstand before a throng of people by Will Tevis, the most spectacular rider in California.

The incident will be one of the big features of September 8th. As a background to the cross-country relay pony express race, the special train bearing the Sacramento Whiskerinoes from St. Joe back to Sacramento will roll into the State Fair grounds to help make the celebrtaion more realistic.

Tevis will have the mount from Placerville to Sacramento. Charles Paine, secretary of fair, is planning to make the occasion one of this year's biggest events.

Tractor Contest

RESULTS of the Horse vs. Tractor Contest announced in a recent issue will be published in the September 2 number of ORCHARD and FARM. Watch for names of winners next week!

CITRUS PRUNING BULLETIN

Deserving of special mention is the new bulletin on citrus pruning by Robert W. Hodgson, of the Agricultural Extension Service, a regular contributor to ORCHARD and FARM. This is said to be the only bulletin written by a County Farm Adviser ever published by the University of California, a real tribute to the study and research work of the Los Angeles County Agent. A copy of this exhaustive treatise may be obtained free of charge by writing the Director of the Agricultural Experiment Station, Berkeley.

Another interesting bulletin published by the University is a reprint from the Journal of the American Society of Agronomy, Volume 15, No. 5, May, 1923, entitled "Alfalfa in History" by George W. Hendry.

GRASSHOPPERS EAT MOLASSES

Six barrels of molasses, 700 pounds of Paris green and 250 dozen lemons recently were used in Yolo County for making bran bait for grasshoppers.

Why I Breed Registered Horses

The Present Status of the Draft Horse as Viewed by a California Breeder

IT HAS been my privilege to be associated with the Percheron breed for many years. My grandfather spoke French and spelled his name Le Arned; my French descent may have inclined me to select the Perheron, but I have always admired their action, style and form.

I have always treated them kindly and honestly, but firmly, and I have never failed to get kindness and honesty in return; invariably, also, I have found them intelligent.

Any average small country home will find the Percheron horse a cheap source of farm power and with a pure-bred registered Percheron there are three ways to increase the bank account: Keep the mare at work; take some prize money at the fairs, and sell the surplus increase.

DRIVES TO STATE FAIR

I have driven the fifty miles from Stockton to the Sacramento Fair three times in the past four years. Last year I started out alone with five stallions and three mares; a three-year-old stallion in the lead with Pink Julia, the mother of the other seven. This stallion never had been in the lead before and had not been worked regularly. One of my wheelers was a yearling nearly as large as his mother and had never had a harness on his back before, and I put the harness on without tying him up. With the two suckling colts tied to their mother and two stallions tied to the back of the spring-wagon, I went to Galt the first day and on to Sacramento the next day. Although an average of three autos passed every minute, I had no trouble or excitement whatever.

During the first night at the fair there was a shortage of stalls so the two three-year-olds were turned loose in one box stall and the two yearlings in another. The three-year-old stallions are good company. They are contented, grow well, play hard at times, never fight or hurt each other, and are ready for a day's work with or without mares in the team.

Annette, when two years old, was taken to work on the spray wagon with my stallion, Bay Boy. When she was four years old, I had had two years' work and two colts. The past four months Bay Boy and Annette have been pulling together on street contractors' work, moving a four-ton water wagon and two-yard gravel dump wagons, and came home weighing 1700 pounds each. There are other draft horses that can move as heavy a load, but the Percheron has been, and is, the wonder of the world in its ability to move a big weight at rapid gait.

A REMARKABLE MARE

I was fortunate in getting started with a son of Pink, an International winner twice, and good old "Kate" that was never beaten in the "Produce of Mare" prize and was as perfect at 19 years of age as most five-year-olds. If she had a fault or blemish I never found it, and the judges always voiced their praises of her. She put $2860 in my pocket, besides the work she did, and left me with "Pink Julia" that won California's Grand Champion mare prize twice.

In my exhibit of Percherons at the State Fair in 1922, I had Pink Julia and her daughter, each with three colts. I have prize ribbons and medals enough to cover a curtain six feet square and I might say I got them all through Kate, and any farmer's son can do likewise.

The Percheron breed has size, form and style, an excellent disposition, activity, strength and endurance, hardiness and docility that make them the kings and queens among horses, the noblest of the brute creation.

I have a great admiration for the Percheron horse and I believe the time is coming when its real worth will be better realized and appreciated than it is now.—H. G. LEARNED, Stockton.

These two fine stallions not only work together, but also are kept in the same corral, where peaceful conditions prevail.

Children Will Exhibit Pets at State Fair

PICTURE scores, if not hundreds, of children with their pet animals all gathered together in loving contest! Won't it make a beautiful animated ensemble? What could be more appealing to the grown-ups as well as to the little folks?

This picture will be one of the zestful features of Children's Day, September 8, at the California State Fair at Sacramento. It happens that also is Rotary Day. September 8th has been set aside by the Fair management for the tots and their pets from all over California. Every boy and girl with an animal pet will be eligible. The entries are expected to be large and varied.

Miss Amy D. Steinhart, Chief of the State Bureau of Child Aid, will have charge of Children's Day, and is now formulating her plans and program. There will be pigeons, birds, rabbits, chickens, dogs, cats, ponies, calves, lambs, goats, and every living pet that can endear itself to the heart of the child. Prizes will be given in the contests.

Besides, there will be pony, bicycle and foot races, also games by the little folks. Arrangements are under way for a juvenile boxing contest, too.

ENTRY BLANK—STATE FAIR CHILDREN'S PET EXHIBITION.

Enter your exhibit NOW by filling out this blank and mailing to Educational Department, California State Fair, Sacramento. Entries close September, 1, 1923.

Any bird, animal, insect, plant, herbarium, aquarium, nature study or woodcraft specimen, may be entered, but no nests nor birds' eggs.

All dogs must have chains; other pets must be brought in necessary container not later than 10 A. M., on September 8th.

There will be no charge to exhibitors, but the Society assumes no liability.

Write plainly or print:

KIND OF PET.....

EXHIBITOR'S NAME ..... AGE .....

HOME ADDRESS .....

Prizes in all classes. For further information, apply above address.

He's in Partnership With Nature

(Continued from Page 2)

no doubt the grass would be allowed to grow in these also were it not for this point.)

PONIES ARE PROFITABLE

And there is yet another interesting branch of the livestock business, in which Butte City Ranch is a big factor—the raising of Shetland ponies. This has proved a very remunerative enterprise; in fact, the demand has exceeded the supply ever since the first little fellows were brought to California from the Middle West. But the ponies are never pampered and must rustle for themselves on pasture much of the time.

Butte City Ranch seeks to demonstrate that purebred stock is adapted to ordinary farm conditions. It aims to produce superior breeding animals at such low cost that they will be within the reach of the ordinary range man and farmer. But when it comes to purchasing sires and foundation stock the "economy streak" comes to a sudden end. Guilford is a shrewd business man and buyer, but he will have nothing but the best when he chooses his own sires and foundation females. That, of course, is the keynote of his success as a breeder; that, and his natural love for animals.

The bloodlines of Butte City stock are those best known to leading breeders for quality and stamina. The "Butte City Princess" family of Berkshires was established in 1917. The original sow was shown at the Western Berkshire Congress meeting at the University Farm at Davis in February of that year, where she was awarded the American Berkshire Association trophy for best animal bred and shown by exhibitor. She was bred by A. B. Humphrey, who stated that she was the best animal he had ever produced.

The Berkshire pedigrees include such well known names as Longfellow, Masterpiece, Rival's Champion, Grand Leader 2nd, and Epochal and Superior.

BEST BLOOD REPRESENTED

The foundation for the flock of Shropshires was selected by the late Arthur Broughton of Albany, Wis., and the best blood from such breeds as McKerrow, Renk, Minton, Cavendish, Buttar, Marshall, Knollin, Ribby, Tanner, Birch, Wardwell and others is represented. The present herd sire, Gibson 415, was purchased from the University of Wisconsin.

The head of the Shorthorn herd is a grandson of the famous Whitehall Sultan, while the ponies are ruled by "General Boggs," a wonderful little animal, son of Grandee, by Prince of Wales.

In all breeding operations Guilford has had in mind definite type ideals. He has developed in each case what might be described as "medium utility" animals, avoiding extremes and emphasizing smoothness, "easy keeping," vitality, prolificacy and medium or "handy" size.

Just how much environment has to do with breeding is emphasized in the following statement by the owners of this interesting establishment:

"A large area of woodland pasture, providing roots, herbs, berries, nuts, acorns, charcoal from brush burnings, etc.; plenty of shade and good water; together with alfalfa, corn, roots, pumpkins and other cultivated crops; and waste products of different kinds from the orchards, makes a combination that is almost perfect for producing breeding animals of all kinds that are strong in bone and muscle, vigorous, active and useful. It is an environment in which animals are happy and contented, and develop normally and naturally."

TREES "RUN WILD."

Guilford's pruning system (or rather lack of system) has created much comment both favorable and otherwise. His theory is that the nearer one can approach the ways of nature, the greater will be the reward. The limbs of the prune trees grow to a great height and are drawn outward and down by the weight of fruit.

In addition to securing heavy yields, Guilford reduces maintenance expense to the minimum and does away with the necessity for propping. The overhanging limbs, it is true, interfere with cultivation to some extent, but if a little growth is left about the trunks of the trees, it worries the owner not a whit. "To be sure, it looks a bit ragged," he admits, "but this ranch isn't being run for looks." The Butte City prune crop this year has been pronounced by experts one of the heaviest ever seen in the valley, with much one-year wood bearing fruit. In answer to his critics he points out neatly-pruned, well cultivated and whitewashed orchards which will produce this season practically nothing.

The pear trees, also, are allowed practically to run wild, although it is now planned to "tie them down" according to the Caldwell system. The uncultivated pear orchards supply much valuable pasture and there has been a minimum of blight.

But in discussing the fruit question, as well as the livestock system, we come to a sudden halt. For, despite such unique methods, Butte City Ranch is far from being archaic. Spraying is practiced religiously; individual trees are treated when they need it; irrigation is done scientifically—and now it is planned to dehydrate much of the fruit. No, there's nothing backward about Guilford. In fact, he may be a few years ahead of his time.

The personality of this independent chap is no less interesting than his ranch. He is a big man—mentally and physically; a self-made man with a reputation for square dealing, a "million dollar laugh," and hundreds of friends. Other interests claim all of the time of his "silent partner," W. P. Dwyer, and much of the time of "Guil" himself, but no matter how absorbing his various enterprises, he is happiest and most at home among the animals and trees he loves.

Rabbit Raisers Hold Opposing Views

H. H. HOLWICK, successful rabbit raiser of Santa Clara County, takes issue with George Green, Southern California's authority, regarding breeding and management methods.

"I am breeding about fifty does," writes Mr. Holwick, "and do not keep any which weigh less than ten pounds—many weigh fourteen pounds. They are American Blues and New Zealand Reds, crossed with Flemish Giants bucks.

"Instead of leaving the young with their mothers for eight weeks, I take them away at half that age and fatten them for market. They weigh four pounds at the age of eight or nine weeks.

"It costs about $2 a year to feed a doe, which should produce 100 pounds of young rabbits. The latter will consume $4 worth of feed, making $6 the total feed cost of 100 pounds of young rabbits."

LEAVE YOUNG WITH DOES

"In my capacity as registrar of the National Rabbit Breeders and Fanciers' Association," writes Mr. Green, commenting on the foregoing statements, "I have questioned hundreds of successful rabbit raisers regarding the advisability of taking young rabbits away from the does at four or eight weeks. They all say that young rabbits cost less to feed, do not need special fattening and are more contented if left in the hutch where they were born.

"I have six young rabbits that lack only six ounces of weighing four pounds each at the age of seven weeks. They have been left with their mothers since birth and could be made ready for market in two weeks. They are pedigreed, registered American Blues, not crossbred mongrels. According to the association standard, the does should weigh ten pounds at maturity. Anything over this disqualifies them for registration.

"The best thing about leaving young rabbits with their mothers, instead of breeding the latter as soon as possible, is that the vigor and vitality of the does is unimpaired by the former method, while the latter procedure puts them out of commission, so far as breeding good stock is concerned.

"In the Pomona-Upland-Ontario district there are perhaps 500 rabbit raisers, some of whom make a living by growing animals for the meat market. Not one of these growers would think of taking young away from the doe at four weeks.

"Two dollars is a rather high cost for feeding a doe one year, even where all the material is bought, as is the case in this district.

"Crossing Blues with Giants does not increase the amount of meat, but of bone, in the young, which grow a large frame before putting on their full quota of flesh. One advantage of keeping the Blue stock pure is that the skins can be sold for a good price, as the fur makes fine garments. Selected breeding stock brings from $5 to $25 per head."

Cost of Hen Food

"AFTER thirteen years' experience in feeding as high as 12,000 hens, we have found that a laying hen will eat 36 pounds of grain and an equal quantity of mash in a year, on an average," asserts a prominent poultryman of Southern California. "To the entire amount required to feed the hens, 20 per cent should be added for young stock grown to replace old birds.

"Wheat cost us an average price of $2.10 per hundred pounds in 1922 and a few cents more this year. Mash is $2.35 at present. We buy grain from a Los Angeles dealer at harvest time, paying a premium of $1.50 a ton over the market price, plus $1 a ton for delivery. Mash is purchased in large lots from time to time, as needed. We do not buy a year's supply, because it will not keep fresh that length of time.

"Grain and mash are the main cost items in hen feed, although green stuff and milk form important parts of the daily diet. Barley and Sudan grass are standbys for succulent forage, the latter for summer and the former for winter. The cost of this material is difficult to compute, owing to varying conditions.

"Dried milk is much more satisfactory than buttermilk, we believe. It is important, however, that it be evaporated at a low temperature, in order to avoid destroying the vitamines. We always feed this kind of milk to hens when they are laying eggs for hatching, using lactic acid milk at other times."

Poultry Breeding Plan

A UNIQUE method of crossing chickens was explained by T. R. Robinson of the National Poultry Society of Great Britain during the latter's recent visit to California.

"Crosses are easier to handle than purebreds," asserted Mr. Robinson. "For that reason, British breeders do not hesitate to cross-breed chickens in order to obtain desired results.

"For example: When a brown egg is wanted, together with a white table cockerel, we mate a light Sussex hen to a brown Leghorn cock. The sex is expressed in the offspring, which makes it possible as soon as the chicks are hatched to pick out the brown pullets and the white cockerels. This method materially improves the meat quality of the males, while the egg-laying proclivities of the hens is unimpaired."

The English visitor was impressed very favorably with the egg marketing organizations of California and especially with the spirit of good fellowship which exists between poultrymen here and the way they are "taken care of" by their association.

Handy Mash Feed Boxes

MASH feed boxes built along the south side of the laying houses are used on a large egg farm at East San Gabriel. This type of mash box possesses many advantages. In the first place, it is filled from the outside easily, having a sloping hinged cover. This not only saves the bother of going into the hen house, but also makes it unnecessary to disturb the inmates. Upright slats on both sides make it possible for hens in the yard and in the house to feed from the box.

MANY GOATS IN PALESTINE

It is estimated that there are more than one-third million milk goats in Palestine, or three times the number of cattle. Half the latter are draft animals.

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Walnut Top-Working Methods

Pioneer Propagator Describes System Which Has Given Signal Success in Practice

A SUCCESSFUL walnut grower is almost forced to become a grafter—and a good one, too—because it is necessary to top-work seedlings to superior varieties and this process is very difficult. Charles J. Sanderson, Whittier orchardist, has had 37 years of experience with walnuts and is considered a past master of the true grafting art.

Native black walnut seedlings are grown where the trees are wanted and at the age of five years are top-worked to the best English sorts. Mr. Sanderson was asked to explain his method.

"Cions are cut in January," he said. "Well matured wood, with plump buds of the previous year's growth, should be chosen. Store in damp—not wet—sand until April, which is the best month for cleft grafting.

"For making cuts in the stock, I have never found anything better than a good, strong butcher knife, with the end of the blade broken off in a vise. About five inches of the blade should be left. Have the end sloping back from the point.

THREE GRAFTS ON EACH STUB

"A limb or trunk two or three inches in diameter is a good size for grafting. Although only one cion is needed for each stub, it is best to put in three, because some may not live and also for the purpose of growing new wood over the cut before decay begins.

"The stub is not split across, as in grafting apple trees, but the cuts are made with the knife pointing towards a place one-third way around the limb. Or mark a triangle on the stub and cut on the lines.

"The cut is held open with a metal wedge. The one I use was made of a 10-inch bastard file, with one inch of the out end bent over at a right angle and hammered to a thin edge. By inserting this in the cut and using the tool as a lever, the incision can be pried open to admit the cion.

"The cion is cut wedge-shaped and inserted in the stock, taking care that the bark matches. The end of the stub and the lower end of the cions are covered with wax."

GRAFTING WAX FORMULA

To make grafting wax, take four pounds of resin, one pound of beeswax, one pint of flour and the same quantity of linseed oil. The resin and wax first are melted and then the other ingredients stirred in and the mixture boiled for a few minutes. The wax is melted partially when needed and applied with a brush.

The grafts are shaded with a paper hood tied over the end of the stub. After the wax hardens it is liable to crack and admit air, which may dry out the graft and prevent its growing. In order to avoid this, the cracks are chinked up with a softer wax, which is made as follows:

One part tallow, two parts beeswax, three parts resin, boiled together. Pour into cold water, grease your hands and work the wax until it cools, like pulling taffy candy. A man's finger makes a good brush with which to rewax grafts with this compound, which remains at the proper consistency without reheating. Grease the fingers with tallow to keep them from sticking to the wax. Carry a chunk of tallow in a small tobacco sack. The grease will work through the cloth, on the outside of which the fingers may be rubbed occasionally.

TIE GRAFTS TO SUPPORTS

Eight-foot redwood strips, one inch square, are nailed to the tree below the graft, projecting in the direction which it is desired the latter shall grow. As the graft grows, it is tied to the stick with raffia.

"Eternal vigilance is the price of good walnut grafts," declared the veteran orchardist. "Sometimes the cions will not start growing for several weeks, during which time they must be watched carefully, as they are very tender and easily injured.

"We have little wind in this locality, but what we do have makes it very difficult to grow grafted walnut trees of the proper shape. The small limbs are very soft and willowy, with large leaves, and it doesn't take much wind pressure to bend the new growth out of shape.

"Since the prevailing winds are from a southerly direction, it is hard to prevent the new tops from being forced over to the north, leaving the trunk exposed to the direct rays of the sun. Not only are the new grafts tied to guide sticks, but also older limbs are pulled around into desirable positions and tied there with cords.

PROTECT TRUNKS FROM SUN

"If the trunks are not protected from the sun's rays, the latter will check the flow of sap, the result being the new limbs on the north side of the tree will grow faster than those on the south side. This tends to make the north side top-heavy and increases the difficulty of maintaining a balanced top.

"Some growers protect the south side of the tree with whitewash. While this does a little good, a much better way is to leave on that side of the tree a small limb, which can be bent down and tied to the trunk."

Cleft grafting is done in April. As soon as the sap rises and the bark slips, grafts may be inserted in T-shaped cuts under the bark and tied in place with raffia, after being waxed. Bark grafts are cut with the slope all on one side. When cleft grafts fail to grow, the stub may be shortened and bark grafts inserted the same season—O. H. B.

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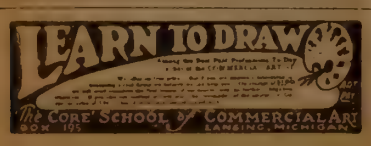


June Drop Situation

WITHIN recent years many investigations have been carried on in various parts of the country in an endeavor to learn the causes and, if possible, preventive measures for June drop of fruits.

The results of most of this work are in substantial agreement, and the general opinion now held by horticulturists is that June drop is caused by dry, hot weather. The loss of moisture through the leaves is so great that the blossoms or young fruits are dried out to the point of dropping.

Lack of moisture in the soil increases dropping, as also does a dry wind. High temperature alone is not considered as serious as dry air in motion. June drop may be avoided to a certain extent by changing these conditions in a variety of ways, such as by irrigating generously, planting wind-breaks to stop the force of the wind and growing summer cover crops, which mature early and provide a good cover at the critical time.

The effect of the cover crop is to shade the ground and reduce soil temperatures, lessen reflection of the sun from the ground, and, most important of all, liberate large quantities of moisture to the air, which increases air humidity and reduces air temperature.—J. ELIOT COIT.

Gopher Injury to Trees

THE amount of harm done to a fruit tree by a gopher depends upon three factors—the extent of the wound, the type of soil and the time of year.

On sandy soils gophers usually work deeper in the ground, and if the wound is entirely below ground and is kept moist by the soil it often happens that new bark is produced over the entire wound area, and the tree recovers without any attention.

If the wound is made in fall or winter or when the tree is not in active growth and the wound extends above ground, so that the exposed cambium layer dries out, then there is no opportunity for regeneration of bark, and if the tree is completely girdled, it is doomed to die in time if it is not saved by inarching.

The important point is that frequent orchard inspection will enable the grower to discover the injury while it is still new. By the painting of all wound surfaces immediately with grafting wax, the tree may be brought back quickly without recourse to inarching and attendant loss of fruit. Every gopher-injured tree should be pruned back somewhat at once to enable it to maintain a smaller top in green, healthy condition rather than the full top in a yellow, sickly condition for several years.—J. ELIOT COIT.

Illegal Operations of Tree Doctors

WITHIN recent months the activities of itinerant tree doctors have increased so that public sentiment in favor of some sort of control over these persons is rapidly crystallizing.

DR. J. ELIOT COIT
Contributing Editor

Usually their treatment of sick trees consists of digging around the tree and painting the trunk with some secret preparation or patent medicine, for which great claims are made that it will cure any or all the ills to which the trees are subject. Such secret preparations are often harmless in themselves, although sometimes injurious, but in practically every case the charges are out of all proportion to the benefits.

The worst feature of the situation is that a grower, once having paid a big bill for treatment of this kind, is very slow to provide the correct treatment which will benefit his trees. He is lulled into a false sense of security by thinking that he has done his full duty by his trees, whereas, the fact is, the trees are no better off, and the value of the orchard continues to decrease.

The present State law provides that all such persons may be licensed and supervised by the county horticultural commissioners. The law has been made to apply to commercial sprayers and fumigators, but it never has been enforced in connection with "tree doctors."

There is a growing sentiment, particularly in farm bureau circles, that the horticultural commissioner should exercise the same control over tree doctors as he does over sprayers. If a man has discovered or worked out a formula, method or medicine which is of any real benefit to sick trees, it would be a real help to his business to demonstrate its value before the horticultural commissioner and secure his approval and a license for its use.

Such control long has been effective in other States. A law covering the matter has been on California statute books for some time. While public sentiment here has not been sufficiently strong to warrant its enforcement, the situation is rapidly changing. Orange County has taken the lead and it is to be expected that other counties will follow.—J. ELIOT COIT.

Important Pear Discoveries Announced

GROWERS in all pear districts will be interested in conclusions reached by the Agricultural Extension Service in Los Angeles County, summarizing the results of test plot work in the Antelope Valley.

In the case of pear blister mite control, it is evident that fall spraying with lime-sulphur, either dry or liquid, or with "B. T. S.," has given very satisfactory control; although the use of miscible oil in the fall did not show any control whatever.

Spring spraying in every case failed to give satisfactory control. These results confirm those of last year with the exception that at that time the liquid lime-sulphur showed considerable superiority to either the dry lime-sulphur or B. T. S. The discontinuance of spring spraying for the control of pear leaf blister mite and the substitution of fall spraying is apparently justified as a result of these tests.

The results with pear pollination plots are even more striking. In every case Bartlett trees in the vicinity of Winter Nellis or Bosc are showing much heavier crops than those out of the zone of influence of cross-pollination. There is a marked difference in the appearance of the fruit. In many cases the difference in quantity of fruit practically amounts to the difference between a full crop and no crop. The use of pollenizing varieties and the top working of a part of the trees in the Bartlett orchards is certainly warranted from the results of this season's plot work.—R. W. H.

Observations on the Flight Habits of Bees

Have You Ever Wondered How Fast and How Far Bees Can Travel? Here's the Answer

HOW fast can a bee fly? is a frequent question, and you may be surprised to learn that it depends largely on the temperature.

Bees can fly but very slowly at 60 or 64 degrees, while at 57 degrees they are completely paralyzed. With the rise of temperature the activity of the bee rapidly increases until at 85 or 90 degrees, if he is busy in the fields, you can hardly see him. So rapidly does he cross the focus of your sight that he appears only a dark streak six or seven inches long.

Often on a bright spring morning, cool after a light frost, perhaps, you may see the bees coming in from the almond orchards laden with heavy loads of golden pollen and dropping exhausted in the grass, often many feet from the hive entrance, to crawl in after the rising sun warms them up.

You think, "How the bees are working!" while in reality their progress is exceedingly slow, owing to the cold. But a few weeks later, when nectar is abundant and the weather warm, mark the almost invisible flight, sometimes directly into the entrance, while the emerging bee pauses only a fraction of a second at the entrance before taking flight. These are the days that add 15 or even 20 pounds to the hive's weight of honey.

The bee's energy is entirely different from that of the warm-blooded animal—more like that of the electric dry cell. Exercise does not warm him, nor the consumption of food. Resentment at being disturbed or forcible confining to the hive seem to be the only forces that will make him "hot under the collar."

A friend has an apiary near a highway, where flying bees can be followed for a considerable distance. The average speed of laden bees flying homeward late in the day, has been found to be 20 miles per hour, as shown by the auto speedometer.

FLY LONG DISTANCES

"How far can bees fly?" is the next natural question. Ordinarily, when in search of honey, they keep within a two-mile range, but when conditions require, will greatly exceed this. Alexander, a pioneer in extracted honey production, told me he had found his yellow Italians working on willow pollen 4½ miles from home, while Doolittle observed them a still greater distance away.

When there is nothing interfering midway to attract them, they will go a long distance. In an early day in Iowa, before the clovers became naturalized on the prairies, I have personally known bees to store honey in large quantities from basswood, when the nearest basswood tree was six miles away.

An old prospector told me of tracing a line of bees on the desert from a water hole to their home in the rocks fifteen miles distant. I am not asking you to believe this, however.

J. R. BIXBY SR.

Silos Supply Cheap, Succulent Livestock Feed

The How and Why of Silos

SILOS have revolutionized dairy feeding in many States and are becoming increasingly popular on the Pacific Coast, where Farm Bureaus frequently conduct silo campaigns in order to educate members to the value of these useful structures. The accompanying article contains some interesting information about silos and silage.
—The Editor.

By O. H. BARNHILL

WHY are there not more silos in California? They have revolutionized dairy feeding in many other States, notably Wisconsin, where 8000 were built in a single year. High winds and freezing temperatures, which in some places seriously interfere with operating silos, are generally absent in California, while in no State can larger silo crops be grown than here.

"It's this way," explains an official of the Extension Service. "The principal value of the silo lies in its ability to furnish succulent forage during the winter season, when pasturage is not available. Here in California we have green feed the year around, hence do not so keenly feel the need of silage. Furthermore, there is little Indian corn, the main silage crop, grown on the Pacific Coast."

In spite of the foregoing, the authority quoted admitted there is a large and important place for the silo in California and other far western States. While it is true, as the land boosters claim, that there is green grass here the year around, this crop affords little feed during the winter season, especially in the colder districts.

In the warmer regions, such as the Imperial Valley, alfalfa meadows often are greatly injured by continuous pasturing. This splendid legume will stand a lot of abuse, but it needs a few months every year for recuperation in order to produce the greatest amount of feed.

WHEN PASTURES DRY UP

Where irrigation is not practiced, pastures dry up in midsummer, leaving livestock on short rations until fall rains start the grass to growing again. For dairy cows it is especially important to furnish succulent feed during this hot and trying period, in order to maintain a profitable lacteal flow. The silo is well night indispensable for this purpose.

Soiling crops—those which are fed immediately after cutting—may be used instead of silage when pastures dry up, but on account of the present high cost of labor, soiling is a very expensive process. The conservation of farm labor is becoming increasingly important, a fact which favors the silo. If some one will invent a machine which will cut and load green crops at one operation, without hand work, he will do much to popularize the soiling system.

Meanwhile, however, ensiling coarse forage crops is the most economical way to handle them, because labor, waste and storage space are reduced to the minimum, while palatability, digestibility and healthfulness of the product are increased to the nth degree. What is the secret of the process which makes it so successful from the feeding standpoint?

"Silage keeps the bowels open, body tissues sappy, skin pliant and coat glossy," according to Prof. W. A. Henry, the noted authority on feeds and feeding. "It contains certain acids which check the putrefactive process in the intestines. Fermentation of the forage is caused by enzymes in plant cells and bacteria carried on the outside of the material. Sugar is broken down into organic acids, chiefly lactic—the acid in sour milk—and some acetic—the sour principle in vinegar."

While considering the chemical side of the subject it should be explained that legumes contain too much protein and not enough sugar to make it ideal for silage, since there is apt to be more or less putrefaction when such crops are ensiled alone. Therefore, it is best to mix them with other materials.

During the fermentation process, oxygen is changed into carbonic acid gas, which is poisonous and liable to asphyxiate workers who enter a silo which has been partially filled and allowed to stand over night. In order to avoid this danger one of the doors near the top of the material should be left open. This will permit the escape of gas, which is heavier than air. A lighted candle or lamp lowered into the silo will be extinguished if the gas is present in an injurious quantity.

Indian corn is an ideal silage crop, sorghum being a close second. The former is cut when the grain begins to harden and the latter when the kernels are hard. Cereals should be in the milk when cut and legumes should be at the beginning of bloom.

Sunflowers make surprisingly good silage and in semi-arid sections are considered a profitable crop for succulent summer feed. The product is inferior to corn, however, and is not generally recommended. Teosinte has been used for silage in Hawaii. It contains 15 per cent less water than corn and sorghum; the same amount of protein, an equal quantity of nitrogen and twice as much fiber. Fifty-ton yields have been secured in Louisiana.

Beet pulp, beet leaves, pea vines, apple pomace and waste from corn canneries all make good silage, but are inferior to the crops usually used for siloing. The silage process was discovered in Europe by storing sugar beet leaves in pits and covering them with dirt.

Silage is especially desirable for dairy cows and breeding stock. Care should be exercised in feeding it to horses and sheep, as mouldy silage is very injurious to these animals. It is a safe rule never to feed silage which is not in perfect condition to any kind of livestock.

Dairy cows will eat 25 to 45 pounds of silage daily. To this should be added 10 pounds of alfalfa hay—or its equivalent—and six to eight pounds of concentrates. Calves, bulls and heifers should be fed 10 to 20 pounds of silage each day.

In humid regions, such as the Puget Sound country and the Southern States, silos are especially valuable because they can be used to store feed during weather which is too wet to cure hay. A little water is an advantage, rather than a detriment, in storing silage, unless the material is very green and juicy.

It will not pay to build a silo unless there are animals enough to consume a comparatively large amount of forage. The limiting factor in silo usage is the rapidity with which silage spoils when exposed to the air. In order to prevent spoilage, it is necessary to remove each day a layer of silage from the top of the mass. This layer must not be less than 1½ to 2 inches in thickness during cold weather and 2½ to 3 inches in warm weather.

CAPACITY OF SILOS

A two-inch slice of good corn silage from a silo 10 feet in diameter and 25 feet high will weigh 500 pounds; 14 by 40 silo, 1000 pounds; 18 by 50, 1700. Sorghum silage occupies about one-third more space than Indian corn.

There should be stock enough to eat at least 100 tons of silage each season. A silo 14 feet in diameter and 30 feet high will hold this quantity. A 17 by 40 silo will hold twice as much.

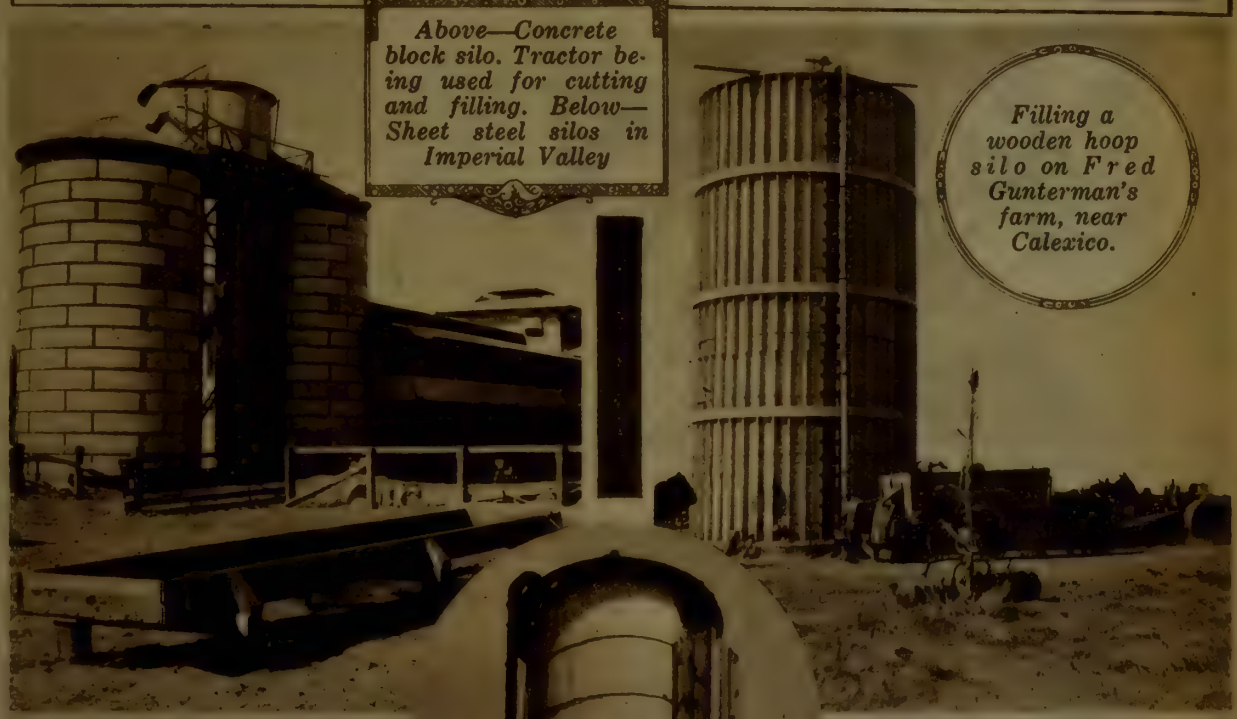
A wide, tall silo is the most economical to build. The width, however, is limited by the amount fed each day. It is unsafe to build very high wooden silos, because of the difficulty of keeping them plumb and from blowing over. Cement silos 108 feet high have been constructed. The cost of high climbing and blowing are height limiting factors.

The three most common types of silos on the Pacific Coast are wooden, cement and hollow tile. Pit silos are popular in Arizona and in some parts of the Imperial Valley. Steel silos are considered rather expensive, although many have been constructed.

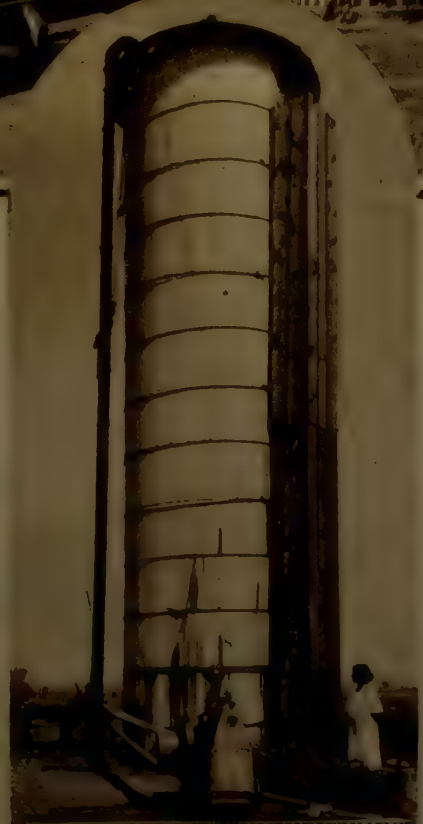
The Portland Cement Association, which has offices in Los Angeles, Seattle and Salt Lake City, publishes a free booklet giving detailed instructions for the building of cement silos. All the agricultural colleges keep a supply of silo bulletins for free distribution, while manufacturers of wooden silos are glad to show customers just how these structures are put together. The agricultural engineering department of the University of California offers free blue prints and plans to prospective silo builders.

Pit silos may be preferred where there is plenty of sand and other building materials must be hauled long distances. The ground must be free from seepage and caving. This type of silo is especially desirable in cold counties, because it eliminates the danger of freezing.

Above—Concrete block silo. Tractor being used for cutting and filling. Below—Sheet steel silos in Imperial Valley



Filling a wooden hoop silo on Fred Gunterman's farm, near Calexico.



This lofty wooden silo is located on the Lone Pine Dairy, near Chico.

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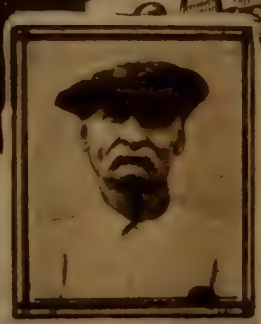

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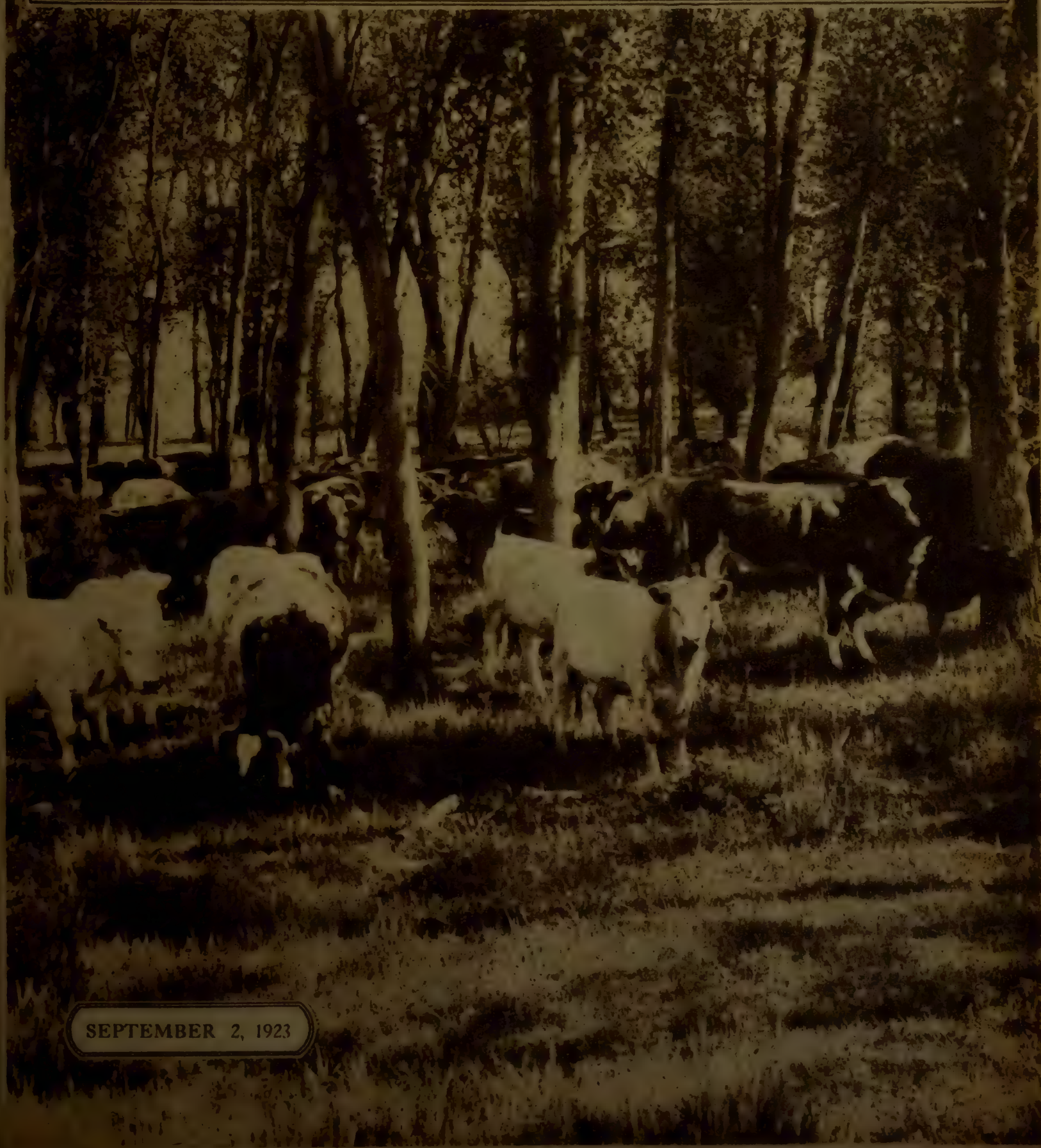
SECTION OF THE SUNDAY EXAMINER



SEPTEMBER 2, 1923

Intensive Production of Diversified Crops

By ALBERT J. MASON

[Here's the story of a ranch of many products—so many, in fact, that one man is kept busy disposing of them. The remarkable thing about it is that each crop is considered a specialty in most districts, and that intensive cultivation is the rule on surrounding farms. If, as economists assert, marketing is "the better half of agriculture," Jim Williams certainly has the right system.—The Editor.

"HE WAS born with a gold spoon in his mouth."

"Yes, but he didn't waste any time chewing on it."

This brief dialogue between two residents of the Goleta (Santa Barbara County) district introduces J. G. Williams, whose father was well able to "stake" him with ample resources, but who has been engaged for the past twenty years in living down most successfully his early "handicap."

True, he entered upon his farming career with both land and capital, but, unlike many rich men's sons, he was a firm believer in hard work. When I sought him out upon one of his big farms, I got an insight into his character from the first man I accosted.

"Jim Williams?" repeated my informant. "Oh, yes. Well, see that fellow over there in the shade leaning against a tree? That's not Jim Williams."

No, indeed, that would not be the place to look for Williams. I found him out in a field, superintending a gang of twelve men. One of these men, I learned afterwards, had been with Williams six years and another, born on the ranch, had lived there twenty years. One Mexican workman had been on the job continuously for eight years.

Williams gets results with men, although he has labor troubles in proportion to the extent of his operations. That his business IS extensive, as well as intensive, is shown by a partial list of products: Apples, walnuts, sheep, pears, cattle, peaches, ducks, apricots, turkeys, asparagus, oranges, poultry, rhubarb, artichokes, lemons, beans, plums, tomatoes, potatoes, eggs, grapes and seeds.

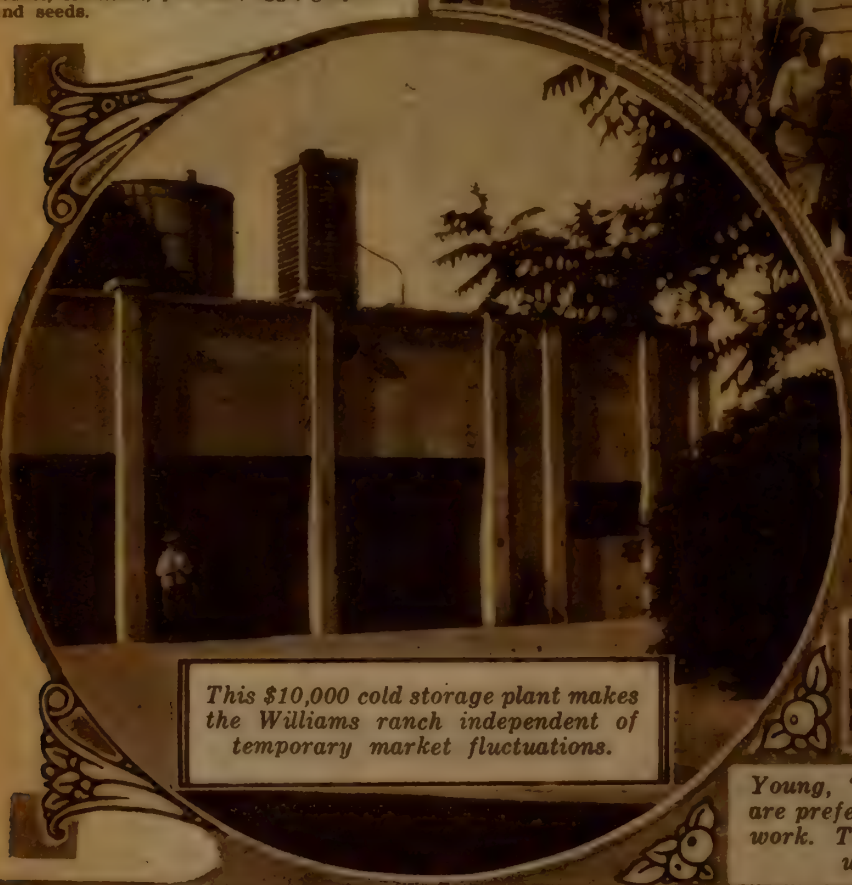
Multiply some of these products by a number of varieties, add a cold storage plant and a cannery, and spread it all over three ranches comprising more than 400 acres of high-priced land, and you will wonder how Jim Williams finds time to be an official of the farm bureau, concern himself with community affairs, and maintain an interest in other business enterprises.

It might seem that there would be much waste and loss of efficiency in an enterprise of this size. It is interesting, therefore, to analyze the methods which have made a success of this wonderfully diversified ranch in a State and county noted for intensive production of specialties.

In the first place, Williams has recognized the importance of the selling problem to the extent of placing in charge of sales James Adamson, a young man who for more than six years has made a special study of local and distant market conditions and who devotes all his time to finding a profitable outlet for the many products of the farms.

Here are represented two important crops: kiddies and artichokes. The Williams ranch excels in quality of both! The dwelling below is of reconstructed adobe, 100 years old.

The house walls are more than six feet thick. Modern finish and equipment inside and out transformed the old home.



This $10,000 cold storage plant makes the Williams ranch independent of temporary market fluctuations.

Young, "handy weight" mules are preferred for ordinary farm work. The plank drag is a much used implement.

Jim Williams doesn't leave important details to others. Here he is shown bossing a rush job of grape planting on the home place.

Here, then, we can place our finger upon one of the essential factors—orderly, intelligent marketing. The size of the enterprise makes it possible to employ by the year a man of Mr. Adamson's ability, and, needless to say, he is never without something to do.

The second important attribute of success is the fact that there are so many eggs in the Williams basket. An important cash crop is available every month in the year. Nothing short of a panic or general catastrophe could stop the source of income. It is quite certain that, of the many different products, one or more will strike a very high market or will make an exceptionally heavy yield each year.

A third factor is the cold storage plant. Williams is practically independent of market fluctuations. The modern storage building, constructed with its up-to-date equipment at a cost of $10,000, has a capacity of some 3000 boxes of apples. Several hundred boxes were in excellent condition in May of this year, having been held since October. It has been estimated this plant will pay for itself in a few years by making it possible to secure a much higher price for the fruit. (*Continued on Page 9*)

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
SEPTEMBER 2, 1923

Deep Tillage Solves Many Agricultural Problems

Sacramento County Farm Adviser Tells of Remarkable Results Following Use of Subsoiling Implements Under Various Conditions

By LEWIS Y. LEONARD

Agricultural Extension Service, University of California

IT is unfortunate that the soil is inanimate. If when in distress it could bawl, cry, whine or sulk in a corner, as our livestock does when suffering, we would pay more attention to it. Instead, the soil suffers in silence and we permit it to do so. This would not be of such consequence if it were not for the fact that our trees and vines depend upon this soil for plant food.

Good soil, instead of being dead material, is very much alive. It contains living organisms of yeasts, molds, bacteria and fungi, which play their part in making plant foods available. These organisms in order to function properly, must have warmth, oxygen and moisture. As we examine the soil in our vineyard or orchard, too often we find it hard and dry, a condition not only detrimental to proper development of the roots of trees, but very devitalizing to soil flora as well.

Just what and why is subsoiling, and what is its value in correcting undesirable soil conditions? Subsoiling, as we best understand it now, is the process of drawing one or more narrow-bladed standards through the soil at a depth of 14 to 25 inches or more. The operation brings no soil from the bottom, but instead just breaks it up on its passage through, the idea being to loosen the soil, break up the plow sole and water pans, and permit air, warmth and moisture to penetrate.

FALL SUBSOILING BEST

The greatest success has been secured from subsoiling while the soil is dry, thus breaking and cracking the strata. Therefore, subsoiling usually is done late in the fall before the rains. From one to three ditches are run, depending on age of trees, type of soil, and money available. These ditches will catch and store a great quantity of the winter rains which will be available for the crop during the following growing season.

The practice of deep tillage simplifies the spring work—another important advantage. The usual method is to plow, thus turning under the cover crop. The next step is to work back the soil with discs, harrows, cultivators, planks, drags or what not, and then (to add to the misery) sometimes a roller. Just what does this mean? The cover crop is turned under more or less as a "rope."

The furrow slice usually dries out and where this is not the case, the leveling operations remove further moisture. Does the cover crop thus handled perform its function to the maximum degree? Many progressive farmers believe not. But if the cover crop is allowed to mature slightly more than usual, it becomes more valuable. Then it may be cut up with a double-disc, followed by deep cultivation. By this is meant cultivating to a depth of ten to fourteen inches—not the ordinary scratching over the surface.

Experience is proving that as a result of this system, the moisture is retained, the cost of plowing saved, the cost of working the land back to level is saved, the cover crop is well chopped and incorporated with the soil, and air and moisture are permitted to enter, thus deepening the area in which the soil flora develop.

INCREASES CITRUS CROP

Often we say, "Theory is good, but how does it work out in practice?" Let us consider, for instance, the Glen S. Andrus citrus ranch at Fair Oaks. This was subsoiled in August at the beginning of eighteen consecutive days with temperatures of over 100 degrees. Irrigation was supplied in subsoil ditches and within a week a great improvement was noticed in the orchard. An estimated crop of five tons proved to be nine tons. The fruit tested 8.5:1 sugar content and better, while groves adjacent were testing 6.0:1 and 6.3:1 sugar content. The following year subsoiling was practiced and without the addition of fertilizer, the crop increased to 13 tons of fruit with the same sugar content.

C. L. Bates of the Louisa Vineyard, Florin District, subsoiled his vineyard on November 8, 1921. The vines were badly attacked by Phylloxera; in fact, he had pulled out a large portion of them. A fair crop was harvested from these vines the first year. Subsoiling was practiced the following year with the result that enough moisture was conserved to bring the crop through without irrigation and at present the vines show two bunches of fruit to the cane, instead of one as before.

VINEYARD IS REJUVINATED

A most interesting example is in the Cosumnes District. About twenty years ago the Del Ray vineyard was planted. Later, C. F. Shephard bought a portion of the tract. The two fields are adjacent, and soil and general cultivation practices were the same, except that Mr. Shephard subsoiled last fall. On June 5 this year, the two fields were examined. The new canes on the parent vineyard not subsoiled, averaged less than four feet of new growth, while the new canes on Mr. Shephard's vines, subsoiled, were six to seven feet in length.

Case after case might be mentioned. The experimental stage has passed. Definite practices are established with beneficial results. These may be summed up as follows:

1. Subsoiling permits the soil to absorb more winter rains.
2. Subsoiling breaks the plow pan and irrigation pan.
3. Subsoiling allows air and moisture to enter the soil, thus deepening the plant food area.
4. Disking in the cover crop cuts it finer.
5. Disking mixes the cover crop with the soil to better advantage.
6. Deep cultivation keeps the soil level.
7. Deep cultivation deepens friable soil.

The use of the subsoiler, double disk and deep cultivator not only systematizes the operations, decreases the cost and improves both soil and crop, but also reduces the number of implements required, and makes for better trees, vines and bank accounts.

This citrus grower makes two subsoil furrows between the rows, which are 24 feet apart. A marked increase in fruit yield has resulted. (See also rotogravure illustrations, page 11)

New Crops Aid Diversification in San Joaquin Valley

Truck Farming on Grand Scale Affords Interesting Possibilities for Profit

By "TULARE FARMER"

DECLINING markets for many fruits emphasize at this time the value of diversification. Consequently there is much encouragement in the results secured in the Mendota district, about 35 miles due west of Fresno.

Here three crops, especially, promise attractive returns—potatoes, onions and asparagus. Several others give equal encouragement as to yield, but are not so certain as to financial success.

It is possible similar success can be attained in truck farming in other parts of the valley—say, from Madera south—although such development is more likely to take place on the west side, from Mendota far into Kings County.

Soil and moisture conditions on the west side differ from those on the east side of the valley. For one thing, the rainfall is far more abundant on the east side, making possible the production of grain without irrigation, which is almost impossible, at least in the southern half of the west side.

Yet the soil is fertile on the west side, as evidenced by the wonderful growth of wild plants during favorable years, despite decades of sheep grazing. This soil is a fine silt, laid down by streams from the Coast Range, and it is very rich in minerals.

This silty nature of the soil seems to make it cooler during hot weather. Although the climate is practically the same as that of the highly developed east side, potatoes may be left in the ground without injury; onions will not sunburn, and asparagus puts out smooth new shoots of fine quality such as cannot be grown in the decomposed granite soil of the Sierra side.

The problem of water development is a costly one. Deep wells throw a big stream when completed, but the cost is said to be $25 an acre, requiring a long pocketbook, and indicating that only big ranches will be developed until such time as some suitable plan of subdivision and irrigation can be devised.

On the ranch of James E. Crew, for example, where truck farming is being developed on a big scale, the well and pumping plant cost $12,000 and buildings and equipment $10,000 more before a start at farming could be made.

Crew specialized on potatoes and onions for years in Southern California and knows the Los Angeles commission men well. When they knew he was selling out and planning to come North, they spoke particularly about the wonderful asparagus they were getting from Mendota, and urged him to investigate this crop carefully and to plant a lot if it looked good. As a result, he has a field in its second summer that is hard to beat, and another big field is getting a good start.

Mendota asparagus excels in quality and early maturity. Imperial Valley growers have the earliest asparagus, but early maturity is its principal feature. The first Delta asparagus brings outrageously high prices because of its good quality and lack of competition.

Mendota district asparagus is even plumper than the Delta product (if there is any difference in size), smooth and fine, and three weeks or a month earlier.

Like Delta "grass," it is cut green and not white. What is needed is enough planting to permit carlot shipments, and the acreage now in the ground, in two years will be sufficient to allow this.

One rancher in the vicinity has been growing asparagus for about six years and keeping pretty quiet about it. This year he will plant 160 acres additional, which in itself is the best proof of its profitableness.

Since potatoes were Crew's specialty when he was in the South, and since his new location seemed to promise success with the tubers, he arranged to grow them on a large scale.

He found it feasible to produce both a spring and a fall crop of spuds. The spring potatoes do not blacken because of heated soil, as in most other sections. Conditions in this respect are more nearly like the Delta and a few other favored districts. Furthermore, it is much easier to get a fall crop than in other parts of the valley.

This year's spring crop was from seed grown on the place the previous fall, the plants having been killed by frost before they were fully mature. Indicating the value of this kind of seed, the yield was 100 sacks per acre.

Some of this seed lay in the bins well into August, when the tubers were planted, and they remained almost without exception smooth and firm. The bulk of the crop brought an excellent price on the market.

This year Crew is planting some of his spring seed for the fall crop, and also has held over in cold storage some of last fall's tubers for emergency use and to give them a trial.

Although this land is lacking in humus, heavy crops of burr clover may be grown in winter.

Growers in this district feel they are in a better position than the Idaho farmer, who, although he enjoys an advantage on the market, can produce only one crop a year.

Just as the nature of the soil keeps potatoes from cooking in the ground, so it seems to keep onions from sunburn. Fresno farmers told Crew there was "nothing doing" except with early onions, to be harvested "right away quick." But he has a big field, which was harvested with potato diggers the second week in August, all ready for sacking as soon as they were topped—and not a particle of sunburn in the whole field! The yield is tremendous, onions crowding one another in the rows and some weighing a pound and one-half each.

The soil is so clean that the expense of production is small. They only required one weeding, which was combined with the thinning. Water was taken off a month before harvesting and they just stood in place and cured. A few tops were still somewhat green.

The leading varieties are grown. One interesting feature is that the Red Weathersfield was being harvested in fine condition during August, when, according to Mr. Crew, there were no red onions, to speak of, in the market and when they commanded 50 cents a bag premium over other varieties. Part of the field was planted in November, the rest in February. In August there was little to choose between them.

In considering other possibilities of this district, it will be remembered that truck crops are a side line as yet. The big planting so far has been to grapes, but the important thing is to find new and profitable lines in order not to carry too many eggs in one basket.

It has taken considerable experimenting to put the above crops on a profitable footing, as they now are, and the list of possibilities is far from being completed.

On a near by ranch owned by a brother, Carl Crew, a very promising crop of baby limas is coming along in fine style, although not until harvest time can it be said how these beans will pay here. They are a big money maker where they do succeed.

The head of the biggest lettuce firm on the Coast states the soil is ideal for lettuce, and experience elsewhere in the valley shows that lettuce here will follow that of Imperial closely, and that the market should be good.

Crew believes cabbages will be a winner and is going to try some this winter.

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ORCHARD and FARM
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Pithy Paragraphs

SUBSOIL PLOWING SEVENTY YEARS AGO.

That "there's nothing new under the sun" in agriculture, is emphasized by the following extract from the writings of Henry Ward Beecher, published in 1849: One of the great developments of the age is the adoption in husbandry of the subsoil plow, or as it is called in England, Deanstonizing system, from Mr. Smith of Deanstone, who first brought the implement into general notice.

"They are designed to follow in the furrow of a common plow and pulverize without bringing up the soil for eight or ten inches deeper. In ordinary soils two yoke of oxen will work it with ease, plowing from an acre to an acre and a quarter a day."

Contrast this with the modern "subber" drawn by a powerful tractor, covering 10 or 15 acres per day, and penetrating to a depth of 18 inches or more! In Beecher's time the idea of using the device separately without a plow had not suggested itself.

BEECHER SAW SUBBING POSSIBILITIES.

Continuing his discussion of subsoil plowing, the famous preacher-writer said: "The use of this plow will renovate old bottom lands, the surface of which has been exhausted by shallow plowing and continuous cropping. It brings up from below fresh material which the atmosphere speedily prepares for crops.

"Old fields, a long time in grass, are very much benefited.

"Constant plowing at about the same depth will often form a hard under-floor by the action of the plow, through which neither roots nor rain can penetrate; subsoiling will relieve a field thus conditioned."

Certain exponents of deep tillage have suggested abandoning the term "subsoil plow," in order to emphasize the fact that modern subsoiling is not plowing.

MODERN EXPERIMENTS CONFIRM OLD CONCLUSIONS.

The present-day exponents of subsoiling have given no clearer explanation of its effects than did Henry Ward Beecher when he penned the following words:

"In very deep molds or loams it (subsoiling) brings up a supply of soil which has not been exhausted by the roots. In soils whose fertility is dependent upon the constant decomposition of mineral substances, subsoil plowing is advantageous by bringing up the disintegrated particles of rock and exposing them to a more rapid change by contact with atmospheric agents.

"Subsoiling guards both against too much and too little moisture in the soil. If there is more water than the soil can absorb, it sinks through the pulverized undersoil. If summer drouths exhaust the moisture of the surface, they cannot reach the subsoil, which affords abundant pasture to the roots."

Henry Ward Beecher, it will be seen, preached the gospel of SOIL as well as SOUL conservation. In his later years he was Editor of "Western Farmer and Gardener," published at Indianapolis, and was regarded as one of the most progressive agricultural writers of his day.

WALK THE CROP OFF THE FARM

"We advocate a few animals on the ranch to 'walk off the crop,'" states J. A. McNaughton, manager of the Los Angeles Union Stock Yards, commenting upon the ORCHARD and FARM story of what P. A. Langdon is doing in the Perris Valley with Hampshire hogs and milking Shorthorn cattle. "Butler's article is just the kind that is very helpful in getting a few animals on every ranch. Practical success stories of this kind are much more convincing than theoretical statements.

"It is a common thing to see a farmer bring to town a load of alfalfa hay or bean straw and take home a load of fertilizer. In figuring the profit on hogs, many ranchers fail to take into account the value of such animals in salvaging waste material, fertilizing the soil and lessening crop haulage. That is what Langdon is accomplishing."

RADIO TO REACH FARMS OF FUTURE

A far-seeing instructor in the University of California envisions the part radio may play in future farming. "At the present time we think of radio mostly as a means of transmitting news and entertainment," the professor points out. "Its possibilities in the way of disseminating agricultural information and aiding co-operative organization and marketing are almost unlimited.

"Not only is speed imperative, now that the world is becoming a vast whispering gallery, but the personal touch is essential for the best results, both in business and education. On the farms of the future it will be possible for college instructors and Extension workers to talk directly to students and farmers, bringing the specialist into close personal contact with the State University and Experiment Stations. Correspondence courses can be directed and finished in record time by means of radio."

"What's New?"—Keeping Abreast of Agricultural Progress

Homesteading Vast New Areas

DURING the past two years 23,000,000 acres of Government land has been acquired by homesteaders. The aggregate area equals that of the States of Maryland, Massachusetts, New Hampshire and Connecticut.

Big Bantam Show Coming

THE largest Bantam show ever held in being arranged for in connection with the Riverside Fair, October 9-13. One thousand exhibition birds are being collected by the American Bantam Association, which will hold its annual meeting at Riverside during the fair.

A New Strawberry Product

PARRY BROTHERS, near Cloverdale, Sonoma County, are manufacturing a home product, known as "Strawberry Sunshine." The material is made of ripe, luscious strawberries, cured in the sun, then made into a delicious preserve, the berries retaining their original shape and flavor. It tastes like the fresh berries. A large number of people are employed picking the berries on the Perry ranch.—K. R.

Baskets Are Displacing Boxes

GEORGIA peach baskets are displacing boxes in Placer County. Fruit is placed loose in the new container, thus eliminating the packing charge. The baskets hold only twice as much as the boxes, yet sold for $2 each on the Denver market, while the boxed fruit brought only 75 cents. Plums sold for $2.50 per basket and $1.25 to $1.50 per box, the latter holding two-thirds as much as the former.

The Cow or the Cocoanut?

OREGON dairymen have formed a strong organization to make a fight against the proposed repeal of the anti-margarine bill. "Vitamines are totally lacking in butter substitutes," declares J. D. Mickle, secretary of the Oregon Dairy Council. "As the facts are becoming better known, people are turning away from imitation butter. When it comes to a showdown we are satisfied they will vote for the cow and not the cocoanut."

Controlling Black Scale

AUGUST fumigation and October spraying were recommended for controlling black scale, at the special meeting recently held at Covina for the purpose of considering measures to prevent the spread of this pest. The attendance of 350 growers indicates the interest in this important work. The recommended spray is 2 per cent lime-sulphur, to which is added a small amount of miscible oil, the exact quantity depending upon conditions in different districts.

Horns Cause Meat Losses

A LOS ANGELES packer recently had more than two tons of bruised meat condemned. Four-fifths of the damage was caused by horned cattle hooking each other. The remainder was the result of poor handling, overcrowding of cars, jabs from prod poles and beating with clubs.

"Ninety-five per cent of beef bruises could be avoided," declares a prominent cattle dealer, "by dehorning or tipping horns, more careful handling of cattle, discontinuance of overloading freight cars, throwing away sharp-pointed prod poles and more humane treatment generally.

"On a single steer, the loss from bruises often amounts to $10 or $12, as the entire carcass has to be sold at a discount."

New Spray Regulations

HORTICULTURAL commissioners of the four citrus counties of Southern California—Los Angeles, Orange, Riverside and San Bernardino—have issued regulations governing custom spraying. These rules forbid spraying during windy or rainy weather or when the trees are wet. A detailed report of the work performed must be supplied the county horticultural commissioner, who is authorized to revoke the license of any one found guilty of careless spraying.

A written contract between grower and sprayer is recommended, also the straining of all materials into the spray tank, the pumping back into the tank of the contents of the hose after each stop and the thorough agitation of the spray material before each operation of the outfit.

Bud Selection in Apples

A TEN-YEAR test has been made at Wisley, England of the yield of apple trees propagated from high and low-yielding individuals.

Four varieties were used, and the trees were grown under identical conditions. Records of the number of fruits produced by the trees from high and low-yielding parents showed wide variation, but the averages for all groups were approximately equal.

The conclusion was that differences in productivity are not transmitted through bud selection and are due not to heredity, but to differences in soil and root stocks.

This is in line with similar findings in this country. Students of horticulture are coming to feel that bud selection in tree fruits is of value only so far as it prevents the accidental propagation of bad sports. Inasmuch as bad sports are more common in citrus, it follows that bud selection is of more value with citrus fruits than with apples.—J. ELIOT COIT.

Purebred Cows Outmilk Grades

THE purebred cows of the Los Angeles Farm Bureau Cow Testing Association produced an average of 389 pounds of butterfat during the past twelve months, compared to 339 for the grades.

"This fifty pounds per year in favor of the purebreds might easily make the difference between profit and loss," points out a prominent Farm Bureau official.

"Another significant fact brought out by the last report of the testing association is that the cows of the old members, who have had time to weed out poor animals, yielded an average of twenty-eight pounds of fat more than the new members' cows."

Good Dairy Bulls Wanted

THERE will be a strong demand for good dairy bulls next fall, according to the California Dairy Council, which bases this prediction upon the prospect of several effective better bull campaigns. Sonoma and Marin counties are planning such a campaign, with 100 bulls as their goal. A year ago a similar campaign resulted in the sale of 116 animals.

San Luis Obispo County is another district that will make a concerted effort to introduce better sires. Early in the summer it was reported that no good bulls of service age were for sale in that county. There is said to be a bull shortage in other districts.

Buyers demand well grown bulls, of good type and in good physical condition, from dams having cow-testing association records of 400 pounds of butterfat.

Avocados Killed by Fungus

OAK ROOT FUNGUS causes the death of many fruit trees annually in California. The losses are largely confined to the foothill sections or where at one time oak trees have grown. The disease is particularly bad on citrus trees, and although many experiments have been carried out, as yet no very satisfactory remedy has been found.

It has been thought that avocados were resistant or immune and in many orchards along the foothills avocados have been used for replanting in spaces where citrus trees have been killed.

Recently the writer has lost several fine avocado trees from oak root fungus near Pasadena, and as this, so far as known, is the first authentic case on record, it may be well for citrus growers to take notice and not continue to plant avocado trees in oak fungus spaces with the feeling that the avocado is immune.

It may be that avocados are somewhat more resistant than citrus or walnuts, and it is to be hoped that they are, but an authentic case is here reported of avocado trees killed by typical oak root fungus. —J. ELIOT COIT.

"THEY SAY"

W. S. KILLINGSWORTH

"California's Best Known Fruit Man"

W. S. KILLINGSWORTH

TWENTY acres of fruit operated under proper conditions in California should make a family independent. It is interesting to note in this connection that there are more successes among growers owning a ranch of this size and under than there are among those operating larger acreages. In fact, there are numberless cases where a ranch of ten acres has brought a very satisfactory income. It costs less to care for the smaller ranch, and it also takes less capital.

The farmer who buys a good producing fruit orchard or vineyard may expect to pay $1000 per acre. If he buys unimproved land he should count on an average cost of $250 per acre. For example, acreage may be bought in this way: Pay down one-tenth of the total cost and then pay off the balance in nine installments, beginning the seventh year. While bringing the place into bearing, the income at first is realized from intercrops, such as berries and vegetables; also poultry. Later the revenue comes from the fruit.

Capital or long-time credit, therefore, is absolutely necessary to the man who starts with the planting of an orchard or vineyard. The State Land Settlement Board, under leadership of Dr. Elwood Mead, extends extremely liberal credit to its settlers, together with low interest and 36½-year amortized payments; yet it has insisted that its more recent settlers, buying 20 acres, must start with at least $2500 actual capital. This should be considered as the minimum anywhere in the State. Of course, the amount required to finance an improved ranch would be higher. To make the first payment on a bearing fruit ranch of ten acres and pay all expenses until a crop could be marketed requires at least $5000 cash. It might be done on less, but the buyer would face greater risk.

[From "Decidness Fruit Growing in California," prepared for "Californiana, Inc.," by Mr. Killingsworth, contributing editor of ORCHARD and FARM. Thousands of copies of this bulletin are being distributed by the co-operative organization among Eastern inquirers who desire to come to this State.]

He Prefers Rabbits to Chickens

Small Farmer Tries Pigs, Poultry and Cows, but Likes Rabbit Raising Best of All

By O. H. BARNHILL

IT is a well-known fact that the average person is not adapted to the fine stock business and therefore is not apt to succeed, even with rabbits, when profits depend upon the sale of animals for breeding purposes. Suppose, then, a man with limited capital started raising rabbits for meat alone. How would he come out?

An answer to this question is found in the experience of W. S. Lewis, who has a ten-acre farm near Torrance (Los Angeles County). Mr. Lewis is 65 years old and unable to do much hard work, being crippled in both arms. He first tried dairying, then pork production and poultrying, winding up with rabbits, which he likes better than either cows, pigs or chickens. He still keeps 275 hens, however.

"I like rabbits because they stay where you put them," explained Lewis; "also because they are not subject to disease and insect injury. They are easy to care for and there is always a good, cash market for their meat.

"The price of young rabbits varies from 14 to 20 cents a pound, being the highest just before Christmas and the lowest when spring chickens are on the market. It is easy to see why the sale of spring frys interferes with the market for young rabbits, because the meat of the two animals is so much alike."

PRACTICES AUTUMN CULLING

Lewis began growing rabbits two years ago, starting with 13 does. Now he has over a hundred. Many of the old breeders are culled out during the fall months, reducing the number to about 50 by the first of the year.

Lacking capital, "Not how good, but how cheap," was Lewis' motto in building hutches, which cost only a dollar each. Palm leaves are used for roofing and keep out the sun's heat better than boards. The south side of the barn also is thatched with the leaves, for cooling purposes. Grain troughs are made of wood, and coffee cans are used in lieu of stone water jars.

Alfalfa hay, which costs $19 loose or $22.50 baled, is kept in mangers before the rabbits at all times, and barley fed once a day. A ton of hay and half as much grain is consumed each month. Some beets, carrots and curly-leafed kale are fed.

"Some rabbit raisers feed green stuff and some do not," explained Lewis. "Dealers prefer dry-fed stock, however. Salt is considered very essential by some growers, but my rabbits won't touch salt.

PREFERS FLEMISH GIANTS

"We like the Flemish Giants best, because they gain in weight so rapidly. The young weigh three to four pounds at 6 to 8 weeks of age. Young does are bred at the age of six weeks and produce four litters a year. They are not much good after reaching the second year."

The first year nearly 1000 rabbits were grown and sold, netting $324. Twenty-five were eaten, for Lewis believes in practicing what he preaches regarding the use of rabbits for food.

"The worst rabbit enemy we have found is dogs," declared Lewis. "We were forced to build a high, tight fence in order to keep out a half-dozen canines belonging to a neighbor."

Feeding and watering the rabbits takes about three hours a day. Cleaning out the hutches is an all-day job and is performed once a week. The droppings are sold to a local mill, which dries and pulverizes the product, using it in the manufacture of fertilizer.

The Lewis ranch lies low, three acres being adobe soil. Water for irrigation is obtained from a neighbor's pumping plant. Eight years ago the land was bought for $200 an acre. It is now considered by the owner to be worth not over $500 an acre, but he has been offered four times that price.

Rabbit Market Strong

MORE rabbits than ever before are being raised in Southern California, yet there seems little likelihood of the market being oversupplied. The other day I visited the killing sheds of one of the largest buyers in the city and was amazed at the magnitude of the industry. The manager said he found it absolutely impossible to supply the demand for rabbit meat, which many people consider superior to young chicken.

The rapidity and efficiency of expert rabbit dressing is astounding. A single workman has cleaned as many as 110 animals in one hour.

Thousands of hides were being pressed into bales for eastern shipment. To rabbit raisers I would say, save your hides—they are worth good money. Country women and others who wish to earn "pin money" should turn their attention to tanning rabbit hides and making garments and robes of them. I have found this a very profitable way to use spare time. In a future paper, directions for making rabbit fur garments will be given.—ELLEN S. GREEN.

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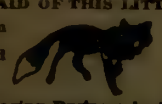

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Further information on deep tillage will be sent in the form of a booklet, "Subbing the Soil;" also a copy of the 1923 Best Tractor Catalog is available for the asking.

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Contest Prize Winners Named

Tractor Vs. Horse for Orchard Cultivation, Topic of Interesting Letters Submitted by Subscribers

RECENTLY ORCHARD and FARM announced a prize letter contest for subscribers on the subject: "Horse vs. Tractor in Orchard Cultivation." Many interesting contributions were received and the judges (John Capwell, Fred S. Gerard and Robert W. Hodgson) experienced considerable difficulty in choosing the winners.

The first prize of $10 was awarded John C. Keefe of Orange, Cal. Mr. Keefe's letter follows:

"A tractor will do the work of four horses; will do it in much less time and leave the ground in better condition for further cultivation.

TRACTOR WINS BY EFFICIENCY

As an example, take the time and cost of a spring cultivation of a ten-acre walnut grove:

"For several years the owner had the work done by horses. There was a very heavy cover crop of melilotus, barley and weeds, especially mustard. With horses the land had to be plowed to turn under the cover crop, then harrowed, then disked. It required seven days to cultivate with horses. But it required only fourteen hours with a tractor, as the tractor could disc the cover crop and get it all under cover with three discings.

"It cost $50 to get the grove in good condition with the horses, and it cost only $2 an hour, or $28, when done with the tractor.

"The ten acres are prepared for irrigation in four hours at a cost of $8 with the tractor and at a cost of $12 when done with horses.

"In a walnut or orange grove one can not work the four horses abreast on account of the trees, but they have to be worked in line. Watching and driving four horses in line and seeing the trees are not injured by the machinery is not an easy task, while with the tractor you ride and can give the work more attention with less fatigue.

"The cost of a tractor for fuel is about 25 cents an hour. The cost of feeding two horses with hay at $25 a ton, and [illegible] at 2½ cents a pound, is about $1 a day for every day in the year. The tractor uses fuel only when it is in use.

"Of course, from the horses is obtained about $50 worth of manure for fertilizer, but it requires more than $50 worth of work to feed and water them and keep them in workable condition. The tractor requires shelter only when not working.

"A tractor will not last as long as a team of horses, for a tractor seldom lasts ten years without considerable repair, while horses will last twenty years, barring accident or disease, but the work is done with the tractor in one-third of the time and with much less labor and fatigue, and with better results.

"That is the reason why the tractor will replace the horse on the farm."

HERE'S SECOND WINNER

In awarding second prize to a horse advocate, A. D. Londsen, the judges pointed out that although Mr. Londsen presented good arguments, they were rather of a general nature and did not make as logical a case as the more definite facts and figures furnished by Mr. Keefe.

Here is the Londsen letter, which wins second prize of $5.

"The writer begs to state that he is an experienced worker on farm and orchard having worked in that useful occupation most of the time in different localities for half a century, and is still helping to produce necessaries of life for man and beast. In this contest for a prize I claim that the mule and horse play important parts on farms and orchards, and that tractors and disc harrows are rather detrimental than beneficial on either farm or orchard.

A FRIEND OF THE HORSE

"Many years ago I worked 49½ acres of part orchard and vineyard with one span of horses weighing 1100 and 1200 pounds each, compactly constituted and just the size for orchard and vineyard work.

"The proper way and the only way (according to my experience) to plow a vineyard or orchard is to start in the middle of the row, back-furrow as near as possible with two horses or mules, and then finish with a light plow with one animal.

Now let a man take a good hoe and chop away the sod from both sides of the tree.

"Now we will plow again. Take a horse and the same light plow as before and plow two furrows, throwing the soil against the tree, as that will make the ground level when finished with a two-animal plow.

"But for the sake of economy of time, a two-horse cultivator will do instead of the plow in finishing the cross-plowing, for the soil will have been loosened by the first plowing and the cultivator will be drawn more easily than the plow.

"Now, so far, take my word for it, the work has been done quickly, thoroughly and at low cost, but is not quite yet completed. After this take an old-fashioned harrow—with the teeth not too far apart—and harrow several times during the summer, so that the moisture will be brought to the surface and the fruit will have its natural flavor.

"Apples, peaches, prunes, grapes, olives, can not be rated as first-class products when forced by irrigation and cultivated with tractors and disc harrows. Now, we will say, we irrigate 50 acres of land utilized for fruit growing. Soon the land is plowed with a tractor. As soon as the tractor goes upon the land, packing commences and in a few years it becomes necessary for the farmer to resort to subsoiling, as he observes that water by rain or irrigation does not readily penetrate; then arrives the red spider, followed by curly leaf, and the banker shuts down the farmer's credit.

"But now we take a 50-acre orchard, worked with two horses or mules, as already mentioned. No lapidification takes place. Two horses or mules and two cows will consume 20 tons of hay in 12 months, worth $350, but that $350 is not a total loss. The manure is worth something.

"It is different with a tractor on the farm, always a bother and expense, and it creates no fertilizers. Wagons and tractors that move along the roads, both create dust in which nothing grows, because the tracks become packed and water penetrates but slowly.

"The horse and mule have helped man to attain glories on the battlefield; they have helped to build up nations in many different ways; they have also gone down to destruction side by side with mankind, but they will again triumph after the farmer, who has lost his best senses with the rattling of the tractor, recovers his good judgment.

"Tractors are not of much help to any country as far as I understand different conditions. Many years ago a farmer in California cultivated 40,000 acres in wheat; he had all his work done with mules and horses. After his death his sons resorted to tractors with very poor results and I know many more."

TWO TIE FOR THIRD

For third prize of $2.50, two contestants tied: One $2.50 check, therefore, goes to Audrey Etzweiler, Taft, Cal., and another to Fred McAvoy of Sacramento.

Our reader in Taft, while not versed on costs of operation, gives some very interesting observations from the viewpoint of a shrewd young observer. Here's the little lady's letter:

"Well, you see my uncle's got a homestead, and while I don't know how much it takes to feed horses, or how much to run tractors, anyway, my uncle used to come in so tired he was cross before he got the tractor. Then the horses broke two branches off uncle's best trees.

YOUNGSTER REPORTS UNCLE'S EXPERIENCE

"Then one of the horses got sick. Uncle wanted a tractor then, but still my aunt didn't want one. She said, 'Too much money for one piece of furniture.' So he got a doctor and the horse got well.

"The horses used to jump the fence all the time and get in the alfalfa. Every time they did it uncle would put up more talk for a tractor.

"Then one night one of the horses got in the alfalfa and one of them died.

"He said he was through with horses, but he didn't say it to my aunt. He went to town and bought a tractor and she didn't know it till they delivered it.

"She was angry, but it didn't do any good. Uncle told her she could have any money he saved (after he paid for the running of the tractor) for a year compared with what the horses would cost.

"Now Aunt Min has a house full of new furniture and she is glad he got it now.

"P. S.—He also hauls wood with his tractor."

Mr. McAvoy, who has made a study of power farming conditions in several States, contributes the following brief, but interesting letter:

"There are distinctly two sides to this tractor question, and undoubtedly there are conditions where the fruit grower is better off in sticking to animal power for cultivation.

POINTS OUT IMPORTANCE OF CUSTOM WORK

"But I think if most of the horse advocates would analyze their conditions, they would find they are condemning the tractor in a general way when it is their own business judgment which is at fault.

"I have investigated a number of instances where former tractor owners or users had returned to horse power, with the declaration that they would never again buy 'iron steeds.' In many cases I discovered the most rabid 'anti-power farmers' originally had purchased machines too large or not large enough for their conditions; or they had made an unwise selection of dealers and failed to get good service.

"A number of these men would have been better off in the first place to discard their horses and hire their tractor work done by neighbors. In other words, they had not sufficient acreage or not sufficient hours of work per year to warrant the ownership of a machine. Yet they would have reduced their expenses by discarding animals and paying the current rate for custom work.

"In my opinion there are few California orchards that cannot be cultivated economically with a tractor in the hands of either the owner or a reliable custom operator."

GAME COCKS AS POLICEMEN

Breeders of game cocks report increased demand for their fowls as a result of the growing practice of poultrymen to use them as "policemen" for the purpose of controlling fighting among the cockerels.

Bob Jones' Corner

Little Stories of Farming

By

ROBERT E. JONES
Contributing Editor

AN INDIAN DAIRYWOMAN

Near Requa, which is north of Orick and in Del Norte County, we met an Indian woman, a direct descendant of the Klamath tribes, who has made a notable success in dairying. She has twenty cows and is furnishing a high quality of milk to the plant. She lives quite a distance up the Klamath River from Requa and milk from her dairy goes down to the cheese plant by boat.

THE PRINCE INTERFERES

There are many Californians who will regret to hear that the visit of the Prince of Wales to Canada will prevent W. L. Carlyle from judging dairy cattle at the State Fair. Carlyle is a most human type of college professor and has hundreds of friends in California. But he is working for the Prince of Wales and it wouldn't do to be away from the farm when the boss is around, particularly when he comes only once in many years.

EVERLASTING LAWNS

I must tell you about that little valley of Orick, an enchanted country with white clover and grass pastures that must resemble those of Old England. Before the little inn is a lawn of natural grass which is never irrigated. Yet in the middle of summer it has a deep, lustrous green. Orick's farm lands comprise about 600 acres of meadows, with adjacent hill pasture, and the eighteen dairymen in the district have about 450 cows. Their milk goes to a Golden State cheese plant at Orick, where a premium is paid for "low count" milk. It is here, because of the fine quality of milk furnished by the dairymen, that some of the best type of cheese in California is produced.

ROADSIDE FARM MARKETS

On the road from Fortuna to Red Bluff, near Carlotta, Humboldt County, Fred Simons has a little farm of less than ten acres, where he grows vegetables and berries mainly for the trade that passes by in automobiles.

Simons told me the other day that he got nearly $1000 for the potatoes he raised on one acre of land. This is a big return per acre, and it wasn't due to the high price he charged the passersby, for we bought potatoes very reasonably. The automobile has carried the market to many small roadside farmers. A little farm with frontage on a main highway where such farm products as campers and travelers want can be raised certainly should be a big profit maker nowadays. But there also should be some means of taming the roadside profiteer, such as the Humboldt woman I heard about who charged the tourists 25 cents for a bottle of milk "just because she could get it."

A TREE STORY

William Boyce of Prairie Creek, near Orick, Humboldt County, owns a farm that would bring a million if it were near a large city. His place is a meadow of 100 acres in the midst of a redwood forest. He has about twenty cows, and sends his butterfat to market by stage.

But the most interesting thing I learned when we visited his place was the fact that the two five-room cottages, the barn and part of the fence on the place all were built of lumber taken from a 100-foot section of a tree on the place.

"Yes, and the telephone poles and part of a building down at Orick are from that tree," remarked Mrs. Boyce. We went up to the edge of the timber to see the fallen giant, about ten feet through. There is enough left to build two or three more cottages. And there are many more magnificent specimens of the magnificent Sequoia Sempervirens on the play. May they live forever!

APPRENTICE FARMERS

I have an interesting though rather disappointing letter from Dr. Elwood Mead. It is disappointing because he says that he will not be able to get back to California before the first of the year. Dr. Mead is still in Australia, helping to revise water laws and caring for settlers. He could find enough to do there to keep him for a year, but we need him quite as badly in California.

This paragraph, which I'm sure I may pass along, will interest you: "Have seen one interesting expedient for filling up the open country. Boys of 14 to 20 are being sent out from England to become apprentices on farms. Their way is paid. When they get here they go to a receiving farm for about six weeks, then to a farm, where they are paid $5 a week at the start, and more as they are worth it. I've talked to about seventy-five. They are well treated and enjoy the change. No doubt some are abused and many must be homesick, but I've not met them."

In the British countries it seems that boys regard farming as a definite vocation, something to be learned. Our attitude here is not as sensible. We seem to feel that when a man cannot do anything else he can farm. As a matter of fact, good farming requires more brains and ability than are required to run a department store or almost any other business.

COWS AND NUTRITION

Do you know that a cow can suffer from malnutrition? Of course it is true; it simply means that the cow may be lacking in a well-balanced ration and her efficiency is thereby reduced, just as with a human suffering from malnutrition.

Professor William Regan of the University of California discovered when we were on a trip to Smith River in Del Norte County recently that the cows there did not get enough protein. It had cut down the milk supply. The pastures were of grass, and clover had become depleted. His trained eye detected the trouble immediately and he told the farmers there about it. If what he told them is put to good use, it will make thousands of dollars for the dairy farmers of Smith River.

Regan was on a trip with California Dairy Council, visiting farmers and talking at a series of meetings. Sometime I want to tell you more about the Smith River district, a wonderful dairy community, up against the Oregon line, and far off the usual road of travel. It is one of the extremes of California agriculture, with conditions just as foreign to those of Imperial County, for instance, as the mind can comprehend.

LEMONS IN COLUSA COUNTY

Marshall De Motte of Corning, Tehama County, is best known to his friends as a fruit grower, though the public remembers him as chairman of the State Board of Control in the Stephens administration. De Motte and James Mills of Hamilton City—another farmer, but also a public figure since he is regent of the University of California and chairman of Governor Richardson's Agricultural Council — live close to each other and are good friends.

De Motte told me the other day of the remarkably fine quality of lemons which Mills is getting from his Maxwell (Colusa County) orchard. This grove, it must be remembered, is in the latitude of Philadelphia, and is a good deal farther north than citrus growers of the South will believe citrus fruit can be successfully grown. Even Mills had to be convinced before he came North. He is getting both quality and quantity in the fruit from his lemon orchard.

Probably the main reason why citrus growing generally has not been successful in the Sacramento Valley is because farmers don't give their trees the care which citrus groves receive in the South. Nature provided easier ways of making money, and it is only human to work along the lines of least resistance.

California's Percentages

CALIFORNIA produces the following percentages of farm crops grown in the United States, according to the California Development Association:

Almonds	100
Lemons	100
Lima beans	100
Raisins	98
Figs	98
Walnuts	96
Olives	90
Dates	90
Grapes	85
Prunes	75
Apricots	75
Asparagus	60
Oranges	55
Lettuce	33

Actual photographs of yeast-fed birds on George Morrison's farm, Arlington, N. Y.

Poultrymen everywhere praise Fleischmann's Pure Dry Yeast

Develops pullets quickly—Increases egg production

Everywhere poultrymen are increasing their profits by the simple addition of Fleischmann's Pure Dry Yeast to the ration, and are warmly recommending it to others.

Philip J. Diehl of Butler, Pa., advises "any chicken raiser to add Fleischmann's Yeast to his list of feeds. The extra eggs will more than pay for the cost of the yeast and will produce more healthy chickens."

"Six or seven weeks ago * * * * we were getting 2 and 3 eggs a day" (from 35 hens), writes Raymond B. Kewper of Newport, Ky., "but since using the yeast the egg production has steadily mounted to from 16 to 24 eggs a day."

After a series of experiments with yeasts on several thousand of his fowls, Dr. E. C. Morris, manager of the Pioneer Hatchery Ranch, Petaluma, Calif., writes: "I have never seen chicks feather so rapidly and develop such bone. This we attribute entirely to the addition of Fleischmann's Pure Dry Yeast, as all other conditions are practically the same as in preceding years."

Endorsements of a similar nature are coming to The Fleischmann Company every day.

Use ½ lb. of Fleischmann's Pure Dry Yeast to every 100 lbs. of mash for dry or wet feeding.

Fleischmann's Pure Dry Yeast can be profitably used for feeding all farm animals. Check on the coupon which booklet you want.

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Caution: Do not be misled by imitations. Fleischmann's Pure Dry Yeast is *all* yeast—yeast in its most concentrated form. It contains no cornmeal or other fillers. To be sure of results, order Fleischmann's Pure Dry Yeast, using coupon below. Agencies in 1000 cities.

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Enclosed find $..... Please send me . . 2½-pound cans of Fleischmann's Pure Dry Yeast, postage prepaid.

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WILD BRONZED BREEDING TURKEYS. [illegible] $27 each, hens $5. Baby turkeys. DENKINS Turkey Farm, R. 1, Box 119, Redwood, Calif.

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POULTRY and berry farming in [illegible] California in the [illegible] Chance [illegible] poultry [illegible] and [illegible] Write for [illegible] CHARLES WEEKS, Greenfieldth, Carlinville.

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"The Wayfarer"

"THE Wayfarer," stupendous spectacle in which more than 7000 actors and singers will take part, is to be presented at the Coliseum in Los Angeles, September 8 to 15.

Seven carloads of scenery are required for the production, and the largest stage in the world is now being constructed at a cost of $20,000.

The performance is for the benefit of the University of Southern California.

A prologue called "The God of War" discloses on the mammoth stage a battle raging on Flanders Field. The Wayfarer, an onlooker, questions the existence of a Supreme Being who would allow such slaughter, fears that civilization is tottering, and is filled with dismay. He prays for enlightenment, which comes to him in the form of a beautiful woman known as Understanding.

She leads the Wayfarer back through the milestones in the history of mankind, beginning with the Babylonian captivity, shows him the great scenes of the birth of Christ, the triumphal entry, the crucifixion, which form the finale to scenes of "The Wayfarer," including the resurrection. The performance closes with an epilogue, "The Golden Age."

Although "The Wayfarer" has had former presentations in Columbus, O., in Madison Square Garden, New York, and in Seattle, the plans of The Wayfarer Society of California call for a larger cast, a greater scenic investiture, a more elaborate concept and a greater outlay of money than any previous production.

The entire production will be supervised by Montgomery Lynch, director of many previous presentations, and he will have as his assistant Hugo Kirchhofer, well-known community leader.

Thirty-five prominent Southern California business men and civic leaders have underwritten the great project.

Danish Co-operation Succeeds

Methods Which Have Made Farmers of Denmark Among Most Successful in World

By CHRIS. L. CHRISTENSEN

U. S. Department of Agriculture

IN LESS than 50 years Denmark has changed from a nation of peasant farmers to the most highly organized agricultural nation in the world. More than 92 per cent of the farmers in Denmark own the land they cultivate. Tenant farming is [illegible] unknown, whatever tenancy exists being conducted on long term arrangements calculated to promote the best interests of a permanent national agriculture.

On his farm of 5 to 60 acres, organized on an efficient business basis for the production and marketing of butter, bacon and eggs, the Danish farmer is not only self-sustaining but financially independent. Through co-operative selling he places on the market a highly standardized product that finds ready demand. His selling costs have been cut to a minimum, therefore, he receives the largest possible share of the consumer's dollar.

Of the 205,000 farmers in Denmark, approximately 100,000 operate farms of an average acreage of 40 to 60 acres; 80,000 farmers cultivate 5 and 20 acres each, while about 15,000 "work" 75 and 150 acres. More than 86 per cent of the Danish farmers are members of local co-operative marketing organizations, which assemble and process the farmers' products.

SURPLUS PRODUCTS EXPORTED

The English markets consume the major portion of Denmark's surplus production of butter, bacon and eggs. These products bring high prices, for the consumer knows that any product with the Danish stamp is of high quality and that a regular supply may be depended upon.

More than 80 per cent of the Danish butter production scores 92 or better, and by reason of the development of winter dairying a regular supply is available. The bacon is of the best quality that scientific agricultural and manufacturing skill can make it. Every egg is placed upon the market in the best possible condition.

There are now approximately 1235 co-operative creamery associations in Denmark doing an annual business of 500,000,000 Danish crowns.

There are now more than 5000 co-operative organizations at the present time doing an annual business of over 1,500,000,000 crowns. These associations also own the controlling interest in the Danish Co-operative Bank at Copenhagen, which last year had a clearing of over 13,000,000,000 crowns.

In their co-operative creamery movement the Danes were early confronted with the need for utilizing the enormous quantities of skim milk remaining after the cream was made into butter. The bacon-type hog was selected as the solution. In former days Germany had offered a market for the lard type of hog but the economic upheaval wrought by wars had practically closed the market. On the other hand urgent demand had developed in England for a high grade of bacon.

ESTABLISH BACON FACTORIES

In meeting this demand for bacon, however, the Danes were forced to market their pigs in Hamburg, where they were slaughtered and the bacon shipped from Hamburg to England. To shorten the marketing lane and to receive more of the prices paid by the consumers the hog raisers decided to assemble their products locally, combine the process of killing the pigs and curing the bacon in their own co-operatively owned plants and send the finished product direct to the English market.

The first co-operative bacon factory was organized in 1887. Today there are 46 such factories distributed throughout the country, doing a total annual business of nearly 400,000,000 crowns.

Similar marketing problems confronted the egg producers. A standard quality product was demanded in the foreign markets and the disorganized efforts of producers resulted in many inferior eggs being shipped. The English in those days often said, "There is something rotten in Denmark," in commenting on Danish eggs.

The outcome was the organizing of local egg collecting associations federated into a large central association where the eggs were handled under careful supervision, examined, tested, graded and packed so that they would provide the buyers with a uniform, high quality product. There are now 750 egg collecting associations federated into one central selling agency which annually markets nearly 300,000 cases of eggs on the basis of 360 eggs to the case.

To complete the picture there are the agricultural societies organized to promote the technical and educational side of agriculture, which do not engage in marketing. Fully 90 per cent of the Danish farmers have membership in these societies which have been an important influence in the production of standardized products.

Garden Tractor Has Come Into Its Own

NOT many years ago farmers, implement dealers and others enjoyed a good laugh over the advent of what they termed the "toy tractor."

Today thousands of the tiny, but powerful machines are busily at work all over the world, and instead of laughter, they incite the greatest admiration.

In many districts they have revolutionized truck gardening and the work of the so-called "little lander." They have relieved humanity of countless backaches and sore arms. And, best of all, they "do their stuff" economically, efficiently and thoroughly.

There are a number of types and makes of garden tractors which may be relied upon to fulfill all the claims of the manufacturers. Many improvements have been made since they were first brought out.

The typical tractor of this type is mounted upon two wheels and is operated by means of levers extending behind and over the implement in use. The operator, as a rule, walks behind and steers the machine, but some of the larger models are provided with trucks and seats for the operator.

Some of the little tractors are equipped with clutch and differential steering device, so that one wheel may be slowed down or locked, reducing the strain on the operator.

Among the innovations noted on new models are protection from dust, made through lubrication. Increased speed and strength, the use of better bearings and metals throughout, and more efficient cooling.

The most remarkable thing about a garden tractor, perhaps, is its low cost of operation. The initial outlay comes so little "pain" as to amount to the uninitiated. Many small fruit growers and vegetable producers are now [illegible] for their machines with the money they have saved by not keeping horse or [illegible].

A recent development is the use of many garden tractors to power [illegible] machines, which use the "horse" for light cultivation and odd jobs to supplement the work of the "big brothers."

Prices of garden tractors delivered in California range from about $[illegible] to $[illegible], depending upon size, power and equipment. The higher price quoted above is for one of the most powerful and efficient machines, with complete assortment of implements and attachments.

Moving Large Trees Long Distances

MOVING large fruit and shade trees is much more difficult in Southern California, where the ground never freezes, than it is in colder regions. In places where zero temperatures are not uncommon, it is customary in the fall to remove the earth from around a tree which it is desired to move, leaving to freeze a large cube of dirt containing the roots. With a derrick of suitable size the tree, roots and frozen cube of ground are lifted onto a truck and transported to the new location, where the tree is lowered into its new resting place.

When John P. Clum, San Dimas citrus grower, tackled the job of moving 24 bearing orange trees to New York in the winter of 1890, he had to solve a new problem. Each tree had 40 to 100 fruits and if the entire exhibit could be removed intact to the Eastern metropolis, in the dead of winter, it would impress visitors very favorably, Clum believed.

Boxes about four feet square, without top or bottom, were built around the trees and gradually driven into the ground, as the soil was dug away from the outside of the boards. Strap iron had been fastened across the lower edge of the box on two sides. These metal straps supported the bottom boards, which were driven under the box when the latter had been sunk flush with the top of the ground. Placing these bottom boards in position was made possible by digging away the dirt from beneath the box, beginning at one side.

"The trees never showed any signs of being moved," relates Mr. Clum, "they kept fresh and green amid the snow and ice of a New England winter. This fruit tree exhibit, together with great quantities of fresh fruit, made a great hit with Eastern people, reviving the orange boom of the 80's, which had about subsided."

The same moving method was used by Mr. Clum a year ago in transplanting a large grape vine to his present home. A much smaller box was used and the operation was entirely successful.—J. H. B.

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HARRY BAYLIES Fence Man
432 Pacific Finance Bldg., Los Angeles, Cal.

ntensive Crop Diversification

(Continued from Page 2)

he gain has amounted to as much as a box. The cost of operation, however, is about $100 a month. It is necessary for one man to be near the building constantly and to devote a good deal of his time to its care.

The fourth factor in successful management is the cannery. The experiment in canning proved so profitable that it will be repeated and probably enlarged upon. A special market is being developed for tomatoes and fruit, canned under the Williams brand and advertised as "Home grown and packed." Nearly 1000 cans of tomatoes were sold last season.

With these three buffers against market fluctuations and with the independence they afford, the Williams ranch is able to rise above some of the difficulties that beset the average producer. Furthermore, the drying and storage of deciduous fruits may be resorted to if necessary.

MUCH PRODUCE SOLD

Large quantities of produce are sold in Santa Barbara and adjoining communities. Asparagus is becoming one of the most important Williams products, while artichokes are coming to the front. Rhubarb has proved quite profitable and other vegetables are grown in season. The Williams truck delivers green stuff to near by towns almost daily. Very little is sold through commission merchants. The attempt is made with every product to develop a special trade and to hold this trade with high quality and good service.

Here again character enters into the business, for the Williams name is regarded as synonymous with square dealing and an honest pack.

The labor expense naturally is heavy. An average of 18 or 20 men are employed the year around, while extra help is required during the harvest season. Despite the reliability of the regular help, however, labor troubles finally forced Mr. Williams to place the upper of "canyon" fruit ranch in charge of a manager, W. F. Nickerson, who represents a combination of foreman, partner and tenant. On this ranch "cots" mature within ten days of those in Imperial Valley, it is said, while all fruits develop excellent flavor and keeping qualities.

The "home place" at Goleta is devoted largely to deciduous fruits, some citrus, and vegetables. "Up the Coast" a few miles is one of the most productive walnut orchards in the county. On this ranch also are apples of several varieties, including Pippins, Pearmains and Bellefleurs. In addition to the cultivated acreage, a considerable area of range land is maintained for the cattle. By the use of purebred Hereford sires, the herd is being improved rapidly.

WALNUTS MOST PROFITABLE

"Which of your many enterprises has proved the most profitable year in and year out?" we queried.

"The walnuts," Williams answered at once. "Other crops are more spectacular and at times appear to be bonanzas, but after all is said and done, considering every factor, the good old walnuts take first place on the right side of the ledger."

Goleta is an important walnut district, said to be the real home of the "Santa Barbara soft shell." The father of the subject of our story, George Williams, is one of the pioneers in this industry and was one of the first officials of the Walnut Association. The family, indeed, has been linked with the development of this beautiful country for three generations.

Spanish romance is not lacking in the history of the Williams place. The home is nearly 100 years old—of adobe construction. But this would never be guessed were it not for the thick walls and deep-set casements, for alteration and new construction inside and out have made it up to date—a beautiful home with every city convenience, surrounded by green lawns, large trees and attractive flowers and ornamentals.

IDEAL COUNTRY LIFE

The visitor is struck by the thought that here is California country life at its best. The highway, with its constant stream of motorists, is just below. The ocean lies beyond it, and not far away is the city. Above tower the Santa Barbara Mountains, with their changing colors and with fertile farms nestling in the foothills.

The Williams ranches include different types of scenery, soil and topography. It is easy to understand how residents of the district become permanently enamored of its charms. This feeling adds an atmosphere of contentment that is lacking in many farming districts, and that is emphasized by the success of the J. G. Williams enterprises.

Williams himself is husky, hearty and well liked by his men. He is the sort of chap whom dogs follow about, and who is fond of children. In fact, he has five youngsters of his own, and with the aid of his capable wife has provided a beautiful and comfortable environment for them. Williams doesn't seek publicity, and perhaps will want to throw a ripe tomato into the editorial sanctum when he reads this, but being safely out of his range, we will add that he is a "regular fellow."

PROFITABLE POTATO CROP

Many carloads of White Rose potatoes were shipped from Porterville this summer. The yield averaged 80 sacks per acre and the price $2.25 per hundredweight, indicating a gross return of $180 per acre.

BEST MILK IN THE WORLD

Los Angeles is getting the best milk in the world, according to T. H. Brice, manager of the California Milk Producers' Association, who recently returned from a 14,000-mile tour of America and Europe. Federal Representative Potter, who visits all the co-operative dairy societies in the United States, is of the opinion that the organization named is doing more than any other similar association for the advancement of the dairy industry.

PLANTS SPINELESS CACTUS

Ten acres of spineless cactus has been planted in Yavapai County, Ariz., in the vicinity of Congress Junction.

SHIPPING MILK TO LOS ANGELES

Part of the 100,000 gallons of milk consumed daily in Los Angeles comes from the following counties: Kings, Kern, Ventura, San Diego, Orange, Riverside and San Bernardino. There are 60,000 cows in the dairies supplying the city with milk, the consumption of which in Los Angeles has increased 40 per cent in the last two years.

PROF. CRUESS GOING ABROAD

Prof. W. V. Cruess of the fruit products department of the University of California expects to leave October 1 for a six months' tour of France, Spain and Italy, where a study will be made of horticultural and viticultural industries.

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Behavior of Bees in Earthquakes

By J. D. BIXBY SR.
Contributing Editor

WE HAD a sharp shock of earthquake at 11:30 the other night. The house trembled perhaps a minute and all the pictures on the walls rattled noisily.

It was bright moonlight and after testing the electric lights to see that no wires were broken, I went out to see if the four colonies of bees near the house had responded to the earth's disturbance, as I had been told they would.

They were awake and bees from the most sensitive colony were outside in great numbers. This colony has always been ready to send out its warriors at the least jarring of the ground, although not unusually sensitive to noise.

A beekeeping friend whose experience covers half a century has had the fortune to be at work in his apiary when two severe earthquakes came. His location is near the San Andreas fault which seems to be the center of our Southern California disturbances.

His description of the action of the bees upon one of these occasions was interesting.

"It was a bright, clear day and the bees were steadily at work," he relates. "Suddenly I realized the sound of an earthquake coming down the valley from the east—'chuck, chucketty chuck' an irregular roar, something like the sound of a heavy freight train being checked upon a down grade. Almost immediately the first shock struck us; the hives trembled and several of the taller ones fell over, while the surface of the ground seemed to rise in a low wave.

"I had started for the team, which was hitched not far away—this was long before the days of automobiles—and it seemed to me I did not gone six rods before every bee in the apiary was outside the hives and in the air, looking for the cause of the disturbance.

BEES BECOME ANGERED

"The next time was many years later, a bright sunny day in June. The same heavy, irregular roar was followed by a sudden shock, or series of them, severe enough to destroy several brick buildings in an adjoining town. The hives shook and almost instantly became black with bees pouring out of the entrances and filling the air, ready to fight anything that moved.

"I ran for the honey-house, where I had left my machine, and was glad enough to stay there for an hour or two, until things got settled down."

The writer had an odd experience in this tremor. I was driving along a good smooth road between two apiaries, traveling from east to west, the direction in which the shock moved. Suddenly the apparently smooth road became very rough without cause for a moment, but I thought nothing further about it. When I arrived home my wife excitedly inquired if I had felt the earthquake.

"Nonsense," I replied. "There was no earthquake." The lady triumphantly led me into the house, where some tall vases had been toppled from the mantel and smashed upon the floor.—J. D. BIXBY.

Subbing Beet Land

DEEP tillage from the viewpoint of the beet and grain grower is lauded by John C. and Walter Bodger of the firm of John Bodger & Sons, who operate extensive ranches in Southern California.

"We are growing beets on very heavy adobe soil," stated the senior partner recently, "and after farming this land for nearly 20 years I can say unqualifiedly that subsoiling is the only thing that has made it possible to obtain the results we have secured.

"Last year, when our beet crop was about gone, due to lack of moisture and unfavorable weather conditions, we had a late rain which, although not heavy, saved the day. The ground was so well opened up that the moisture penetrated to a depth of 12 to 14 inches and we secured a very good crop where otherwise we would have had a poor one, if any.

"If this land had not been sub-soiled the water would have been available only near the surface and much of it would have run off.

"Without heavy tractors and deep tillage implements we feel it would be impossible profitably to work this type of soil."

Mr. Bodger stated it is their practice sometimes to plow crosswise after subsoiling, but deep plowing in the usual sense of the word was abandoned long ago.

The Bodger brothers consider aeration of the soil of primary importance, and give subsoiling credit for making available to the plants the maximum of air as well as moisture.

They state they have secured increasing yields of grain on land previously subsoiled for beets.

Success With Pecans

AFTER 40 years' experience in growing pecans, I am firmly convinced that as fine pecans can be grown here as anywhere. I planted 30 varieties here in Riverside County. Many trees have been improved by topworking with buds which I cut from the four best pecan trees I could find in Texas.

The trees were interplanted in an orange orchard on Placentia loam. They began to bear at three, four and five years of age.

I have done considerable crossing of superior varieties. Have also crossed pecans with English and black walnuts. The rootstock is the greatest factor in growing pecans.

The pecan will stand both extreme heat and not use cold being unharmed by zero winter temperatures. It needs, however, an immense amount of water.

W. D. Tate has 10 Success pecan trees near Yuma, Arizona, which in their fourth year bore 600 pounds of nuts. In their eleventh year the crop amounted to 800 pounds. The nuts are sold in Los Angeles at one dollar a pound. C. R. Cranes has a 25-year-old pecan tree at Escondido which produced last year 600 pounds of nuts.—R. A. Harris.

Killing Tree Borers

DURING the past 12 months more than 1000 acres of fruit trees in Alameda County have been treated with para-dichloro benzene for borer control. Ninety per cent of the worms were killed, according to Extension Service officials.

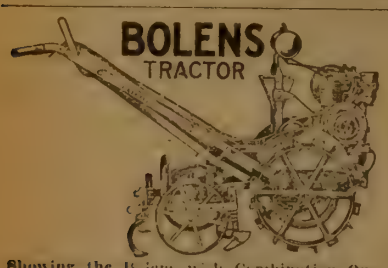
This treatment has been used successfully in the locality named for the past three years. In orchards where the borers had been killing five or six trees annually no trees have been lost since the "P. D. B." treatment has been applied. The cost is estimated at four cents a tree.

From May till November is the best time to use this chemical, which is employed to control woolly aphis and other soil-infesting insects as well as borers. The soil should be reasonably dry and have a temperature of 55 to 85 degrees. From three-quarters of an ounce to one ounce is sufficient to treat an ordinary tree.

Sprinkle the chemical on the ground in a band two inches wide around the tree, the inner edge of the band being two to four inches from the bark. Cover with two to four inches of dirt, which should be packed down with the shovel.

NEW APRICOT VARIETY

A new variety of apricots, Kandiers, has come into bearing at the Mesa (Arizona) Experiment Farm this year for the first time. A good yield is reported.



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Different from any other garden tractor that you have seen. Works astride the row, the practical way of doing close cultivating. It will straddle plants 18 to 24 inches without damage and has 14 inch actual clearance under the arch. Equipped with offset handles, so you walk between the rows. The wheels have deep traction lugs to give plenty of pull from the 2½-horsepower motor, although the tractor weighs but 200 pounds. It has patented snap hitches so you can change in a few seconds from one kind of work to another without using even a wrench. Come and see the Bolens, or ask for demonstration.

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23—03

Subsoiling Mines Soil Riches

These grape roots were cut off by a subsoiler one year before picture was taken. Shows new growth started in subsoil ditch.

The subsoil blade, tearing the soil to a depth of 18 to 30 inches, breaks up hardpan and permits the penetration of water to the lower strata.

Subsoiling implements have done much to popularize the tractor. Power and plenty of it is required.

Fred Schmidt, a progressive grape grower, testing soil moisture after subsoiling his vineyard. Knowledge supplants guesswork when the augur is used.

This bean vine grew on subsoiled ground which, prior to the operation, had shown decreasing yields. Note wealth of foliage.

"Subbing" with an irrigation crowder which makes a deep furrow in the same operation. Furrowing attachments are used also for manuring.

Chisel cultivator penetrating 14 ins. deep in peach orchard of George Gooding. New feeding ground for tree roots!

No man would think of mixing feed with his eyes shut

Yet—that's practically what the poultryman does when he mixes his own feed. Read why!

No matter how clever he is—no matter how cheaply he buys his ingredients—the poultryman who mixes his own feed is "blind" to this glaring fact:

All the things that go into an egg mash may test differently.

All bran, for instance, is not the same. All millfeed, all meat scraps, all oil cake meals, are not the same. There's a heap o' difference in the analysis of each. And it is in the *analysis* that the real value of the ingredient shows up.

Take the single item of *protein*, for example. *Bran* can be 14% or up to 18%—and so can *middlings*. *Soya bean meal* can be 37% or up to 45%. *Meat scraps* can be 48% or up to 75%. And so on! Remember, too, that you find this great variance true in the analysis of carbohydrates, fat, fiber, etc.

So, how in the name of scientific feeding, can the home-mixer hope to make the same batch of feed for his flock twice in a row? How can he tell whether the ration is too strong this time and too weak next time? How can he know whether he is getting the most egg-making value for his money? The answer is—*he can't!*

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If you haven't sold yourself yet on the poor economy of home-mixing—we have an eye-opening booklet for you. It's called "Why Mixed Feeds" and it's free!

Written by Dr. Kaupp—a great national authority on feed investigation—this new Sperry Service Bulletin is being studied with profit by poultrymen up and down the Coast. Mail the coupon now!

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

SEPTEMBER 9, 1923

Kiddies, Prunes, Walnuts, Pecans and Jujubes

Garbutt Raises 'Em All

IF you were a young traveling salesman with little prospect of advancement and a growing family, would you have the nerve to tackle farming, establish an orchard, and stay with it to the finish? That's what this chap did, and he's getting away with it in fine shape! His ranch is a mighty interesting place to visit, too. —*The Editor*

By ALBERT J. MASON

WHAT crop is most conducive to happiness and prosperity?

S. B. Garbutt, popular Glenn County fruit grower, answers this question by pointing with paternal pride to his five rollicking youngsters. In fact, all the plans and aspirations of Mr. and Mrs. Garbutt center around this energetic quintet.

Incidentally, Garbutt raises prunes—some 35 acres—as well as apricots, walnuts, pecans and a variety of experimental fruits. The latter includes what is said to be the second largest planting of jujubes in the State. The ranch comprises a total of about 50 acres, practically all of which is given over to intensive production.

This young farmer is looked upon by his neighbors as an expert in budding and propagation, and his hobby is experimenting with promising new plants. He grew his own prune trees, securing bud wood from heavy-yielding individuals in near-by orchards.

Garbutt's present fruit enterprise was founded some ten years ago upon property acquired by his father-in-law, Eugene Grubb, the nationally known potato expert. During this decade the young couple, by the hardest kind of work and self-denial, have developed it into one of the most productive ranches in the county.

The enormous crop of prunes set this year is equaled only by a few other ranches in that vicinity, and certainly not by orchards of any other district. Experts predict a $25,000 yield, but the owner, who doesn't believe in counting chickens before they hatch, smiles and says, "We'll see what we shall see."

BOOSTS IMPERIAL PRUNES

Garbutt has Imperials and French prunes, about "50-50." The French trees produce more fruit, but the Imperials win every time in quality, says this grower. He believes they are well worth the extra trouble of rolling during the drying period, often bringing a cent apiece. Boys with brooms have been very successful in doing this necessary, though tedious, rolling job on the Garbutt ranch.

Dehydration is coming to be regarded as the best crop insurance for all varieties of prunes, including Imperials, in this district. Garbutt believes it will lessen the tendency of the Imperial to turn black at the pit.

The shy-bearing attribute of the Imperial, Mr. Garbutt believes, may be overcome to some extent by slightly heading back the trees each year. One of his 5-year-olds of this variety yielded nearly ten boxes of fruit, and nearly all the older trees have borne a crop every year, and a very heavy crop every other year.

All fruit trees, it is noted, develop with remarkable rapidity in this sediment soil along the Sacramento River. Some of Garbutt's 5-year-old prune trees are as large as 8 and 10-year-olds in other parts of the State.

Observing the enormous yields secured by a neighbor, who practically allows his trees to "run wild," Mr. Garbutt abandoned severe pruning in favor of an extremely moderate method, which permits the heavily laden limbs to hang low and thus to support much fruit without props. In fact, he believes the no-pruning plan might be preferable were it not for the fact that the overhanging limbs would become so low and thick as to interfere with cultivation and thus add to the difficulties of picking.

WALNUTS PAY TAXES

The walnuts on the Garbutt ranch are mostly of the Eureka variety, topworked on black seedlings. "They are my taxpayers," he says, "just a side line, planted along the ditch banks and fence rows. But I know one man near Orland who has one-third acre of walnuts in a border row which produce better than $125 a year. More and more ranchers in Central and Northern California are becoming interested in walnuts. They are both productive and profitable here."

Pecans, according to this versatile horticulturist, have a big future in California. In proof of this assertion, he points to some of his 8-year-old trees which tower above everything else on the ranch. "They not only grow large, but they also bear regularly," says Garbutt. "I was very much interested in Professor Overholser's articles on pecans, published recently in ORCHARD and FARM. I agree with him that the best varieties for California are those brought from dry places, such as the Burkett from Texas."

Mr. Garbutt is experimenting with 50 seedlings from the Bidwell planting, near Chico. He has sold his seedling pecans at 15 cents a pound, and says they should be as profitable as walnuts, if not more so, in the interior valleys.

"Pecans," says Garbutt, "are very slow to attain their growth, being especially sluggish the first four or five years. This has discouraged many experimenters, who expected results too soon. After the first few years, however, they develop amazingly in this section, some- *(Continued on Page 9)*

A typical prune tree on the Garbutt ranch.

The Garbutts have five principal reasons for liking farm life. Here they are.

One year from planting! Apricots thrive, as proved by the illustration.

The owner does most of his routine orchard work. He considers the tractor indispensible

This 9-year-old jujube tree bears enormous crops of the "Chinese dates."

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
SEPTEMBER 9, 1923

Pollination Is Key That Unlocks Fruit Wealth

Varietal Considerations Are of Primary Importance—Pear and Avocado Discoveries Emphasize Necessity for Interplanting

THE importance of pollination as a factor in successful fruit culture year by year is becoming more apparent and hardly a season passes without some important discovery being made relative to its necessity and benefits.

Perhaps the most recent contribution to this subject in Southern California is the work which the Agricultural Extension Service in Los Angeles County has done with reference to Bartlett pears in the Antelope Valley. The results prove conclusively that cross-pollination with the Bartlett pear in the desert sections may be expected practically to double the production, a factor of tremendous importance in the success of the industry in those districts.

PEAR PRODUCTION DOUBLED IN DESERT DISTRICTS

By ROBERT W. HODGSON

Agricultural Extension Service, University of California

The question frequently is raised, especially by the older fruit growers, as to why the importance of cross-pollination has not previously been recognized. They point to the fact that years ago cross-pollination was not considered necessary and the varieties which today seem to require cross-pollination formerly appeared to produce satisfactorily without special provision being made for pollenizers.

It should be remembered, however, that commercial fruit culture in the United States, especially in the West, is but little over a generation old. The era of planting out vast acreages of budded or grafted trees embraces at most hardly fifty years. Prior to that time practically all the fruit plantations consisted of seedling trees, each tree a variety unto itself.

WHY FACTOR NOT RECOGNIZED

It is therefore quite obvious why the pollination factor was not recognized; without doubt ample opportunity existed for cross-pollination in most cases. With the advent of commercial fruit culture, consisting of the planting out of considerable acreages of budded and grafted trees, the number of varieties naturally was reduced to a comparatively few of superior merit.

With the planting, however, of large acreages to a single variety, there soon came the realization that for reasons which were not evident, the production was far from satisfactory in a high percentage of cases. For some years this was attributed principally to lack of adaptation to environmental conditions. Fifteen or twenty years ago, however, attention was called to the differences in production of trees close to trees of other varieties blooming at the same period, as compared to trees remote from trees of other varieties.

At last it became evident that there was an intimate relationship between the amount of crop and the presence of trees of other varieties of the same species having blooming periods either overlapping or coinciding.

Ten or fifteen years ago this situation became apparent in all the larger commercial fruit districts of the West, with the result that the various experiment stations undertook investigations.

It was early shown that certain varieties are either wholly or partially self-sterile and require the presence of other varieties close by for the setting and maturing of fruit. For a period of years the general conception was that most fruit varieties must be partially or entirely self-fertile.

GROWER MUST PLAY SAFE

As pollination studies have proceeded, however, it has become apparent that the safest attitude for the commercial fruit grower to assume is the very opposite; namely, that most commercial fruit varieties should be regarded as self-sterile until the contrary is proved. At the present time the general recommendation (for new districts especially) is to plant an assortment of varieties in order to make certain that cross-pollination is provided.

But still another factor must be considered. From the work which has been done in various places, it is now known that varieties differ materially in pollination requirements in different districts. In one section a variety may be partially self-fertile to the extent that satisfactory crops are produced without cross-pollination; in another district the same variety may be found to be practically self-sterile, bearing little or no fruit unless cross-pollination is provided.

Avocado orchard of Spinks self-fertile variety. Insert—Unpollinated seedless Bartlett pear (left), and early, large pollinated fruit, (right).

The pollination question therefore is now regarded as a local problem for each district and one to be worked out in each section according to local environmental conditions.

Other confusing factors have been brought out in the discovery that under certain conditions some fruit varieties do not require pollination in order to set fruit. It has long been known this is the case with the navel orange.

One of the first discoveries made by the Agricultural Extension Service in Los Angeles County in its study of pear pollination in the Antelope Valley was the fact that under ordinary conditions the Bartlett pear in this section belongs to this class of fruits and sets fruit and matures it without pollination.

The fruit is practically coreless and is of course seedless. This fact apparently had never been called to attention.

The amount of fruit produced, however, did not appear to be as large as in some other districts and the percentage of windfalls seemed to be unusually high. For these reasons it was felt desirable to undertake some experiments looking toward testing the possible value of cross-pollination.

Two years ago, preliminary pollination studies were started in the Antelope Valley and a large number of hand pollinations were made. The first year's results confirmed the findings of the Division of Pomology in that the percentage of fruits containing seeds produced from self-pollination was found to be practically negligible. Cross-pollination, using the Winter Nelis, resulted in over twenty times the set of fruits secured from self-pollination.

As a result of these studies a number of pollination plots were laid out, the results from which recently have been summarized.

These plots in every case show from two to three times as much fruit on the trees provided with cross-pollenizers. Counts made of the windfalls indicate further that from 85 to 90 per cent of the fruits which drop late in the season, sometimes after marketable size has been reached, are non-pollinated and contain no seeds.

Distinct differences in the character of the pollinated and unpollinated fruit have been found, principally in the matter of size and shape.

The increase in crop resulting from cross-pollination, together with the larger size of the pollinated fruit, it is believed make pollination in the desert sections a matter of extreme importance.

As a result of these findings hundreds of growers in the Antelope Valley are expecting to top-work a part of their trees to other varieties to secure cross-pollination. Thus far the best pollenizer noted is the Winter Nelis. The Howell, however, seems to be satisfactory and the Anjou, Comice and Bosc also have given good results.

BY FAR the most important recent avocado event was the lecture on pollination by Dr. A. B. Stout, director of laboratories at the New York Botanical Gardens, who spent last winter at Pomona College. For many years Dr. Stout's specialty has been fertility and sterility in plants.

AVOCADO PROBLEM SOLVED BY POLLINATION DISCOVERIES

By DR. J. ELIOT COIT

Contributing Editor of ORCHARD and FARM

For the last several years avocado growers in California have been much concerned about the strange irregularity in bearing observed with certain commercial varieties, particularly the Fuerte. Some trees bore well, while others, just as vigorous and well cared for, failed to set any fruit. Girdling has been of distinct value in forcing tardy trees to bloom, but in many cases the bloom has failed to set fruit.

Dr. Stout was prevailed upon to make a study of the pollination problem and his preliminary report is of great value and interest. He has found that each avacado flower blooms twice, once for fertilization of the blossom and again for the shedding of pollen. This is a device of Nature to prevent inbreeding.

A flower of Fuerte, for example, opens for the first time 4 o'clock in the afternoon to 9 o'clock the next morning. At that time the stigma, or female organ, is receptive, but no pollen is shed.

The flower then closes and remains closed for twenty-four hours and opens again at 9 o'clock in the morning, when the pollen is shed quickly through the trapdoor-like valves in the anthers.

No pollen is left for use on other flowers which may open in the afternoon. Consequently the Fuerte, when grown by itself or with other varieties which bloom *(Continued on Page 9)*

Danger of Corn Belt Egg Competition Analyzed by Barber

"THERE can be little doubt," declares J. H. Barber, general manager Pacific Poultry Producers, "that the next year or two will see a number of co-operative egg marketing associations organized in the Central West, under the direction of the American Farm Bureau Federation.

"The extent of this movement has led some of our Pacific Coast producers to fear that they shortly may be faced with much sharper and more formidable competition from Middle Western eggs. The argument is that better marketing conditions in the Central West will lead to larger production of eggs, which will swamp the Eastern markets to such an extent that Pacific Coast eggs will no longer be sold at a premium.

"It is a well-known fact that about one-third of the eggs produced on the Pacific Coast must be marketed in the East in order to prevent our home markets from being glutted by an oversupply, resulting in the price being forced down much below cost of production. It is evident also that if this surplus which is shipped east had to be sold at the same price as the Middle Western eggs, the net price obtained after deducting transportation and other charges would still be much below cost of production on the Coast."

CONDITIONS ARE DIFFERENT

The eggs produced in the Middle West, Northwest and Southwest, principally in the corn belt region, are produced under very different conditions from those surrounding egg production on the Pacific Coast. This great volume of Western eggs is produced almost entirely from small flocks of hens on general farms. The poultry on these farms is a small side-issue, usually handled by the women on the farms.

The cost of production is very low, because the hens pick up the greater part of their living around the farm. For this reason such eggs can be sold at a very low price, because the labor cost is negligible, and the feed cost is likewise very small. The commercial poultryman who makes a business of producing eggs under practically factory conditions, as on our Pacific Coast poultry farms, could not possibly compete on even terms with the by-product eggs of the Central West.

"We must remember that the production per hen on the corn belt farm is very low," Mr. Barber points out. "It is stated on good authority that the average annual production in Iowa is only fifty-five to sixty eggs per hen. Iowa produces more eggs than any other State in the Union. The low production per hen is undoubtedly due largely to methods of feeding and housing, and also to the fact that production is cut off during the severe winter weather.

INCREASED PRODUCTION COSTS

"To increase production in the Middle West would mean the building of substantial hen houses; systematic feeding of balanced rations; heating the houses in cold weather, and much better care in general than is now given to the hens. All this would mean a very considerable increase in the cost of production, which in turn would mean that the eggs would have to be sold at much higher prices."

California and the Pacific Coast generally possess climatic advantages for egg production which can not be equaled in any other part of the United States. The Middle Western producer can not hope to equal these conditions, and should he attempt even to approach them by artificial means his cost of production would be increased to such an extent that he could not afford to produce eggs for market at the prices he is now getting. He would have to get more money for his eggs or else he would quit producing them for market, because he is not any more anxious to lose money than we are.

Secondly, the quality of mid-western eggs in general is not as good as ours, especially during the summer months; partly on account of climatic conditions, partly from lack of systematic feeding, running roosters with the flock, and irregularity in gathering, grading and delivering the eggs.

"It is very probable," concludes Mr. Barber, "that the first and, in fact, the most important effect of co-operation will be to improve the quality of the product by selection, standardization and more careful methods of handling. Improvement in quality should mean better prices, thus automatically raising the level of the entire egg market."

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THE CALIFORNIA AGRICULTURAL WEEKLY

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

CONTROLLING PRODUCTION VOLUME

"Farm crops are produced without regard to market conditions," asserts C. F. McIntosh of the Federal Board of Vocational Education. "Farmers have not yet learned to contract or expand production at will. Unlike other industries, agriculture trusts blindly to hazard in producing its commodities. The result is that every crop is a gamble."

A comparatively small crop surplus sometimes serves to glut the market, forcing the price down to an unprofitable level. Cooperation in limiting production, preceded by a comprehensive survey of market demands, would prevent such disastrous experiences. Advanced teamwork of this kind will be possible when American farmers are sufficiently organized, through the Farm Bureau and commodity marketing associations.

ARE FARMERS TOO EFFICIENT?

There's no use talking to farmers about greater efficiency, according to a prominent Orange County soil cultivator. "We have become so expert in growing crops and animals that we now are producing more than the market will absorb," he declares. "Our co-operative marketing associations are very efficiently managed, so there isn't much room for improvement there. The wide gap between producers' and consumers' prices is due to the latter's demand for service, and more service.

"The only practical way to make farming more profitable is to curtail production. Instead of weeping over the way farmers are moving to town—41,000 in Michigan last year—we ought to rejoice, because it lessens competition for those who remain. The population tide never will turn to the farm until more money can be made there than in the city."

LISTEN! THE EARWIG IS COMING

Anyone who listens to the earwig stories which emanate from Seattle and Portland will get an earful. Until just recently, nothing was heard about the insect, but now it has become such a nuisance as to constitute a public menace. Property values in some districts have been depreciated by the presence of this pest, which is worse than flies, ants, moths and cockroaches put together.

Seattle and Portland already have spent $100,000 in a vain endeavor to check the spread of earwigs. In the latter city the area of infestation in two seasons increased from 16 blocks to 600. Several other Washington and Oregon cities have been invaded by earworms, whose southern outposts have reached Roseburg. It is to be hoped that California's efficient quarantine service will be able to prevent the entrance of the insect into this State.

Although the earwig is a household pest of the first magnitude, it inflicts serious injury to orchards and gardens, being comparable to the Colorado potato beetle and the Mediterranean fruit fly in the extent of its depredations.

WHY FARMERS MOVE TO TOWN

Hundreds of tons of loganberries drying up on the vines in Oregon, because prices were too low to pay for picking; thousands of tons of California apricots rotting on the ground for the same reason; millions of bushels of potatoes never harvested last year—these are some of the reasons why farmers move to town.

L. C. Baldwin, Los Altos orchardist, writes that he sold his Santa Clara sweet cherry crop for four cents a pound, then went to New York City, where the fruit was shipped, and saw similar cherries selling for 60 cents to $1 a pound. He saw oranges selling at 10 cents each, yet a Florida friend got nothing but red ink for orange shipments.

Instead of money, Baldwin received a bill for $37 from a commission firm to which he consigned 113 crates of first grade apricots. The fruit retailed in New York for $4 a crate, yet the grower was credited with 75 cents. Forty cents a crate was charged for packing. Not a cent was received for hundreds of tons of apricots which were consigned to commission merchants by Baldwin's neighbors, he says.

SUPPLYING THE FARM TABLE

"Times have changed since I was a boy," remarked the Pioneer Farmer, turning off the radio switch and glancing up at an aeroplane scraping the sky. "I remember with what pleasure we used to look forward to the first 'garden sass' in the spring—asparagus, rhubarb and green onions.

"When the peas were ready for the table we would enjoy them for a month, followed by new potatoes, roasting ears, green beans, tomatoes, melons and all the other good things that come from the garden. It was the same with fruits—gooseberries, strawberries, raspberries, blackberries, cherries, plums, pears, peaches and apples. As soon as we got tired of one thing another was ready to take its place.

"Nowadays, with refrigerator cars and hothouses, we have almost all kinds of fruits and vegetables on the market the year around. We don't relish things as we used to, because there is so little change in our diet. As for economy, we have almost forgotten the meaning of the term.

"What's the use of living on the farm if we can't depend upon our orchard and garden to supply our table?"

"What's New?"—Keeping Abreast of Agricultural Progress

Making War on Larkspur

SHASTA National Forest officials and Trinity County stockmen have started a war of extermination upon larkspur, a plant which poisons cattle and sheep. From the State Department of Agriculture information may be obtained regarding the identification of this pest and best means to employ for its eradication.

Seven Freezer Fruit Ships

SEVEN steamships, each capable of carrying 250 carloads of freight, are being equipped with refrigeration by the California-New York Steamship Company and will be used in shipping California fruits to Eastern markets. This change from rails to water is expected to save citrus growers and other Pacific fruit men many millions of dollars in freight charges.

Cause of "Little Leaf" Disease

THE mysterious disease of apples and pears known as "little leaf" is caused by irregular moisture supply, according to W. W. Thomas of the California College of Agriculture.

"This trouble commonly is found on trees which have been planted on soils lacking in the capacity to absorb or retain moisure," states Professor Thomas. "Other factors sometimes are involved in the disease, which in some cases is caused by anything that weakens the tree."

Earwigs Menace California

ALTHOUGH earwigs are not a serious pest in Europe, where they are held in check by natural enemies, they are doing serious injury in this country, into which they were introduced 12 years ago, according to the U. S. Department of Agriculture.

"This insect not only destroys fruits and vegetables, but is such a serious pest in the home that many people have moved away from infected districts," states the O. A. C. entomologist.

Will Grow Alaskan Wool

SHEEP are to be raised extensively in Alaska by the Aleutian Livestock Company of Los Angeles. The new concern is headed by F. J. Hagenbarth, president of the National Woolgrowers' Association.

"Wool can be moved by water from Alaska to Boston for $1.50 per hundred pounds, compared to the rail rate of $2.75 from Idaho," points out Mr. Hagenbarth. "Climatic conditions are very favorable in the Aleutian Islands for wool production and wild animals which prey upon sheep are absent."

Yes, We Have No Banana Blight

THE deadly tropical blight, called Panama disease, which is destroying so many banana plantations in Mexico, Central America and the West Indies, is not found in the United States and it is unlikely this pest will ever do any damage here, according to W. E. Bolles, secretary of the Florida Banana Growers' Association.

"The varieties grown in Florida—Hart, Orinoco and Cavendish—seem to be immune to the Panama disease, because the heat here is less intense than in the tropics," Mr. Bolles points out. "More bananas are being planted in Southern Florida than ever before."

"Eat More American Beans"

AMERICAN bean growers are planning to spend $60,000 a year to advertise the superior food value of beans grown in the United States. Bean associations are to contribute one cent a sack for the campaign.

During the past year 600,000 sacks of Japanese beans have reached the United States via the Pacific Coast and an equal amount by way of the Atlantic States. During January and March of the present year 280,000 sacks of Jap beans were shipped into San Francisco. The American bean crop in 1921 amounted to 5,690,000 sacks, enough to make ten strings of beans reaching to the moon.

Jersey Bulls Are Going East

THE recent shipping of six Jersey bulls from Oregon to Pennsylvania was a significant event, for it indicates that the East at least is acknowledging the supremacy of the West in the production of superior breeding stock.

The tide was bound to turn, because ideal dairy conditions on the Pacific Coast attracted the highest type of breeders, making a combination that was certain to produce the very best animals. Remarkable butterfat records convinced conservative eastern buyers of the superiority of Willamette Valley Jerseys.

The sale was made through E. B. Fitts of the Pennsylvania Extension Service, who formerly was employed in a similar capacity in Oregon and is now boosting the Far West.

Unique Bird Experiment

A TEST to determine the practical value of birds as insect destroyers is being made by the New York Experiment Station at Geneva. One hundred bird boxes have been placed in several pear orchards infected with pear psylla, a tiny insect which passes the winter under the bark of trees. It comes out on sunny days, when it is an easy prey to woodpeckers, chickadees and other birds. Suet and sunflower seeds are provided to attract and feed the feathered enemies of insects.

The pear psylla is very destructive to New York orchards, sucking out the sap, which causes the tree to become sickly and finally die if unprotected from this enemy. During the summer the psylla exudes a kind of honey dew, which furnished a favorable medium for the growth of sooty fungus on the fruit.

World's Champion Cow

THE world's champion cow, according to a record recently completed, is DeKol Plus Segis Dixie, a Holstein owned by the Raymondale farm at Vaudreuil, Quebec. In her ninth year this remarkable animal produced 33,466 pounds of milk, which contained 1349 pounds of butterfat, enough to make 1687 pounds of butter—an average of 4.6 pounds for every day in the year. A four-year-old son of the new champion sold at public auction for $14,100.

Automatic Bean Sorter

A MICHIGAN farmer is reported to have perfected a machine which sorts beans automatically, having a capacity of 15 bushels per hour. The discovery which led to this invention was the fact that certain minerals are sensitive to light changes, which causes corresponding changes in the electrical conductivity of the mineral. This makes it possible to pick out bad beans, which are darker in color, either wholly or in spots, than good ones.

More Milk for Mexicans

"THE dairy industry of Mexico is growing rapidly," states Gonzalo Robles, an agricultural commissioner of the southern republic. "We have only two kinds of cows, Holsteins and Jerseys. The latter are kept to produce fancy milk.

"Our Government now has a dairy division, which maintains a demonstration school at San Jacinto, where there is a modern dairy, cheese factory and pasteurization plant, all electrically equipped. Many girls are taking short courses in dairying."

Record Idaho Apple Yields

FROM a half acre of 12-year-old Rome Beauty apple trees near Nampa, Idaho, E. F. Stephens last year picked 825 boxes of fruit. Nine boxes of Winesaps were gathered from five-year-old trees. Thirty-six boxes of Winter Bananas were picked from a 14-year-old tree.

Stephens' orchard was cultivated 24 times a year until the trees were five years old, when the ground was seeded to alfalfa. The latter is mowed three times a year and the crop left to rot on the ground, adding humus and fertility to the soil. Desert conditions prevail, but the land is liberally irrigated.

"THEY SAY"

ROBERT E. JONES
California Dairy Council, Contributing Editor of ORCHARD and FARM.

BOB JONES

"ONE must traverse the entire length of California to appreciate our State.

"A week ago I was within six miles of the Oregon border and on the western edge of America—in Del Norte County, treading the velvety pastures of the Smith River bottoms, where irrigation is never necessary and where giant redwoods cover the mountains about the valley.

"Here is a dairy district settled by progressive families who milk Guernseys and Jerseys. The rainfall is amply sufficient for the grass.

"Six months before, I was on the southern edge of our United States, in Imperial County where there had been no rain for a year, where irrigation is always necessary, where the cantaloupe vines were sprouting under winter skies. Where the magnificent, barren hills seemed to hold the spell of a forgotten age yet in a most magnificent dairy district. Both of these in California—the extremes of the earth, yet in one great State!"

In no other part of the world, perhaps, can one experience in so short a time so many changes of climate and scenery. Would the traveler view the ever-changing panorama of the desert? Presto! A few hours spin over paved roads and he is looking upon one of the earth's most desolate and picturesque arid areas, simmering in the sun.

Would he like a dip in the ocean? It is only a brief trip to white sands and roaring breakers, where cooling breezes never rest.

Then, what about a jump to 10,000 feet altitude? A good road makes it easy! Pine-fringed mountain lakes sparkle like blue jewels in green settings.

Ever-changing vista of sea, pine, mountain, desert; sunshine, fog, heat, cold; avocadoes, wheat, cotton, apples, manufacturing, mining, oil, and foreign trade—name what you will in scenery, climate, crops, animals or the works of man. We have them all in California! I wonder if we really appreciate our State!

Planning the Suburban Acre Intelligently

Points to Consider in Selecting and Planting Large Home Grounds—Importance of Systematic Plans and Danger of Following Rules Blindly

By RALPH D. CORNELL

Master in Landscape Architecture

THE fortunate builder of a suburban home, while still limited to a space within visible boundaries, does not have to contend with problems of cramped quarters as does the owner of a small city lot. The choice of site is closely related to the type, character and size of house to be built. One situation will strongly suggest a certain style of architecture, while it might be entirely inappropriate to other house styles.

The aspects of exposure and orientation are vital, particularly in such a land as California, where the elemental conditions vary so markedly within short distances. Where there is opportunity for choice, a site should be selected that will permit the entrance of sunlight into the living quarters of the house, give shade where it is desired and properly relate the house to prevailing winds, protecting it from an over-strong sea breeze or opening it to the cooling effects of the afternoon trade winds.

The shape of the ground about the house may vary considerably within the confines of an acre plot. A rising piece of ground is more commonly preferred to a depressed area, although there are those who choose to be entirely shut in by surrounding trees or hills. Drainage is, however, always important.

VALUE OF PLEASING VIEW

A house so located as to permit a pleasing view of distant mountains, nearby meadows or sunny waters, offers many more possibilities for the development of a beautiful home place than one where sources of interest are confined to the property itself.

The topography of the land will largely influence its development. Level land of rectangular and compact proportions will often permit more concentrated and complete use of the ground, but it seldom carries the possibilities for variety and interest that are suggested at once by land of irregular contours.

While an acre of space sounds large to the average home builder, it is really surprising how little it will hold. With a fairly large house, garage, entrance drives, formal or living garden, cut-flower and vegetable areas and a possible tennis court or croquet ground, there is little room left for landscape setting or lawn spaciousness.

A disjointed plan, lacking in unity, is never pleasing to its beholder. Axial relationships should be considered and recognized. For example, a formal garden that is balanced on some axis of which a house facade, entrance or other detail is a terminus is usually far more satisfying than the formal garden that seems to float, unattached, within the grounds.

So far as possible, the planting of the suburban acre may conceal the boundaries of the property from the different viewpoints within and about the house. Perhaps this is more easily accomplished on sloping than on level sites. If the immediate surroundings of buildings and man-imposed things may be obscured by massed plantations of shrubs and trees, over which the eye carries to more distant views of open country, one has a greater sense of freedom and expanse than though he were continuously aware of the adjacent structures which shut him in.

Trees are used for accent, where height is sought. The size to which they generally attain demands that their positions be carefully studied in order that they may not become too large for the space to which they were allotted.

General rules for planting demand that the boundaries be generally concealed; that all unsightly objects or outside views be hidden by foliage masses; that desirable vistas be framed by suitable trees or shrubs; that separate units within the grounds be separated by shrubbery (such as the screening of a drying yard, or the enclosing of a formal garden); that planting be placed for accent at such places within the grounds or adjacent to the house as good taste demands; and that shrubbery planting with masses of flower color is often and generally pleasing against walls and fences and along the foundations of the house.

RULES ARE DANGEROUS

It is dangerous, however, to make such rules, because they cannot be followed blindly with any degree of success.

The accompanying plan illustrates a suburban plot occupying an acre and a half of ground, on a hillside of about a sixteen per cent grade. The house is rather large and is placed with consideration for factors mentioned. It is entered from the rear, so that the driveway and its attendent traffic will not interrupt the excellent view of outlying hills and valley.

The upper half of the diagram might be said to comprise the utilitarian portion of the plan and the lower half the aesthetic, although no such sharp segregation actually can be made. The entrance drive, garage and garage court, family orchard and service wing of the house are all compact in both their relation and arrangement. They occur in a position not to interfere with sunlight, view nor summer trade winds.

The formal garden, to the right, bears axial and architectural relation to the house. It is enclosed, a complete unit of itself, and yet conveniently accessible from other parts of the grounds.

The lower half of the plan also comprises the lower elevations of the plot, over which the distant view is seen. Graded to a slightly concave slope and covered with turf, this area serves as the foreground to the picture of which the house is the dominating feature.

The trees and shrubs along the property lines define them, afford a sense of enclosure and privacy, screen from the view unsightly objects and buildings of the near-by foreground and carry the eye on to the distant mountains. By the mere process of excluding adjacent structures and concealing the middle-distance, such planting may be made to bind the immediate foreground to the distant landscape and tend to make one forget that his own front yard has very narrow limits.

Desert Creosote Brush

"THE most widely distributed of desert plants is the creosote brush," says H. J. Wilder, San Bernardino County farm adviser.

"In the dryer and more sterile soils it is a small and scraggy plant but where it has abundant moisture it makes a large and handsome bush. It usually has a bright green color, with shiny glossy leaves, but in winter time and in periods of long drouth it is rather dingy.

"The plant is rich in creosote, so much so that the leaves seem covered with varnish, and when rubbed leave the hands sticky. When the leaves are boiled in water the creosote collects on the surface and can be skimmed off like grease. The liquid produced by boiling has always been a favorite remedy for sore shouldered horses and mules, the desert teamsters often using it to bathe the animals' shoulders.

"Its principal use has been for firewood, many of the isolated mining camps depending solely upon it for fuel, it being so inflammable that it will burn when freshly cut. In the days when Calico was a live silver camp the town pumping plant was fired with creosote brush that was up-rooted with a peculiar implement dragged behind a wagon.

"People engaged in clearing land and burning brush have at times suffered intensely from the effects of the smoke, the eyes being especially affected.

"The creosote brush looks its best in the spring time when it presents a profusion of yellow flowers massed on a background of bright shining green. If it would grow as well on the coast and had a name that proclaimed it a native of foreign lands, it would be a favorite bush in the various parks."

Growing Greenhouse Grapes

GRAPES constitute one of the most important crops grown on the 2000 acres of land under glass in England. Thirty cents to $1.50 a pound represents the usual range of prices, although the first ripe fruit sometimes brings 30 shillings, $6, a pound.

Alexandria Muscats bring the highest price. Alicantes and Hambros also are grown. Each vine bears 14 to 18 bunches of fruit weighing 24 to 40 ounces each. In one greenhouse 20 by 130 feet visited by Prof. A. G. Bouquet, of O. A. C., two tons of marketable grapes were harvested this year.

Thinning is the biggest job connected with the growing of hothouse grapes, a portion of the berries being removed from each bunch. Four persons work two weeks thinning the crop on two rows of vines 150 feet long.

Breeding Better Hemet Valley Duroc Jerseys

Alfalfa and Barley Make Possible Large Scale Production of Purebred Pigs—Choice Stock Brings Big Prices

By W. REYNOLDS BUTLER

ABOUT three miles west of Hemet you will find the 366-acre Charnock Ranch, where purebred Duroc-Jersey pigs are produced from 300 select sows.

I use the term "select" advisedly. The individuals are the acme of breeder's skill and the pedigrees are rich in line breeding of show ring champions of this great breed of hogs. Ribbons won by this herd at California exhibits are sufficiently plentiful to indicate National award ancestry.

Charnock Ranch belongs to Mrs. J. A. Freeman of Pasadena. It is not a fancy show place, judged by the standpoint of elaborate buildings. The whole breeding and feeding plant is laid out on a practical plan, with a view to minimizing labor.

Burdette Raynor, secretary of the Hemet-San Jacinto Chamber of Commerce, declares this ranch and Charles Tyler, the man who manages it, constitute one of the best advertisements of successful farming in Hemet Valley.

SOWS RAISE LARGE LITTERS

Some fifty sows were found in the farrowing pens, all with large litters of uniform and lusty pigs, ranging from a few hours to a week old. Mr. Tyler climbed over the railing into the pens with the sows, picked up the pigs and the "old ladies" didn't fuss a bit.

"We haven't a mean sow on the place," asserted Tyler. "They have been raised on kindness and because they have been handled well we have very few losses at farrowing time."

This central farrowing house has guard rails, feed trough conveniences, caretaker's alleys between each pen, handy door arrangements and many other features that could be studied with profit by any hog man. Other sheds, more for shade than for shelter, cement feeding floors and self-feeders and other adjuncts to a well ordered hog plant are to be found there, all with an eye to hog health and comfort and to saving steps and labor in feeding and management.

SOILING CROP FOR SOWS

Of the 366 acres, 175 are in alfalfa. This is used either as a soiling crop for the sows and pigs confined in the lots or as pasture for the developing shoats and young breeders. In the winter months the sows are fed alfalfa hay in racks, much as sheep are fed. From 500 to 1000 tons of hay are sold annually.

The balance of the ranch grows barley at the rate of 16 sacks to the acre. This is ground fine and fed on the ranch. In addition to that grown on the ranch, 18,000 sacks of barley were bought to feed to the hogs last year.

A real test of the hog raiser's ability is the number of pigs he raises per litter. Mr. Tyler averages between seven and eight. A record like this, with an extensive farm to manage and a brood sow population of around 300, is something to be proud of. The sows raise two litters a year. About sixty sows farrow each month.

CLOSE CULLING FOR BREEDERS

It is seldom you find a breeder who reserves only 10 per cent of the pig crop for breeders, but that is the rule with Tyler. Half of the feeding shoats go to Bassett and are "fed out" on garbage. The other half are grain fed in self-feeders on alfalfa pasture on Charnock Ranch. Even with large scale production, Tyler gets his pigs to an average of 225 pounds at 225 days after farrowing.

The fat hogs go to either Los Angeles Stock Yards or direct to Los Angeles packers. The hogs are of such quality and uniformity that buyers bid top prices for them.

Seventeen boars are in service. Most of these have given a good account of themselves in the show ring and as producers. We were shown one boar which soon was to be shipped to Hawaii. Charnock Ranch sends breeding hogs to every part of the United States and Canada.

Prices for such stock during the past year were $75 to $100 for gilts and young boars, and $125 to $150 for bred sows, and $125 to $225 for tried sires.

SOWS ARE "TRAPNESTED"

Every sow on the place is ear marked and her pigs are marked to correspond. On each sow's farrowing pen is a concise statement of facts worth knowing to the breeder. Each sow's production record is kept in books in the office. The feed for all the hogs is weighed out in bags in 60-pound lots, to check up on costs.

Every pig at 40 pounds is given the double treatment against cholera by a competent local veterinarian. Serum and virus are of the very best. Tyler keeps on hand serum for hemorrhagic septecemia. He has had very little of this deadly ailment of baby pigs, but he always is forearmed against it. He believes in a mineral mixture for his hogs and uses plenty of it.

Mr. Tyler believes in fitting and showing his best breeding stock at fairs. That he has been a successful exhibitor of Charnock Ranch Durocs is a matter of record at California fairs and shows for the past few years. Showing is his method of checking up on his success as a breeder and he considers it mighty good advertising. He also believes in advertising in breed journals and the agricultural press.

A visit to Charnock Ranch and a talk with such a successful breeder and feeder of hogs as Mr. Tyler is full of information and inspiration.

Controlling Cabbage Pests

THE best way to kill cabbage worms, according to Prof. A. C. Bouquet of the Oregon Agricultural College, is to dust the plants with arsenate of lead, using 16 per cent of this chemical, 5 per cent of lime or sulphur and 84 per cent of [illegible]. Best results are secured when the plants are dusted with dew. A spray [illegible] dust shaken [illegible] is recommended.

[illegible] is recommended. Both sides of the leaves should be inspected for lice, which must come in contact with the [illegible] Calif. [illegible] is the best [illegible] to apply the dust.

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Breeding Back Yard Milk Goats

California Woman Finds Much Health and Some Wealth in Raising High-Class Toggenburgs.

By O. H. BARNHILL

IT'S a long way from the Toggenburg and Saanen districts of Switzerland to California, yet milk goats appear to thrive equally well in both regions. More than half of all the milk goats in the United States are produced in the Golden State. Residents of the Eastern and Middle States look to California to supply them with high-class milk goats as well as pure-bred prunes, raisins and oranges.

Goats have a happy faculty of adapting themselves to environment. In California they are grown to perfection in the foothills near Redlands, in the back yards of towns and cities near the coast, in the north central sections, and many other different places. If a customer from the East traced one of his finest purchases to its source, he might find himself at the home of A. M. Dunn, near Venice (Los Angeles County). Mr. Dunn is employed in the city, leaving his wife to play the part of goat farmerette.

"If anyone thinks that taking care of 50 goats is all play and no work, he has another guess coming," smilingly remarked Mrs. Dunn. "I certainly enjoy it, though, because the little animals are so gentle, affectionate and playful. Everybody falls in love with them. In habits and disposition, a goat is very much like a deer."

When asked how she happened to get into the goat business, Mrs. Dunn replied:

CHOSE GOATS FOR HEALTH

"It wasn't a 'happenstance' by any means. I was sick unto death and business assured me that only outdoor work would save my life. I decided I would rather raise goats than anything else. We had almost no capital to invest in the business, but owned twenty-five acres of land. I started out in a few choice kids and increased the stock by breeding to the best bucks I could find. With the profits of the business I bought better kids in this way building up a herd of purebreds. I have only three grades left and expect to get rid of them at the earliest opportunity.

"At that time we lived near what is now the Aviation Field, which afforded fine pasture. One never realizes how much feed a little bunch of goats consumes until one has to buy all their provender. Our stock eats about two tons of hay every month, besides a large amount of grain."

The Dunn ranch covers less than one acre and is located on the Pacific Electric car line one block west of Ocean Heights station. In addition to the goat sheds and corrals, room is found for garden, yards and a [illegible] for a patch. Besides her goat duties, which are quite heavy, Mrs. Dunn finds time to raise a good deal of poultry. Among the feathered stock we found bantams and the curious Jap "silkies."

Mr. Dunn thinks it was practically impossible to grow turkeys in that district. Mrs. Dunn tried her hand at the business, as she enjoys overcoming obstacles. She had such good success last year that this season she has 100 fine "turks," having saved every bird in some hatches.

COLOR MARKINGS UNIFORM

But let us take a closer look at the goats, which, with ears thrown forward are looking curiously through the wires at the visitor. The latter is impressed with the remarkable uniformity of the color markings of each animal. The general color scheme of the Toggenburgs, which is the main variety kept, is a brownish gray. In addition to white "markings" there are two white streaks on the face and markings of the same color in other places.

The two imported bucks are big strong fellows, inclined to be belligerent in their pen. Since no halters or nose rings are used, the goat lady was asked how she handled this class of stock.

"Oh, I just hold them by their whiskers," she explained, referring to a method which is said to be especially efficacious in controlling Irish men.

"No, our goats are never troubled with any pest or disease," answered Mrs. Dunn in reply to another question. "We are careful to keep them clean and furnish them a variety of wholesome feed. In addition to hay, we give them rolled barley, beet pulp and a powdered goat feed. The kids are fed milk until they are six months old and make rapid growth. We never use fat capsules."

The pens are cleaned every morning by a man who does the work on the premises, which makes excellent fertilizer. Lime dust and rabbits, the goat is a very cleanly animal.

Five hours' work each day is required to care for the goats. Mrs. Dunn may reduce her herd to one-half its present proportions, feeling that the care of such a large number of animals, in addition to her other duties, is a rather heavy burden.

GOAT PRICES ADVANCING

The average person hasn't a very definite idea of milk goat values. Mrs. Dunn was asked for some information upon this subject. "Prices are unsettled at present," she stated. "Like nearly everything else, there was a slump in the goat market a few years ago, but the business gradually is getting back to a profitable basis.

"Four of our kids were selected by Miss Richards to join the herd of milk goats recently shipped to South America. These were put in at $[illegible] each. They were worth more money, but additional funds were not available.

"Our best does are valued at $200 to $250; young females from imported stock, $150 to $200; young bucks, $100; domestic pure-breds, $50 to $100."

A domestic pure-bred, it was explained, is 31-32 pure, or better. Imported stock is considered superior for two reasons: because new blood imparts vigor, and because foreign goats all are officially inspected before leaving Switzerland and any which do not come up to a certain high standard are rejected. Mrs. Dunn thinks it would be well to have a similar system of inspection in this country, where inferior animals sometimes are sold on the strength of their pedigree.

IMPORTED STOCK IS SCARCE

The high prices obtained for imported stock, Mrs. Dunn has a due when cost $600—is explained by the fact that there are so few foreign goats in the United States and additional importations are difficult to obtain. From 1906 to 1920—14 years—no importations were allowed, on account of the danger of bringing in foot-and-mouth disease.

At the present time it is necessary to keep foreign goats six months from the time they leave Switzerland until they enter the United States. One importer kept his stock in Cuba during this period and lost a great many animals.

"We ship stock by express to Iowa, Ohio and other Middle West States," [illegible] Mrs. Dunn. "The total cost of shipping an animal by express to the last named State is about $50. The buyer pays this order price."

We have sold in the past six of our kids for special characteristics. The requirements were that the animals must be either Texas or Nubians, at least three months old and 15-16 pure bred."

The two breeds aimed at by breeders of milk goats are: Heavy production and conformity to the accepted standard. Mrs. Dunn's imported doe, Hut Cliff Blue, has a record of 12 pounds six ounces of milk in one day and this year gave seven quarts a day, which would have weighed more than the recorded production.

MILK BENEFITS BABIES

Like all other goat breeders, Mrs. Dunn is an enthusiastic believer in the value of goat's milk as a food for babies and invalids. She does not make a business of selling milk, yet one invalid for a long time has drive [illegible] miles every day to obtain a supply of this life-giving lacteal fluid.

While Mrs. Dunn was telling of the many remarkable results which she has known to follow the use of goat's milk, a neighbor arrived and also seconded the testimony.

"The globules of goat's milk," explained the visitor, Miss Abbott, who is a teacher in the Venice High School, "are smaller than those of cow's milk and the curd is softer. Goat's milk digests in a half hour, and in spite of its superior richness—3 per cent fat—sick babies handle it readily when they are unable to assimilate 4-per-cent cow's milk. Besides, there is no danger of tuberculosis infection."

Miss Abbott keeps a Saanen doe, the milk of which is in great demand by the neighbors. One woman gained 12 pounds in five months on less than a pint a day, while another was cured of an obstinate case of constipation, for which goat's milk is especially recommended. A baby was cured of eczema and other infants of various ailments. A nearby hospital buys milk of Mrs. Dunn for baby inmates.

After growing goats for seven years, Mrs. Dunn is the picture of health, having a happy smile and rosy cheeks which any school girl might envy, not to mention a large and lucrative business.

Goat-fed baby and one of Mrs. Dunn's purebred Toggenburgs.

Castor Beans for Shade

ALTHOUGH at present there is no market for castor beans, the plant on which they grow is valuable for poultry yard shade. So congenial does the castor bean find conditions in Southern California that it frequently volunteers and without any attention will make a rank growth. The castor bean is a perennial, the plant increasing in size from year to year. Specimens eight feet tall are not uncommon.

Shade for fowls is something which poultry experts appear to have overlooked. How dangerous sunshine is the rule in agricultural California, yet the average laying hen is unprotected from this burning heat. With open bill and extended wings she seeks the absent shade the result being weakened vitality and lessened production.

Some poultrymen provide a scratching shed or "winter garden" by setting the chicken house up off the ground a few feet and allowing the hens to run underneath. Others plant fruit trees and berry bushes in the yards. The simplest, easiest way to provide shade is to plant castor beans. The seed is cheap, leaving no excuse for unprotected poultry.

"We do not handle castor beans," writes H. L. Musser of the Aggeler & Musser Seed Company. "Even though we had a carload, it would not pay to ship to St. Louis. Not only do castor bean plants make good shade for chickens, but we occasionally see a windbreak of them."

Food Value of Fruit

AT the recent opening of the Persian Restaurant in Fleet street, London, Dr. Josiah Oldfield had the following to say regarding the food value of fruit:

Apples prevent kidney trouble. Oranges and lemons prevent influenza and cure fevers. Grapes and raisins postpone senile hunger and perpetuate youth. Nuts and olives prevent chills and provide body heat, physical endurance and stamina. Salads and vegetables supply potassium salts and vitamines and ward off scurvies and anemias.

Today America is spending $70,000,000 per annum on cosmetics and face powders. If she spent it instead upon the foods which produce a velvet skin, lustrous hair, limpid eyes and the fragrance of health, what an increase of happiness there would be in the world!

MARKETING GROUPS FORMED

Three commodity marketing associations are in process of formation in Navajo and Apache Counties in Arizona.

Home Farm Happenings

By ONE OF US

FRUIT RIPENING EARLY.

Last year we started picking prunes September 18. This year we began nearly a month earlier. Although the first part of the season was cool, fruit of all kinds has ripened early.

Our local weather prophets say the signs all point to an early fall, but their prophecies don't always come true. We are hoping that fairly good fall weather will make a good prune harvest.

PIGS WELCOME FRUIT SEASON

Pigs are delighted when fruit begins to ripen, for there is always some waste that is given to them. Our shoats have been reveling in some cull pears. Every autumn they get some prunes that have been spoiled, one way or another.

Fruit is a fine thing for a hog—or a man. There isn't much difference in the anatomy of the two brutes, anyway. Judging by the results, table scraps seem to be an almost perfect hog feed.

SHIPPING GREEN FRUIT.

There is a lot of good, green fruit in our neighborhood. We would ship twenty cars or more, if it were properly cared for and handled.

As it is, some of it is sold locally, but most of it goes to waste. There are plums and apples and some apricots and a number of different varieties of peaches and pears, nectarines, persimmons, quinces. Lots of fruit to make up mixed cars. Some time we may develop enough brains to get together early in the season and make arrangements for handling these crops.

POOR FENCES—BREACHY CATTLE

All our fences are not as good as we would like to have them. We have some cattle that know every nook and corner of the ranch. They seem to know better than we do when corn is ready to eat on one of our neighbor's places.

We have to take them out of the field adjoining this farm, because once they get a taste of the corn it seems almost impossible to make a fence strong enough to keep them out of it. We have old cows that seem to have no fear whatever of barbed wire. They can go through unbelievably small holes.

The best way to hold stock is to have fences so strong the animals never start to get through them.

SUCCESSFUL CORN BREEDER.

J. H. Brough Jr., who lives just south of Butte City on a good river front farm, is a sort of amateur Burbank. For several years he has been experimently with cross-breeding black Mexican Squaw corn with Egyptian corn. He now has it developed to a point where it is true to type and he claims it is a better corn than the Black Mexican and yields much more heavily. Instead of one or two heads to the stalk, the new "Brough corn" yields as many as eight or ten big, fine ears.

The rich land on which this experiment has been conducted may have had something to do with the development of the unusual number of mature ears per stalk. On thin or poor land the head might be only a cluster of small nubbins.

SOME SHORTHORN SALES

Breeders are selling registered Shorthorn cattle; some bulls and a few females. Prices are not high, but buyers are hopeful for the future of the cattle industry.

There never was a time when conditions were more favorable for starting a small herd of registered cattle than now and if all present inquiries result in sales, several such herds will be started in this locality.

Our registered Shorthorns have always made more money than grades would have earned. Of course, we do not pamper them, but raise them in the way we think makes them most useful.

One thing is absolutely true: the more registered cattle, or any other kind of animals, in a neighborhood, the more demand for breeding stock. Each one in the business will experience.

GOATS CLEAR LAND.

Twelve hundred Angora goats now are working on about 100 acres of our brush land. They make dense thickets look mighty open and airy in a very short time.

The owner of the goats pays five cents per head per month for the feed. It really is excellent goat feed—grapevines, oak trees, elder, sycamore, rose bushes, poison oak, some grass and many other things.

Goats will eat every leaf off a tree or vine as high up as a man can reach and peel the bark from many of the smaller trees and shoots. An old goat will stand on its hind legs with its front legs braced against a tree and reach leaves and bark at an almost unbelievable height.

Cattle work into elder patches, break down wild stalks and open up the thicket pretty well. They also browse grapevines considerably. Sheep and hogs likewise are a big help in opening up brush and timber land preparatory to planting. But goats are the real, efficient land clearers.

THE "L. A. LUG" FRUIT BOX.

The Los Angeles lug is a fruit shipping box that holds about 28 pounds. "Jerry" Klein of the Klein & Simpson Fruit Company, Los Angeles, tells me he was the first to use this kind of a package. It was originally called "Klein's Box."

"We get a lot of first class fruit in L. A. lugs on the Los Angeles market," said Mr. Klein. "But it has been a custom to ship seconds and culls in this box to the East and some Middle West markets. It is the most popular package that comes here. It is convenient to handle, and cheap. Fruit that comes in L. A. lugs is not wrapped. Sometimes we have to break boxes of wrapped fruit, take the wrappers off and put them in L. A. lugs for our trade here.

"The men of all nationalities who retail fruit here are keen as razors, and very close buyers. When fruit is in the small, shallow L. A. lug they can run their hands down through it and see what is in the bottom of the box, which is one reason buyers like it.

"I predict that more fruit will be packed in these boxes for every market every year," concluded Mr. Klein.

DOGS DESTROY DURHAM SHEEP.

A few days ago I enjoyed a nice visit with George Kreutzer, manager of the Durham Land Colony. Kreutzer is one of the most capable land experts and colonization authorities in the world. He knows every angle of settlers' troubles from soil handling to family affairs, and has had unusual experience along this line, not only in America, but in Australia as well.

Early in the history of the Durham Colony developments, he got the farmers interested in small farm flocks of sheep. A useful place for sheep is one where they can keep ditch banks clean, pick up left-over feed in fields and become in other ways a by-product proposition.

It was expected that some day the Durham colony would produce several carloads of very high-class rams per year.

Therefore, when I said, "Well, George, how are the sheep coming?" I expected a report of splendid progress. "Too many dogs," was the reply. "We are practically out of the sheep business," he continued. "They have been nearly all killed by dogs and we have never been able to find out which dogs have done the damage. Apparently we had to choose between dogs and sheep. We decided to stay with the dogs," he concluded.

WATER! WATER! WATER!

To make big crops of big prunes and pears we are finding that our problem is water and water—and then more water. Some time ago Professor Vehmeyer talked to the growers who constitute the Prune Growers' Round Table at Colusa. He gave some startling figures about the amount of moisture evaporated by growing trees, compared to the quantity lost from the surface of the soil in an orchard; also about the number of tons of water required to make a ton of dry matter in the fruit wood and leaves of a tree.

We haven't made any experiments, but observation seems to indicate that on our land the situation develops something like this: We start in with the soil full of moisture in the spring, say, before growth starts; then, on come the leaves and blossoms and fruit. We believe that this, together with the moisture pumped out by the north wind in April, pretty well uses up the readily available water supply in the soil area in which the principal feeder roots are located.

By the last of April or early in May we must fill up this soil moisture reservoir by irrigation. During May and June, as new wood growth is being made and new roots growing and fruit developing, the readily available moisture supply is again reduced to a minimum, and in order to keep all the departments of the tree moving, a second irrigation is required.

To swell the fruit to its maximum size and weight may require a third irrigation.

Water is absolutely our principal limiting factor in the production of maximum crops.

DANES CO-OPERATE

It is not unusual for a 40-acre Danish farmer to belong to a dozen or more co-operative associations. He will deliver his milk to a creamery, hogs to a bacon factory, eggs to a marketing organization, buy feeds of one dealer and fertilizers of another and so on, all on a co-operative basis.

Subsoil

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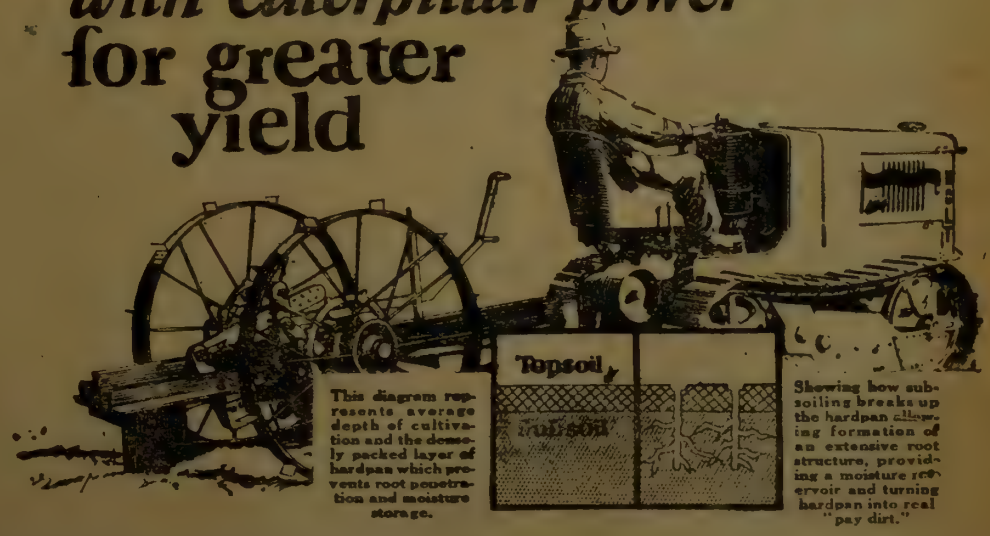

This diagram represents average depth of cultivation and the densely packed layer of hardpan which prevents root penetration and moisture storage.

Showing how subsoiling breaks up the hardpan allowing formation of an extensive root structure, providing a moisture reservoir and turning hardpan into real "pay dirt."

Reports of bigger yields after subsoiling have come from "Caterpillar" Tractor owners all over California. Practically every crop grown here—from beans to barley—from olives to oranges—shows greater yield, faster growth, finer quality after subsoiling.

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WANT to hear from owner having farm for sale. Give particulars and lowest price JOHN J. BLACK, Chippewa Falls, Wis.

FARM wanted, immediately. Send particulars Mrs. L. Roberts, 320 E. Tray, Roodhouse, Ill.

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How "T B" Spreads

BOVINE tuberculosis may be introduced into a healthy herd of cattle in the following ways, according to R. D. Foot, assistant farm adviser of Mendicino County:

By the purchase of a bull or other animal that is infected with the disease. This animal may be apparently healthy at the time of purchase, but if it contains the germs, the disease may develop and spread to other cattle. New animals should only be bought from a herd that is known to be healthy.

Feeding calves with milk, buttermilk, or whey that has come from tuberculous cows. A farmer may have a healthy herd, but if he brings home skim milk from a creamery and feeds it to his calves he may give them the disease. Such milk should be rendered safe by boiling or pasteurizing it.

Showing cattle at fairs and exhibitions where proper care is not taken to keep out diseased stock or to disinfect the stables.

Shipping animals in cars that have not been disinfected, as these may have recently carried diseased cattle.

Allowing cattle to graze with diseased ones, or to come in contact with them over fences

When the cattle are permitted access to small ponds, water holes, or troughs, these may become badly contaminated with infected manure. The rapid spread of the disease on certain ranges is believed to be due in part to infected water.

Tuberculosis develops so slowly that in many cases it is months and sometimes years before any symptoms are shown.

Wild Pigeons Reported

IN A recent issue of ORCHARD and FARM mention was made of the periodical reports of wild or passenger pigeons being seen. Mrs. Pearl Gaertel of Carrols, Wash., writes as follows:

"Wild pigeons have done so much damage to grain in this district that a State law has been passed allowing them to be killed in 1925. George Oyster of Kelso will confirm this statement. I hear them from dawn till dark during the summer season, as they nest near here. Have also eaten some of the birds. They are now picking berries, within easy gunshot distance, on my place."

According to the New International Encyclopedia and other standard authorities, wild pigeons have "totally disappeared," the last one dying in the Cincinnati Zoological Gardens in 1914. Reports of the reappearance of these interesting birds are perennial, but no specimens have been identified by ornithological experts.

The extermination of the passenger pigeon is at once one of the most remarkable and disgraceful pages in North American history. Where there were literally billions of them within the memory of persons now living, not one now remains. Flocks of them used to darken the sky, one drove being a mile wide and 150 miles long.—O. H. B.

Successful Banner Strawberries

R. H. McNEISH is the owner of a picturesque and profitable quarter-acre berry ranch one mile north of Van Nuys (Los Angeles County). In the spring of 1922 the ground was plowed 10 to 12 inches deep, then thoroughly worked until dry. The soil was then given plenty of water and again cultivated. Chicken manure was used as a fertilizer. The ground was further enriched by planting a cover crop of barley and melilotus indica.

Five thousand Banner strawberry plants were set out last January. This variety is very popular in Northern California, where it is extensively grown for market. As soon as the plants began growing dirt was raked over them. When they had grown through the soil the process was repeated. This caused the berries to grow on a little ridge, allowing the irrigation trench to be between the rows two feet apart.

The first ripe strawberries made their appearance February 18, a month from the time of planting. Picking began on a small scale in March. The yield increased each month, as follows:

March	30 baskets
April	75 baskets
May	122 baskets
June	793 baskets
July	900 baskets

BANNER BEST VARIETY

Mr. McNeish considers the Banner strawberry the very best variety that he has ever grown. It is less acid than most varieties, shows exceptional color after canning and retains its original firmness. It is a good keeper if picked before over-ripe. Five thousand more plants will be set out in November.

In addition to the strawberries, a large number of blackberries, dewberries and raspberries are successfully grown by this horticulturist. All vegetables used by the family are raised on the place. Surplus products are readily sold at a little berry store operated by Mrs. McNeish in front of their home, on the San Fernando boulevard. Clusters of tomatoes weighing more than four pounds each are frequently grown, which indicates the richness of the soil in the Van Nuys district.

The original cost of the McNeish one and a quarter acres of land was $1250, the price paid three years ago. The property has more than doubled in value, being now priced at $3000.

WATER CHEAP AND PLENTY

Water for irrigation costs one cent per inch. Minimum turn on, $3 worth. Cost of irrigation per month, $6.

Mr. McNeish estimates that his net return from strawberries from a quarter acre of ground totals $400 for six months. Next year, if all goes well, he figures his net returns from 10,000 strawberry plants will be $1500.

This little berry farm has been systematically laid out and its appearance is attractive and neat. It is substantially fenced, the posts being painted white. The strawberries are gathered with unusual care. Each member of the family is paid for his or her work and accurate individual accounts are kept.

A bonus is paid those who take exceptional care in preparing the baskets of fruit for market. According to law, each basket of strawberries must weigh

McNeish in his berry patch.

at least 12 ounces. Many from this ranch weigh 15 ounces.

WAGES WAR ON INSECTS

Every effort is made to destroy the two principal fruit pests, red spider and aphis. For the extermination of the first sulphur is placed on the ground near the plants, but not on them. The sun's heat causes the sulphur fumes to generate and as the spider breathes through his pores the fumes enter them and kill him. The aphis is destroyed by the use of a spray.

The McNeish family consists of father, mother, two sons and two daughters. The eldest of the children is 15 years of age. Nestling among climbing vines and flowers in the center of the tiny ranch is the picturesque bungalow home, which shelters one of the most progressive families in the Van Nuys district.—J. S. PEACH.

More About Making Rabbit Fur Garments

By ELLEN S. GREEN

IN a former article I gave instructions for tanning rabbit skins. Now the Editor has asked me to explain the cutting and making up of fur garments.

If you have tanned your skins until they are very soft, sometimes it is as well to block the skins before marking the pattern. Dip a piece of soft rag in a little warm water, rubbing the wet rag all over the hide on the skin side. Continue the rubbing until the hide is fairly wet. Now get a smooth board or table and tack the hide on this, fur side down. Stretch and pull into shape, and you will be surprised how much you can enlarge the hide.

Leave the skin on the board until real dry. Then you are ready to commence the sewing. Have the pattern of whatever you intend to make ready to lay out on the skin side of the fur. I always keep a few glass-nob tacks for this purpose to pin the pattern, so it does not move.

Mark all around the edge of pattern with a pencil and be most particular that all parts of pattern run the way the fur runs (that is the most difficult part of the whole thing for a beginner to remember).

Take a safety razor and cut all around the pencil marks, never laying the fur down while cutting, as that ruins the edge of your fur. Hold it up and cut. After a little practice this will become easy, but at first it is tiresome work.

Place the edges of fur together and fasten with an oversew stitch, taking the stitches fairly deep. I always advise a beginner to start on a child's neckpiece, or something else not very elaborate. It is surprising how soon one gains confidence in one's ability and branches out into making more complicated garments.

I am still receiving inquiries as to which rabbits are fur-bearing. If one stopped to think, all rabbits are fur-bearing, but, of course, some furs are deeper and better for garments than others. In my opinion, American Blue is the rabbit skin par excellence for elegant coats and the more elaborate women's garments.

In a leading dry goods store of Los Angeles city, I priced an American Blue coat, just a little, short garment, made of 25 or 30 skins. The price was $225. Another similar coat was marked $195. Now, perhaps, you will listen to me when I say, save your rabbit hides.

Of course, the big city stores have a great deal of overhead expense, otherwise one would come to the conclusion that some one was trying to get rich quick, as I can turn out a real smart coatee with many more skins than could have been used in either of those I saw for less than one-third the first price named.

I have made auto robes out of all kinds of skins: New Zealand, Flemish, Checkered Giant, Polish, Black Himalayan, etc. All are usable as long as the skins are mature and in good condition. One of the most beautiful things I ever made and sold was an American Checkered Giant auto robe, black and white, for which I received $50. It was beautiful enough to be well worth the money.

What one woman can do another can. Utilizing the hides in your rabbitry is one way of making rabbit growing a sure success. If I can help with further suggestions in this paper I shall be glad to do so at any time.

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We will send a STERLING razor on 30 days trial. If satisfactory, send $1.27. If not, return razor. Free Horsehide Strop FREE. Write today. STERLING COMPANY Suite 40 BALTIMORE, MD.

Electrically Operated Farms

Present Advantages and Future Possibilities of Performing Farm Work With Electrical Current

By O. E. BRADFUTE,
President American Farm Bureau Federation

NO ONE who was not born and reared on the farm can realize what it means to the farmer and his family when for the first time he presses the button and sees his home, lawn, barns and yards suddenly spring from darkness into a full noonday light and the activities of the farm take on, as it were, new life.

When the farmer's wife enjoys the experience of the electric sweeper, full electric laundry equipment and the sewing machine motor; when the family has the experience of a modern bathroom and a convenient kitchen sink with hot and cold water under pressure—these things alone give a trial of electricity which a user never will be willing to surrender.

This simple test of electricity in his home awakens in the farmer deeper interest in electricity, as he begins to think of the possibilities of this invisible power if it only could be harnessed for general farm purposes. Naturally, what first comes to his mind are some of those tasks that were so irksome to him in his boyhood days.

He remembers very well as a boy the request from mother for a fresh bucket of water from the old pump, or a more severe command from father that a tank full of water for the livestock be furnished by his manipulation of that same pump handle.

DESTROYS FARM DRUDGERY

He has not forgotten the old grindstone, which he wearily turned while grandfather sharpened his very dull ax, nor does he forget the old fanning mill, the cranking of which became so irksome to him. He also recalls the milking machine of his boyhood days, which was nothing but himself, now being supplanted by modern milking machinery, hitched up to electric current.

He thinks of the old dash churn, which has been replaced by the barrel churn, to which electric power is so easily applied; and of the more modern cream separator, to which a regular electric power lends so much efficiency.

The farmer is hoping for the time when by pressing other buttons he can start machinery for grinding his feed, unloading grain from his wagons into the bin and again from the bin into the wagons; motors for the operation of his threshing machinery, his husking machines, his silo fillers, woodsaws and thousands of other forms of stationary machinery used on the farm.

Many farms should be equipped with devices for recharging batteries, such as are used in autos, trucks and radio equipment. The needs of refrigeration on the farm are as important as in the city. Electricity solves that problem much easier and better than the old fashioned ice house.

ELECTRICITY SAVES DAYLIGHT

The farmer has not been very appreciative of the daylight saving program, adopted in many of the cities, but he has found it quite profitable to lengthen the daylight activities of his hens and poultry house by means of electricity, for this results in an increase of egg production. Some recent discoveries of the effect of electric light on plants may also lead to a very greatly increased use of electricity for the purpose of stimulating plant growth.

Larger electric power plants can be used by farm communities to operate cooperative elevators, cotton gins and other kinds of machinery for handling farm products. In the arid sections many farm irrigation plants are operated by electric motors.

Farmers of this generation may see the day when electric motor tractors will be attached to their plows, cultivators, reaping machinery and other farm implements, for the operation of which it only will be necessary to press the button and watch the machinery go into action.

It is claimed that modern farm machinery has increased the efficiency of the American farmer 20 per cent in the last decade. It is not unreasonable to expect a similar increase in efficiency in the next decade and, no doubt, electricity will play an important part in accomplishing that result.

ELECTRIC FERTILIZERS

Experiments have proven the ability of large electrical plants to make fertilizers at a very much lower cost than farmers now are paying. To produce abundant and cheap fertilizer means much, not only to the farmers, but to all the people of the Nation, for the fertility of America's soil is the basis of our national wealth and prosperity.

God has equipped America with many fine rivers and streams, well scattered over the entire country. He must have had in mind the electrical age and surely intended that we should harness that great power now going to waste and wisely distribute it to all the people.

Farmers, along with many other people, deny the right of a few persons to pre-empt water power rights for their own individual and selfish use. Surely the public is not willing to make a gift of this great power to any individual or group of persons and then pay interest on the value of that gift for all time to come.

Therefore, we do not hesitate to recommend that there be some general plan adopted similar to the Ford plan of amortization as proposed in connection with the Muscle Shoals proposition. The people are perfectly willing to pay for equipment that will transform water power to electrical power, but they are not willing to pay for the water power itself which God has given to the whole people.

Garbutt's Orchards

(Continued from Page 2)

times putting on more size during the next two or three years than during the first five. I believe they should be planted at least 60 feet apart. After they begin to develop, it does not take them long to interlace, if planted too close."

Perhaps the most interesting product of the Garbutt ranch is the Chinese "jujube," of which two principal varieties were tested originally at the Chico Plant Introduction Gardens of the United States Department of Agriculture.

Garbutt has more than 100 bearing trees or "bushes," as they might more properly be termed, judging from their appearance. He has not pruned them and they have attained a height of 15 feet or more, bearing tremendous crops every year. He has the two varieties recommended by the Chico Experiment Farm—the "226-84," which is of better quality, and the "226-86," which is more prolific. The only planting exceeding this in size is said to be that of the Mills Orchard Company, Hamilton City, numbering 600 trees.

"Were it not for the marketing problem, I believe the jujube could be made one of California's most profitable products," says Garbutt. "But at present the production is so limited that we who have a few trees find some difficulty in placing our fruit. However, I believe when some of the confectionery companies and wholesale produce men learn of the delicious and valuable qualities of the jujube, the demand will exceed the supply. Few city consumers know anything about them."

JUJUBES ARE DELICIOUS

The fruit is delicious when simply cured on the tree, having a flavor which may be described as a mixture of the date with molasses. One variety has a sugar content of 65 per cent, and may be candied simply by soaking or boiling in water, in which a small amount of sugar has been dissolved.

The principal problem remaining to be solved is that of softening or breaking the tough skin. Dipping in lye, pricking and other methods have been tried without much success. Candy manufacturers assert if some method can be found to accomplish this result, they can use large quantities of jujubes for making fancy confections. Already it has been learned that storage for several months softens the tough skin to some extent.

Heretofore Mr. Garbutt has disposed of most of his jujubes to neighbors, who gladly paid as much as 50 cents a pound for them. Children especially seem to be very fond of the fruit, which may be eaten like a date. The skin is red and the stone is about like that of the date. The fruit has a noticeable laxative effect, similar to the prune. The Garbutt youngsters make frequent trips to the shed where the remainder of last year's crop is stored—a fact which may account, in part, for their excellent health.

SYRUP PROVES VALUABLE

Mrs. Garbutt, in processing the fruit, made an interesting discovery. The syrup left after boiling was found to have the color and flavor of maple. In fact, it was learned that this maple flavor could be imparted to corn, sugar and other syrups simply by adding a little of the jujube liquor. Hence a valuable by-product was found which also sprang into instant popularity among the neighbors.

"The jujube is very easy to grow in this locality," says Garbutt. "The trees may be set 15 feet apart each way, and seem to thrive even when neglected. In fact they will grow without irrigation or cultivation here, and so far have been free from pests and diseases.

"Five-year-old trees will yield sixty pounds of fruit or more, and it ripens in October, at a convenient time for harvesting. One advantage is that the fruit may be left on the ground several days until convenient to pick, a little rain apparently doing it no harm."

"The jujube, then, must be about the most profitable thing on the ranch," we suggested.

CAPRIFIG MAKES MONEY

"No: I'll show you my most profitable tree," said Garbutt, leading us to a giant fig. "This is a caprifig," he said, "and the demand for its fruit exceeds the supply—at 1 cent each."

But, after all, these are only side lines which help to make ranch life more interesting.

The prunes are the real "money crop."

Mr. and Mrs. Garbutt are graduates of Colorado Agricultural College, and find much to be said in favor of their California farm as a place to apply their scientific knowledge. But most of all do they appreciate ranch life as best and most healthful for a growing family.

"I was a traveling salesman for years," relates Garbutt. "I dread to think of where I would have been had I stayed in that business, with this fine family growing up, and my work making it impossible for me to be with them. After all, the greatest pleasure in life is found in children, and if one cannot spend any time with them, what else matters? We are working hard and denying ourselves some pleasures, it is true, but we are building up a valuable, producing property which we hope not only will make it possible to educate our children, but eventually make us independent as well.

"Would I have been better off as a traveling salesman? Could I have saved anything for a rainy day? Would life for all of us have been as much worth living?"

And as one—father, mother, the five little Garbutts and even grandmother, answered unanimously, "No!"

Pollination Points

(Continued from Page 3)

in similar fashion, is not able to set a full crop of fruit. The few fruits set now and then are accounted for by the occasional overlapping of the blooming time of a few stray flowers, which occurs more often near the coast or in protected, cool, foggy weather.

Fortunately some other varieties, such as the Dickinson, the flower of which open in reverse fashion, are able fully to pollinate the Fuerte. Dr. Stout suggests that the largest crops of Fuerte will be secured by top budding and growing one limb of Dickinson in each Fuerte tree. It happens, however, that the Fuerte, being resistent to frost, is grown in many places which are too cold for Dickinson, and it will be necessary to await the further progress of these studies in the hope that some hardy variety may be found which may prove a suitable mate for Fuerte when grown in frosty places.

TAFT TROUBLES EXPLAINED

The Taft variety is a very fine fruit which was much planted in the early days of the industry. It has proved very disappointing and has not fruited except in a few places. It is now known that the trouble is lack of pollination, but so far no variety has been found which will mate with Taft. On account of the fact that some Taft trees do fruit well, it is confidently expected that suitable mates will be found during another season's investigations.

Pollination of the avocado is not accomplished by wind but is brought about almost entirely by bees and it is important that a plentiful supply of bees be near at hand during the avocado blooming season.

Dr. Stout's work has emphasized the importance of cross-pollination which must be taken into consideration when selecting varieties for any avocado planting. But pollination is not everything, as a full crop may be set and then largely shed in the early stages of growth if careful attention is not given to prepare irrigation and cultivation.

Bee Doctor Cures

AN apiary of more than 300 colonies, which had been condemned by the county inspector and ordered cleaned up within ten days on penalty of being destroyed by burning, recently came into possession of an experienced young beekeeper.

This was a very aggravated case of American foul-brood and called for immediate and promptly effective treatment. Every colony in the yard was more or less affected.

With two experienced assistants, the owner removed all combs from the hives and the honey was extracted, the combs being immediately thrown into a caldron and rendered into wax.

The honey then was diluted slightly with water and boiled for one hour, until the color of dark molasses. Sheets of foundation in new frames had been provided for each colony. When cooled, the honey was diluted with water 50-50 and fed back to the colonies.

They drew out the foundation finely and stored the surplus. Brood-rearing started at once and the colonies were soon in thrifty condition.

This was about June 1, and no recurrence of the disease, so far, has appeared. Some honey was being gathered at the time and conditions were favorable for doing the work without inciting robbing, which is the great drawback in such operations.

PUMP WITH TRACTOR OR MOTOR?

F. H. Steigler of Livermore found by comparative tests that it cost only $4 an hour to operate an irrigation pump with an electric motor, while $4.50 was the expense when a tractor was used.

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From Public Service to Suburban Orcharding

John P. Clum, 72 Years Young, Finds Orchard and Garden Work the Most Interesting and Absorbing of All Occupations

By O. H. BARNHILL
Assistant Editor of ORCHARD and FARM

AFTER fifty years of office holding, public speaking and traveling from Mexico to Alaska and Washington to Hawaii, how could a man be content to live in the country and devote all his time to orchard and garden work?

O. H. BARNHILL

John P. Clum, Arizona Indian agent, Alaska postmaster and American lecturer, considered the question a moment, leaning on a hoe and wiping his perspiring brow.

"Why not?" he countered. "I've 'seen America first' and been before the public for half a century. They say 'a change of occupation is rest' and this work is different from anything I've ever done before. What could be more interesting than to co-operate with Nature in producing beautiful flowers and fruit?"

Cultivating, irrigating and other routine operations of orcharding are not considered especially attractive, but the solving of horticultural problems, such as the control of tree diseases and the building up of soil fertility, are found full of absorbing interest. Mr. Clum is growing a cover crop of cowpeas in his eight-acre orange orchard near San Dimas and carefully watches and treats every insect pest and fungus disease that appears, following expert advice emanating from the Los Angeles County farm adviser's office.

DEVELOPMENT WORK INTERESTS

Development work, however, is what most interests the veteran fruit grower. All his long and useful life has been devoted to constructive industry, which for him still possesses a strong appeal. When, a year ago, he acquired his orchard home, it was one of the most unattractive places imaginable. It belonged to a non-resident owner, who kept the trees in fairly good shape, but rented the house and surrounding grounds, which were sadly neglected.

"It was the possibilities of the place that appealed to me," explained Mr. Clum. "There is a wonderful view of the mountains, especially of Mt. San Antonio—please don't call it 'Old Baldy.' In order to get a good lookout I had to trim off a good many lower limbs from the eucalyptus grove and dig up a few orange trees, but the reward was worth the cost. Most of my life I've lived in sight of great mountain peaks and would feel lost without them.

"We call our shade trees the 'Great Forest' and the barranca nearby the 'Royal Gorge,'" smilingly explained Clum. "I believe in making the most of everything. We give our kittens the most interesting and unusual names we can find and are wondering which will develop into the best hunter. A cat really is an important orchard adjunct, protecting the trees from a great pest, the pocket gopher."

While the dry wash occupies valuable space, Clum does not begrudge the room, because of the scenic setting which it gives the place. "I'd never be content to live in a level orchard, surrounded by trees," he explained. "I'm something like the Plains Indian, who didn't like a wooded country, because the only direction he could see was straight up."

The barranca, however, is to be made to pay for itself in dollars and cents, as well as sentimental inspiration. Waste water from neighboring irrigated orchards runs through the Clum place.

"I've lived so long in a desert country that it hurts me to see water going to waste," he declared, leading the way to a miniature dam which he had thrown across the gulch. "With this small turbine pump we expect to save 15 to 20 inches of water—I dare any of it to get past us now."

An old barn was torn down and an unprofitable power pump nearby dismantled. These are located on a triangular piece of land which was mostly planted to young orange trees. Part of the middle spaces were seeded to alfalfa, which furnishes green feed for the chickens and promises soon to supply nitrogenous humus for the orchard.

Mr. Clum and his new California home.

Vegetables, grapevines and miscellaneous fruit trees were planted in the unoccupied space.

UTILIZES DRAINAGE WATER

Finding, upon investigation, that two inches of waste water from an adjoining orchard was flowing through an underground pipe across this tract 10 days out of each month during the growing season, Clum put in a shut-off at the upper end and now has plenty of free water for the alfalfa, vegetables and young trees. The old well is to be cleaned out and tests made to determine how much water it will yield.

Vast quantities of brush and rubbish were removed, bringing order and neatness out of what was rapidly becoming a howling wilderness. Many vines, shrubs and flowers were planted in strategic positions and it doesn't take a strong imagination to visualize the bower of beauty which the Clum orchard home soon will become. Wild flowers even were planted along the right-of-way of the railroad which runs in front of the property.

The house has been repainted and remodeled. An especially attractive feature is the two big screened-in porches. As we sat in one of these, looking out over fruitful orchards to the mountains beyond, a Santa Fe express train rushed by. Mr. Clum was asked if the passing trains didn't annoy him.

"Not at all," he replied. "It makes me happy when I think I don't have to catch one of them — I've traveled so much.

TRADES YOUNG DATE ORCHARD

"How did I come to get this place?" repeating another question. "I traded for it a young date orchard in the Coachella Valley. It was too hot there for me and too cold here for the man with whom I traded—he lost a crop by freezing.

"I began orchard work in 1915, planting Deglett Noor date offshoots, which the Government imported from Egypt. The war prevented further importations, which put a stop to planting this variety. Our young trees are now producing many offshoots, with which the remainder of our 10-acre tract is being set."

While Mrs. Clum prepared an appetizing lunch on the airy porch, her husband related some of the interesting incidents in his eventful life. Graduating at an early age from a New York college, he helped organize the weather bureau at Washington. While in the service at Tucson and but 22 years of age he was placed in charge of a bloodthirsty band of wild Apache Indians at San Carlos, where the river of that name empties into the Gila.

Native police were appointed and the redskins organized upon the basis of self-government. So successful was his work as Indian agent that during his four years of office the inhabitants of four other reservations were moved to San Carlos, the population of which increased in that time from 800 to 5000. Although the Government was saved approximately $100,000 by this concentration, Clum's salary remained the same, $1500 a year.

INTERESTING EARLY EXPERIENCE

Lacking adequate support from the Government and having his work continually hampered by the white settlers and soldiers—the latter having at that time no other opportunity of winning military honors and promotion than by fighting Indians—Clum resigned his position and began publishing the Tombstone Epitaph, being at one time mayor, postmaster and editor in that town.

Having the misfortune at this time to lose his wife, Clum endeavored to drown his grief in work, which resulted in nervous prostration, from which he never fully recovered. In the '80s he engaged in the real estate business at San Bernardino.

In '89, after the collapse of an orange boom, Clum went to Washington to attend the inauguration of President Harrison, taking along 12 boxes of navel oranges. This variety of fruit had been grown in the United States only a few years and had not yet been shipped farther east than St. Louis and Chicago.

The Washingtonians were so surprised and delighted with the new California fruit that the next year Clum went to New York with a citrus exhibit which has probably never been equaled. Two dozen trees, each bearing 40 to 100 oranges, were transported to the metropolis and exhibited in the dead of winter to thousands of curious and astonished Easterners. Before digging, a large box was sunk around each tree, leaving the roots undisturbed in their native soil.

An immense quantity of fresh and dried fruit, wine, brandy, olive oil and numberless other California products were also exhibited, including a giant cactus 20 feet high and weighing 1800 pounds. The Santa Fe railroad transported the exhibit free of charge. The result was the revival of the orange boom, which still is making a loud and agreeable noise in the Land of Sunshine.

In '76 Mr. Clum had gone to the Centennial Exposition at Philadelphia with another and very different exhibit—25 wild Apache Indians. Exhibitions were given for the purpose of raising funds to move some outlying tribes to the San Carlos reservation. The Custer massacre was still fresh in the public mind and the blood curdling yells of half naked redskins, brandishing tomahawks almost scared the life out of some Eastern audiences.

SPENDS DECADE IN ALASKA

Did space permit something would be told of the 10 years which Clum spent in the postal service in Alaska and of his work on the lecture platform, where he eloquently described the wonders of the West, far North and Sunny Southland. Part of the time he was employed by the Southern Pacific and part of the time by the Government, the latter paying for National Park lectures. This latter work was not discontinued until four years ago.

Mr. Clum is president of the Open Forum, a local organization which meets weekly to discuss current issues. "San Dimas people are the best I have ever known," he declares. "They are friendly and interested in newcomers, but not bothersome, and are a very superior class. Often I am asked to play golf, attend lodge meetings and do other similar things, but I find orchard and garden work much more interesting and enjoyable."

Likes Hubam Clover

M. M. WINSLOW, Riverside Farm Adviser, thus describes a spring cover crop of Hubam clover grown by John Gobruegge in a citrus orchard:

"The Hubam was planted the first of April at the rate of six pounds of seed per acre. Water was applied to the grove every fifteen days, giving approximately four inches per acre. This was sufficient water to keep the soil in the root zone reasonably moist at all times, secure maximum growth of the cover crop and maintain the trees in good condition.

"The trees are about 30 years old and are planted in a loam soil. The cover crop was disced under the last of June. At that time it stood 4½ to 5 feet high and had roots 18 inches to over two feet in length. Undoubtedly the deep penetration of the roots would have a very beneficial effect in opening up the subsoil—something that the turning under of the top growth would not do.

"Mr. Gobruegge also grew a plot of melilotus alba, but it did not make nearly as good a growth as the Hubam. He considers Hubam a very promising spring cover crop."

Self-Sprouting Grain

INSTEAD of sprouting grain for chicken feed in the usual manner, barley is thickly drilled in the poultry yards, on the Richardson egg farms. A one-horse disc drill is used for this purpose. The seeding is begun late in the summer and successive crops sown until the following spring.

Until the fall rains begin, light irrigation moistens the sandy soil sufficiently to make possible a good job of drilling. A much larger amount of grain is used than where it is sown for a crop.

"The hens are kept out of the yard until the grain is out of the ground a couple of inches," explains one of the ranch superintendents. "Then they are turned into the tender sprouts and you should see the biddies scratch and eat! This not only is the easiest way to sprout grain, but it forces the birds to take natural and beneficial exercise. Besides, it cleans and sweetens the soil."

EAST ABANDONS FARMS

During the 1910-20 decade, 1,685,000 acres of cultivated land in New York was abandoned; Pennsylvania, 825,000; Illinois, 753,000, Iowa, 684,000; North Carolina, 614,000, according to the U. S. Department of Agriculture. In pleasing contrast to the retrograde movement of agriculture in the East, millions of acres of virgin soil in the Pacific West was brought into cultivation during the same period.

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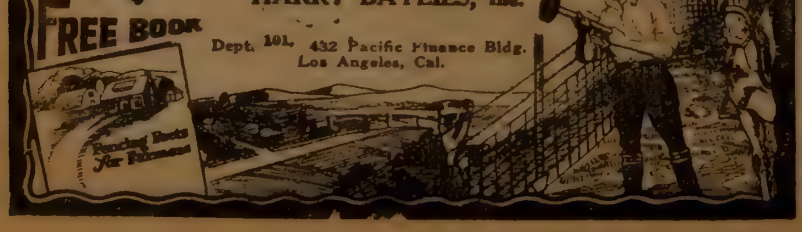
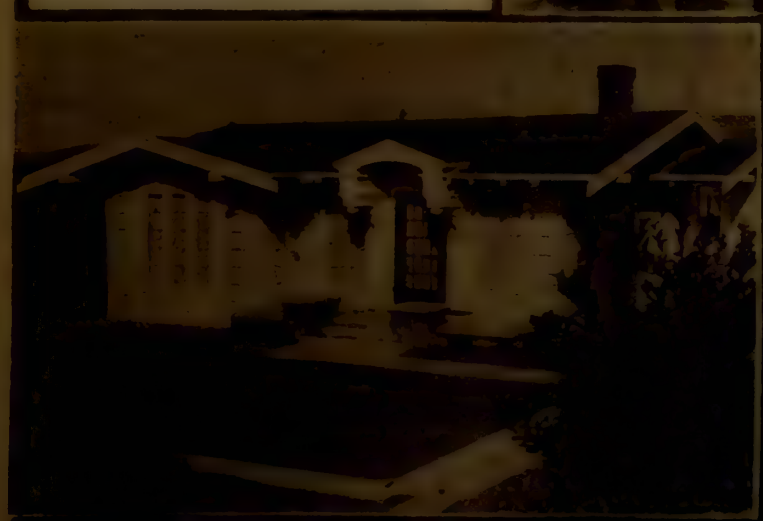


Farm Home Suggestions

At Fairoaks, near Sacramento, this restful rural home lends beauty to the landscape. The graveled roadways add much to the picture.

In contrast to more elaborate houses is this "garage home" of a colonist. Some day it will shelter the car instead of the family.

In the hot interior valleys, nothing helps as much as vines to make home more livable during the summer months. A perennial arbor of deciduous plants is ideal where winter sunshine is desired.



The little white bungalow is accentuated by a background of green foliage. When the owner has completed his planting of lawns and shrubbery, this "little gem" will have aesthetic value far in excess of its modest cost.

How well the California suburbanite can emulate the Oriental or tropical atmosphere is shown by this unique home place near Azusa (Los Angeles County). It is a veritable botanical garden.

Three Dollars Each for Peaches—In 1854

By ROBERT E. JONES

Contributing Editor Orchard and Farm

THE peach tree has followed civilization around the world, and, like so many things, including man, the peach has found its most favorable home here in California.

It was not the rosy, thick-meated, luscious fruit with a tiny pit which the Chinese boy of centuries ago knocked off the tree in his father's back yard, but a small fruit which was mostly pit and skin, the sort we get today out on a dry, neglected farm, shriveled in the sun.

The ancestor of California peaches was present on many an historic occasion. Doubtless Confucius mused in the shade of the peach tree and certain it was that Xynophon, with his 10,000, gathered peaches on the famous march through Persia. The peach arrived in the United States via Europe, having crossed the Bosphorus from Persia, and made its way to the northern nations.

A REAL CASH CROP

When gold was discovered in California the peach was present. There is the story of a tree at Coloma, where Marshall made his world-exciting find, that in 1854 bore 450 peaches which sold for $3 each, or $1350 for the crop of one tree; the peach then vied with gold for favor!

It is probable that some of the realty enthusiasts of peach boom days had this tree in mind when they intimated to Easterners the prospective fortunes in California peaches. While every branch of California's famous fruit industry has its drawbacks and advantages, the writer must say that peach growing has an extraordinary appeal. Of course, the proper location must be chosen; that is but good sense.

Probably one of the best arguments for peach growing as a business is the fact that it is a three-outlet crop. One can ship peaches to Eastern markets or local markets; sell them to the cannery or dry them. Now this does not mean that the grower of any given variety has that choice, for he must decide before he plants his orchard just which outlet to seek. Certain varieties are more desirable for shipping, others for drying and others for canning.

The most startling peach story I have heard is that of Miss Lanie Wilbur of Yuba City, Sutter County. About three years ago she entered the Farm Bureau peach contest and won on yield and quality, with an average yield of twenty tons of peaches to the acre for ten acres of Phillips clings. This remarkable yield was the reward for liberal fertilization, careful pruning, the selection of good trees for planting and general good care. At the time canning clings were bringing about $100 a ton and the gross return from this orchard, of course, was fabulous.

There are about sixty commercial varieties of peaches grown in California, although progressive growers and nurserymen are trying right along to reduce the selection to a smaller number of approved marketing quality.

The industry is widespread in the State, although most of the leading peach growing counties are either in the Sacramento-San Joaquin valleys or adjacent foothills. Fresno County is first in total number of bearing trees, Placer is second, Tulare third, San Bernardino fourth, Sutter fifth, Stanislaus sixth and Kings seventh. Two of these counties are in the Sacramento Valley, three in the San Joaquin and Stanislaus (while in the San Joaquin) is just at about the dividing line between the two valleys. San Bernardino is in the southern part of California.

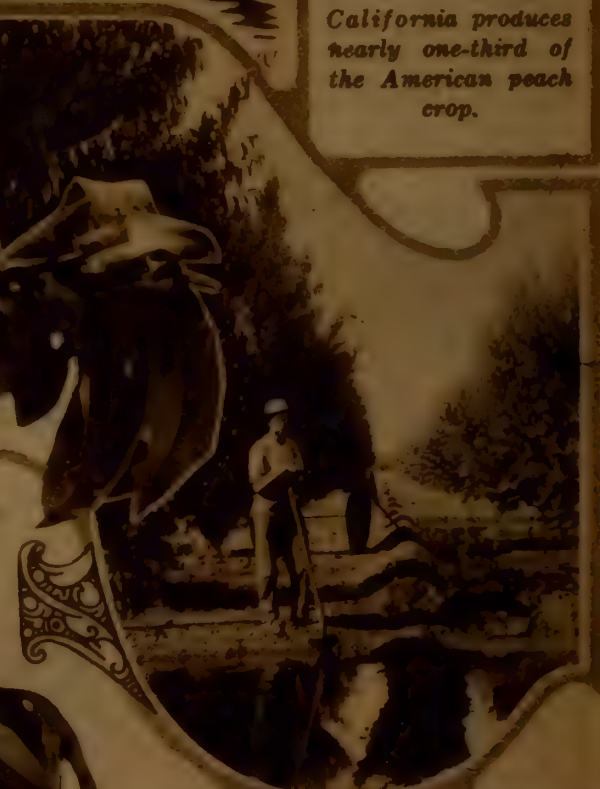
Drying and canning of peaches is an extensive practice in the San Joaquin Valley. In fact, Fresno County is the headquarters for the California Peach and Fig Growers, Inc., which markets the major portion of the dried crop.

Placer County, on the border of the Sacramento Valley, is what we call a "shipping" district, for most of the peaches go over the mountains to Eastern markets fresh. Sutter County, in the heart of the Sacramento Valley, is probably the most famous canning peach district in the world, and it is the district which gave to California the Canning Peach Growers' Association, another of the State's co-operative organizations.

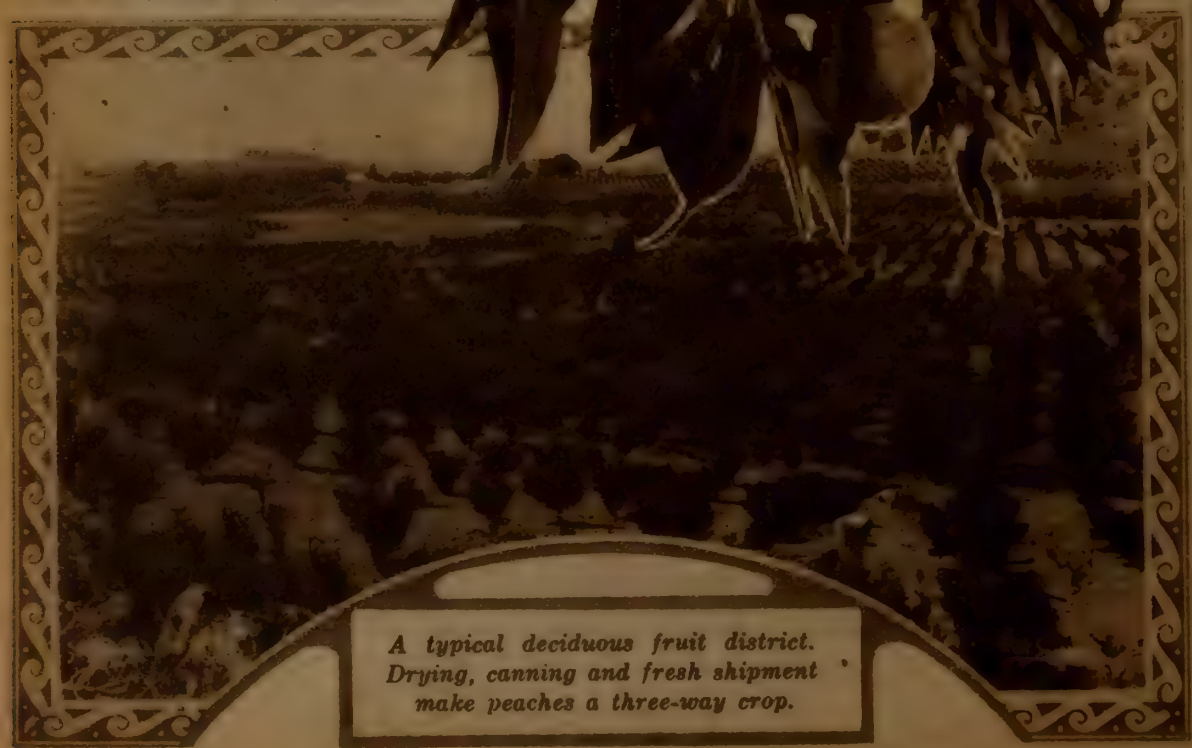
When one considers the wide distribution of the peach in California, its remarkable adaptability as to climate and soil is outstanding. The peach reaches a high degree of excellence on the shallow soils of the Sierra Nevada foothills, and yields abundantly and in fine quality on the deep alluvial soils of the valley's middle.

California fresh peaches reach markets all over the North American continent; our canned and dried peaches reach the markets of the world. We are sending back to the Orient, whence the first tree came, in dried form and in cans a finer quality of peach than the Chinese had ever dreamed of. Such is the record of improvement of American horticulture.

California produces nearly one-third of the American peach crop.



Irrigated orchards lead in yield per acre. A summer scene in Central California.



A typical deciduous fruit district. Drying, canning and fresh shipment make peaches a three-way crop.

Among the States of the Union, California leads in peaches. The crop, year in and year out, is fairly constant here in California, due to the fact that frost seldom does serious damage at blossoming time. Other States which have large peach plantations vary greatly in their output from year to year, due to spring frosts, so that while California is always first in production, and Georgia is usually second, third place, fourth place and fifth place among the States depends largely upon the season.

For 1922 the first five States, with the production in bushels given, were as follows:

United States' total	56,705,000
California	17,500,000
Georgia	4,900,000
New York	3,400,000
Missouri	2,200,000
Oklahoma	2,070,000

California's crop in 1922 brought $18,900,000, farm value. The average price was $45 a ton. Two years before the price was $76 a ton and the total for the State was $27,360,000. Considering America as a whole, the peach is our second most important fruit, with apples first.

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

SEPTEMBER 16, 1923

Practical Hints on Sand Control in Vineyards

(Editor's Note—This is one of a series of articles written especially for this magazine by Professor Bioletti, who is considered one of the world's leading authorities on grapes and grape products.)

By FREDERIC T. BIOLETTI

Professor of Viticulture, University of California

A SANDY soil has some important advantages for the growing of vines. The fruit ripens early, and often colors better; cultivation is easier and more economical; the vines are secure from the attacks of phylloxera.

There are also some dangers to be guarded against, however. Dry surface sand, driven by the wind, will cut the leaves and fruit and even the stems of the vine. The damage may be so great as to make it difficult to establish a young vineyard. Many vines may be killed and much replanting rendered necessary.

The vines which live may make but little growth for two or more years. The final outcome in such a case is a vineyard of uneven, defective vines, the bearing of which is delayed several years and which costs more than a good vineyard. These dangers usually can be avoided and the damage prevented or much lessened by the use of well tested means of defense.

SEVERAL CAUSES OF DAMAGE

The damage is due not only to the abrasive action of the sand, but also to the attacks of white ants, rabbits and other pests which are much more harmful to small, weak vines than to those which grow vigorously from the start.

Drifting sand also is injurious to old vines. Fruit hanging within a foot of the soil may be cut and marred. Vines in parts of the vineyard may be completely buried and those in other parts almost uprooted.

The injurious effects of sand are due to the ease with which the wind causes it to drift over the surface of the ground; these effects can be prevented by any means that moderate sufficiently the velocity of the wind or prevent the movement of the sand.

The wind can be controlled by wind-breaks of lines of trees, bamboos or other tall-growing plants, or by fences of bamboos, boards or other materials. Such wind-breaks are effective for varying distances, according to the height of the trees, the velocity of the wind and the slope of the land. As a rule, a wind-break is of little effect beyond 15 or 20 times its height.

Rows of trees 30 to 40 feet high are required about every 600 feet or quarter of a mile. Where the velocity of the wind is very great they should be even closer. Where a large district is well supplied with wind breaks they may be a little farther apart. In a district where orchards of tall trees are scattered among vineyards, the orchards often are sufficient protection for the vines.

FENCES AS WIND-BREAKS

Fences are more effective than tree rows for short distances, but their effect seems to extend to a smaller multiple of their height. They seldom can be made more than eight or ten feet high, and their usefulness therefore is confined to gardens or other small tracts. Their advantage is that they do not waste soil and water.

A growing wind-break must be given sufficient room, soil and water for growth. A high, efficient wind-break of trees requires at least 20 feet for growth and at least 10 feet beyond this as a turning space for the cultivation of the vineyard.

A wind-break row of trees every 600 feet, therefore, will require nearly one-fifteenth of the area or about two and one-half acres out of 40. If the value of the remaining 37½ acres is doubled, as it may be, the loss of area is insignificant.

A greater loss often is caused by the wide-spreading roots of strong-growing trees, which take up space and water needed by the vines. The depressive influences of eucalyptus, walnuts and cottonwoods often may be traced for 40 or more feet on each side. This may represent easily a loss of two or three times as much or perhaps one-sixth of the area.

This loss can be minimized by the use of deep rooting trees and by heavy but infrequent irrigation of the trees to encourage deep rooting and spreading of the roots. In some cases a deep, open ditch between the vines and the wind-break can be used with advantage to prevent the spreading of the roots into the vineyard. This ditch can be employed to irrigate the wind-break.

RYE CROP IS VALUABLE

Wind-breaks of this kind often are sufficient for full-grown vines, but in some cases (and nearly always in the case of young vines during the first two years) something more is needed in easily-moved sand. For this purpose a winter-growing annual, such as rye, nearly always can be used effectively.

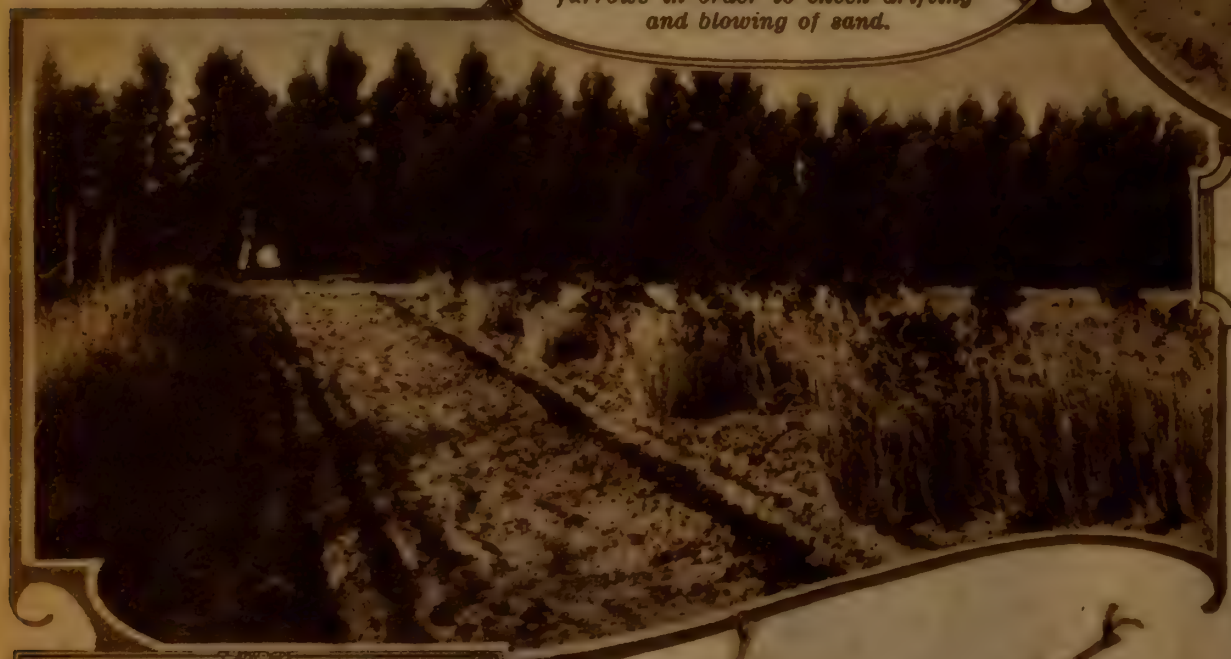
A strip of about two feet wide should be planted down the middle of the space between every two rows or every second pair of rows. The rye should be planted early—October or November—so that it will be two or three feet high before the young vines start in the spring. It should be irrigated and kept growing until it heads out and should then be allowed to dry and remain standing in the vineyard all summer.

These strips of rye are very effective both as a wind-break and as a sand holder. Any winter growing grain can be used, such as barley or wheat. It is necessary to plant it in the autumn or early in winter or it will be too low to be effective when the vines start and when they need protection most. Grain handled in this way will seed itself and does not require reseeding the second year.

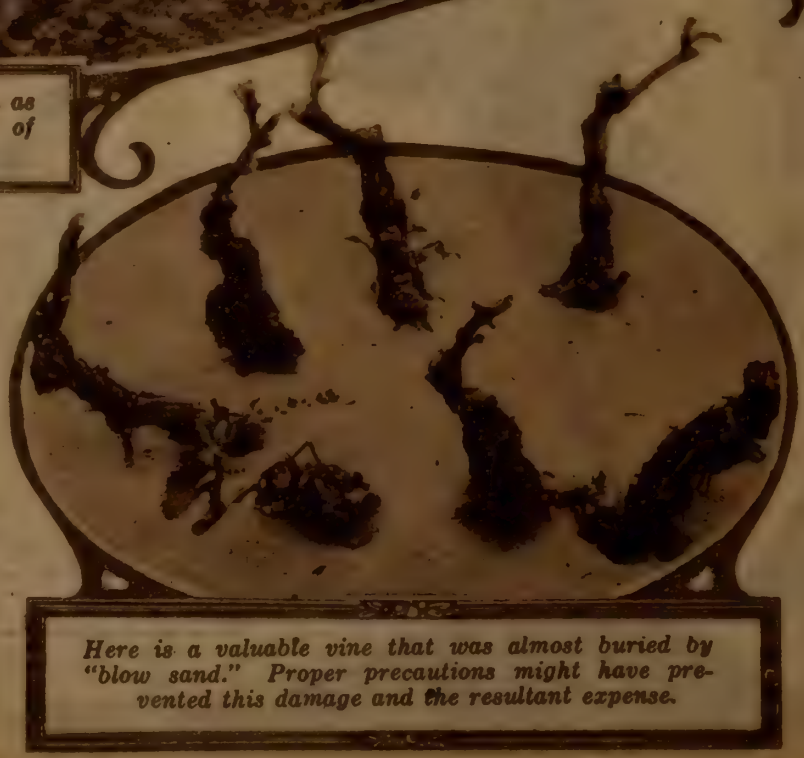
In some districts, especially in the hottest and sadiest, a similar control of the sand is desirable even in the old, bearing vineyard. For this purpose probably it would be better to replace the strips of grain with a lower-growing summer legume. This lower-growing (Continued on Page 9)

Although a light soil has important advantages for grape production, it presents serious problems as well. The owner of this vineyard plowed furrows in order to check drifting and blowing of sand.

An extreme case of root exposure due to sand movement in a windy grape district.



A winter growing annual, such as rye, planted between the rows of vines in October is helpful.



Here is a valuable vine that was almost buried by "blow sand." Proper precautions might have prevented this damage and the resultant expense.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER

SEPTEMBER 16, 1923

Cold Storage Protects Dried Fruit From Insects

Low Temperatures May Supplement Spray Dope as a Means of Crop Insurance Against Injurious Insect Enemies—Results of Tests

By E. R. DE ONG
Department of Entomology, University of California

THE use of cold storage as a protection against insect loss has long been practiced by dealers in furs and costly woolen goods. This practice also may be profitably applied to the storage of dried fruits and nuts for short seasons during the fall, or for that portion of the crop which is carried over to be retailed through the late spring months and summer.

Infestation of a serious nature seldom begins until the spring following the harvest, hence that portion of the crop sold during the winter or early spring seldom requires cold storage, but can be handled in dry storage at a considerable reduction in storage charge. To protect our stored crops, however, after climatic conditions favor the breeding of insects, protective measures should be used to avoid even the possibility of infestation.

The thought of insect control in stored products is usually associated with a gross infestation, followed by a hasty attempt to kill all insects present by fumigation or other means. Such practice implies a certain amount of injury by insect feeding, but this in itself may be small compared with the loss from impaired appearance and the resulting prejudice of the purchaser of such infested packages, irrespective of whether or not the insects present are alive or dead. And the higher the pinnacle upon which a specific brand rests, by reason of expensive advertising, the greater will be its fall if that brand becomes the symbol for worm-eaten goods.

FUMIGATION DISADVANTAGES

After the injury has been accomplished the killing of the destructive insect cannot replace the loss in weight, remove the frass and webbing or restore the damaged fiber. Neither is reinfestation prevented by fumigation or heat, no matter how carefully the work is done. Prevention is needed rather than cure; we want insurance against all loss by insects and if fungi and bacteria can be included, the greater the value of the treatment. This is what cold storage may accomplish.

A co-operative experiment between the California Associated Raisin Company and the University of California has been completed. Raisins were stored four to five months at temperature ranging from 10 degrees to 48 degrees F. The summary of the report for the entire storage period, as made by the technical expert of the association, is as follows:

"The experiment indicates that keeping raisins in cold storage at all temperatures of 10 degrees to 48 degrees F. will prevent infestation, but does not prevent sugaring. The lower the temperature at which raisins are stored, however, the less they are sugared.

"It was found that raisins brought from any degree of cold storage to 50 degrees F. for 36 hours and then to 70 degrees were in a slightly better condition than those brought directly from cold storage to 70 degrees temperature.

"All the stored samples were in good merchantable condition, there being no fermentation, insects, or mold present."

Showing work of Indian meal moth. Of each pair of specimens, the one on the right is wormy.

INSECT DEATH RATE

Length of Exposure—	—Degrees of Temperature— 10	25	32	36	45 to 50
One month	100%	98%	80%	86%	....
Two months	.....	99%	88%	100%	....
Three months	100%	100%	100%	100%	83%
Four months	100%	100%	100%	100%	85%
Four months	100%	42%	45%	....	3%

The last line refers to mites only.

Total number of specimens observed: Dried fruit beetle, 294; saw-toothed grain beetle, 133; Cadelle beetle, 35; Indian meal moth, 404; dried fruit mite, 3000.

Insects are dormant at low, constant temperatures, 45 degrees to 50 degrees F., and prolonged exposure at a still lower degree may cause death, which state may be reached even more quickly by sudden alterations from low to high and the reverse. Experiments to secure definite data of this nature were conducted on the different stages of the insects and mites commonly attacking dried fruit: Indian meal moth, dried fruit beetle, saw-toothed grain beetle and the dried fruit mite.

Dried prunes, raisins and figs infested with the above mentioned insects were placed—just as they came from the storeroom packed in fifty-pound boxes—in the experimental storage plant, where the daily variation in temperature is less than one degree. The temperature in the different rooms was 10, 25, 32, 36 and 45 to 50 degrees F.

Every 30 days one or two boxes of fruit were removed, their contents examined and a count made of all insects found and their condition noted. Dead specimens were discarded to prevent their being counted the second time. The total number of dead and living specimens was then taken as the basis for determining the percentage in the accompanying table.

RESULTS OF EXPERIMENT

From the table it will be seen that a constant exposure of three months or more at any degree from 10 degrees to 36 degrees has proven fatal to the three stages of all insects experimented upon. Two years prior to this a somewhat similar experiment was conducted with a total mortality rate of 96% in the third month and 100% in the fourth month.

It may be concluded that dried fruit stored at any temperature from 10 degrees to 36 degrees will be free from all injury by insects during the time of storage, and when removed at the end of the third or fourth month all stages of the insects experimented upon, unless it be the egg, will be dead.

The action of bacteria and fungi were apparently suspended during the time of storage. A temperature of 45 degrees to 50 degrees causes a dormancy, but only a low mortality.

The cold storage method of handling dried fruit would give protection during the summer months, when practically all the loss occurs, so that hold-over stocks for use during the summer or speculative goods stored until another year could be held without risk or loss by insects. Stocks remaining in storage for three or four months would be practically sterile, from the insect standpoint, when removed.

The practical application of cold storage must include the comparative cost of chilled and normal temperatures. A comparison of the rates as established by the California Railroad Commission shows a range in prices per ton, for a season of six months, as follows:

Cold storage, 75c to $1 per cwt.; dry storage, including labor, 11c to 23c per cwt.

STORAGE COSTS COMPARED

This is an average of 70c per cwt., or .7 cent per pound excess charge for cold storage. When the average retail price of dried fruit ranges from 20 to 30 cents per pound the season's insurance cost is from 2.3% to 3.5% of the value. This cost will seldom need to be paid on any of the stock sold during the winter following the production of the fruit.

Comparing this with the cost of insect protection during the growing season, we find that pear growers estimate the cost of one spraying as equivalent to 2% to 3% of the crop value, with from three to six applications necessary, making a total protective cost of 6% to 18% of the crop value.

Summarizing the insurance cost of the two periods, it is seen that crop protection during the growing season is four times as expensive as similar insurance during the storage period.

Musty Volume Recalls Old Days of California State Fair

By JAMES C. KNOLLIN
Editor of ORCHARD and FARM

Politics, Pumpkins, Purebreds and Personalities Intermingle in Official Report of Sixty Years Ago

WITH the eyes of agricultural California recently focused on the 1923 State Fair, "old-timers" take delight in recounting the stirring events of earlier exhibitions.

It was my good fortune recently to "browse" among some old official reports, which included the "Transactions of the California State Agricultural Society for the Year 1859."

The officers elected that year included T. G. Phelps of San Mateo, president; O. C. Wheeler, Sacramento, corresponding secretary; D. O. Mills, Sacramento, treasurer, and a board of managers which included Wilson Flint, P. J. Devine, T. Ogg Shaw and C. I. Hutchinson, all of Sacramento and San Francisco. The only officers from the southern part of the State were two of the seventeen vice presidents: J. J. Warner of Los Angeles and Pablo de la Guerra, Santa Barbara.

These patriotic pioneers and many others, officers and members of the society, worked zealously toward the advancement of our industry and agriture. How far we have progressed since then is indicated to some extent by the awards of that year for livestock exhibits.

Cattle were divided into the various classes, including Shorthorns, Devons, Herefords, Ayreshires, Alderneys and "Graded Cattle or Cross Breeds." R. J. Walsh of Colusa was the most consistent winner in the "Durham" division. A special department was devoted to "Working Oxen."

The horse show was much more comprehensive, the classes represented in the breed awards being (1) Horses of All Work, (2) Roadsters, (3) Draft, (4) Graded, (5) Thoroughbred, (6) Mules, Jacks, etc.

A press report of one of the racing events deplores the fact that there were only four entries, but makes much of "good attendance at the track, there being more than 2000 persons present, 300 of this number being elegantly dressed ladies."

In the account of the sheep show we find a number of strange breeds and terms. The "Saxons" seem to have been much in evidence, while the finewools included "French Merinos" and "Spanish Merinos." Other breeds shown were Silecian Merino, Southdown, Leicester and Cotswold.

The swine exhibits lacked a good deal of being up to those of the present time, but we find two Suffolk boars "in the money," while the Berkshires were represented by a yearling sow, which won $10 for her owners, Haines & Cheeny of Sacramento. Other exhibits seemed to consist merely of boars, sows, or sows with pigs, lacking the dignity of breed affiliations!

Passing to the poultry division, the bewhiskered visitors were entranced by a bewildering display of "Dunghill Fowls" (which department included white Dorkings, black Spanish, black, golden and silver Polands, red and buff Shanghai, Bantams, Brahma Pootras and Cochin Chinas), turkeys, ducks, geese, peafowls, swans, guinea fowls, pigeons and rabbits. The latter were divided into three classes: common white, lop-eared and long-eared hares.

Needless to say, there was no tractor show, but the machinery division in-show, but the machinery and implement division included such items as wagons, carriages, plows, windmills, reapers, "fan mills" and hay presses.

The pioneers believed in encouraging crop diversification. Provision was made for many different kinds of seeds and farm products. Prizes of $10 and $5 were offered for the "best sample of newly introduced grain, valuable to the farmer, not less than one barrel."

Exhibits included such crops as buckwheat, millet, Chinese sugar cane, hops, flaxseed, native clover, broom corn, tobacco, hemp, tea plant, rice and white beans, as well as the more ordinary cereals and forage plants.

The dairy exhibits included butter and cheese, each entry of which was accompanied by a signed statement as to time and manner of making the product.

COMPETITION AMONG JUDGES?

No doubt unusual interest was manifested in the showing of native wines, which in that pre-Volstead era, described by certain reminiscent native sons as the "dear dead days," was very comprehensive. A prize of $30 was offered for "best exhibit with reference to number of varieties, vintage and quality." The report does not mention keen competition for the position of judge in this department, but we assume the entire procedure was conducted with a view to good taste.

In the fruit department, where "autumn and winter varieties were placed in separate *(Continued on Page 8)*

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Pithy Paragraphs

HOW TO GET CHEAP FARM POWER

The way to get cheap power for the farm—and every other industry—is to use profit money to pay for plants, according to Gray Silver, Washington representative of the American Farm Bureau, who explains the situation as follows:

"Eighty per cent of the cost of hydro-electric power goes to pay interest charges on capital invested. Under the present system, this is a fixed charge, which goes on forever. It is possible, in time, to save this 80 per cent and reduce power costs to 20 per cent of what consumers now pay. In other words, instead of paying $25 to $30 per horse power, the cost would be $5 to $6.

"This can be accomplished by using the money which the big power companies now set aside for "melon cutting" or plant extensions, to pay off the original cost, leaving only operating expenses and depreciation for consumers to pay. This is the amortization plan which the Farm Bureau asks the Government to apply to Henry Ford's development of the Muscle Shoals project."

FAIRS BEST LIVESTOCK BOOSTERS

For stimulating their industry, breeders of farm animals can do nothing more effective than exhibiting at fairs and stock shows.

Many a new breeder has entered the business as the direct result of inspiration received at such exhibitions.

We know of one fruit grower who decided to acquire a few sheep. He bought some common ewes which proved quite profitable, but upon seeing the purebreds shown at the local fair he decided immediately to start a registered flock. He now has become an enthusiastic breeder and possesses some excellent animals.

Another farmer of our acquaintance made a modest start with purebred hogs and at first believed he had acquired some very good stock. But upon comparing his own animals with the prize winners at a show, he discovered how lacking they were in certain desirable characteristics. The rapid improvement which has taken place in his herd may be attributed directly to the influence of the show. Let every breeder consider these facts and take an active part in at least his local fair.

THE FUMIGATION FURORE

That fumigation has not solved the citrus scale problem in Southern California now is an open secret; despite improvements in fumigation methods, infestation has been unusually heavy during the past two seasons.

At the recent Covina meeting, attended by more than 300 leading growers, resolutions were passed to the effect that "for reasons unknown, fumigation has not given satisfactory control during the past two years." As a result of this meeting it is anticipated the U. S. Department of Agriculture will be prevailed upon to send its best citrus entomologist to California to make a special study of the problem, and to recommend better methods of control.

Meanwhile a "compromise" in the form of combination fumigation and spraying has been reached. What the results will be time will tell. In the meantime, citrus circles are buzzing with the discussion, and producers are determined to find a real remedy.

WILL SPRAYING DISPLACE FUMIGATION?

During the past three years great improvements have been made in fumigation practice. The old pot method has given way to the use of efficient vaporizers and heaters; the best engineers and chemists have given much time and thought to the problem. Powerful manufacturing organizations as well as private investigators have spent thousands of dollars in experimentation.

But what has been the effect? A recent comparative test of old and new methods gave the same results—lack of satisfactory control. Perhaps the principle, not the method of applying it, is wrong. This, indeed, is the contention of some authorities. It is quite generally agreed the scale which infests California groves must have developed resistant qualities, which no system of fumigation has overcome satisfactorily.

FLORIDA METHOD ATTRACTS ATTENTION

Many prominent citrus growers believe spraying for scale control, as practiced in Florida and other Southern citrus districts, should have a more thorough test in California. It is said Mississippi, Alabama and other States have conquered heavy infestations of the scale by the Florida method of spraying with engine oil.

The thought is suggested that if the Florida scale becomes spray-resistant, it may be advisable to "swap" methods. Before long we may see the fumigators invading Florida and the sprayers in charge of the California situation. Meanwhile, California seems to be the only citrus-producing section of the world which depends upon fumigation as its principle weapon in fighting the dread scale!

"What's New?"—Keeping Abreast of Agricultural Progress

Wine Grapes Selling Well

IN CONTRAST to the low prices obtained for peaches and apricots this year, wine grapes are selling at $50 to $75 a ton, Alicante Bouchet bringing $80 to $90 in Sonoma County. Last year a Solano County grower sold his 20-acre crop of wine grapes for $375 an acre on the vines.

Potato Dealers Heavily Fined

LOUIE HON, Chinese vegetable dealer, and T. Moriso, Japanese farmer, recently were fined $200 each for selling potatoes infested with tuber moth and deceptively packed, at the Ninth Street Market, Los Angeles. M. Shepherd, County Horticultural Inspector, made the complaint.

Fly Destroys Peach Crop

THE Mediterranean fruit fly is playing havoc with the Australian peach crop, according to P. T. Hincks of Yuba City, who recently returned from the Island Continent. All the fruit in some orchards had been rendered unmarketable by this pest. The California State Department of Agriculture is keeping the fruit fly out of the United States.

Dairy Special Going East

A SPECIAL train will leave Oakland September 26 for Washington, where the World's Dairy Congress meets October 2. Additional sessions will be held at Philadelphia and Syracuse.

Sam H. Greene, manager of the California Dairy Council and vice president of the World's Dairy Congress, will have charge of the Pacific Coast delegation's special train. Southern California delegates will leave Los Angeles September 25 for Oakland.

Jews Becoming Farmers

TWENTY years ago there were only 216 Jewish families in the United States living on the land. Now there are 75,000 Jews owning over 1,000,000 acres of farm land. The Jewish Agricultural Society has loaned its members $1,000,000 and lost only three per cent of that amount. Aaron Sapiro, who is credited with doing more than any one else to organize co-operative marketing associations in the United States, is a Jewish attorney of San Francisco.

Canada Prohibits Margarine

ON and after March 1, 1924, it will be a crime in Canada to make, import, sell or possess oleomargarine. Manufacturing and importing imitation butter was permitted until September 1.

"Margarine makers and dealers were unwilling to handle their product on its own merits, persisting in coloring it in imitation of dairy butter, or selling coloring matter with margarine, to enable meal servers to deceive customers," explains a prominent representative of the dairy interests. "It was, therefore, decided that only by prohibiting the margarine traffic entirely could butter users make sure of getting real butter."

New Co-operative Success

THE California Rhubarb Growers' Association, organized last spring according to plans furnished by Fred N. Bigelow, State Market Director, sold $211,000 worth of goods this season for an average price of $1.86 a box, an advance of 35 cents over last year's prices.

The association's commission amounted to $9672, of which $6000 was returned to members, the cost of operation being only $3300, or one and one-half per cent of the gross sales. The remaining $372 was placed in the sinking fund. By investing $3300 in co-operation, the growers received nearly $40,000 more for their crop.

Dates Bring High Prices

WITH Coachella Valley dates of the new crop selling at 55 to 70 cents a pound wholesale in Los Angeles, a prominent grower speaks enthusiastically of prospective profits. "These are the best opening prices in the history of our date industry," he points out, "proving that sanitary, cleaned, fresh dates from Coachella Valley are superior to the cheap, foreign article.

"Dr. Kellogg of Battle Creek declares that if the public realized the food and health value of the invert sugar contained in good dates, consumers would never be without them in the home.

"There is a lot of lazy capital that should get into this very profitable industry," concludes our correspondent.

Fruit Shipping Losses

THE risks of consignment shipping are well illustrated by the recent experience of L. C. Baldwin, Santa Clara orchardist, who delivered to a commission firm 113 crates of apricots. The fruit was shipped to New York, where apricots were selling at $4 a crate, and sold for 75 cents a crate, a total of $84.75 for the shipment.

The commission firm put in a freight bill of $62; precooling, $9; commission, $6; packing, $45, a total of $122, or $37.25 more than the entire proceeds. The charge for packing was 40 cents a box.

"My crop of sweet cherries, 10 tons—brought me only four cents a pound," writes Mr. Baldwin. "I was in New York City in June and saw this fruit selling for 60 cents to $1 a pound. Good oranges were selling for 10 cents each, yet a friend of mine in Florida was given a freight bill by a commission firm, in return for a shipment of oranges.

"My neighbors consigned hundreds of tons of selected No. 1 apricots to the New York market and not one received a penny in return. Thousands of tons of apricots rotted in the orchards within 40 miles of San Francisco for want of a market."

Almond Crop Ripens Early

THE first shipment of 1923 California almonds—five carloads—left the State August 25. Last year the first nuts of this kind were sent out September 18. The crop this year is estimated at 8500 tons and the quality said to be first-class. The California Almond Growers' Exchange expects to handle three-fourths of the crop.

Planting Carload of Garlic

LOU CUNNINGHAM is planting a carload of garlic in Mendocino County, which he believes is well suited to the culture of this odoriferous vegetable. Last year garlic retailed at 30 cents a pound in California and up to 50 cents in Oregon, but dropped to 15 cents this year, on account of an unusually large crop.

Packers' "Velvet" $10,000,000

THE combine recently effected between Armour and Morris, Chicago meat packing companies, will result in a profit increase of $10,000,000 a year, according to F. E. White, president of the former concern. The Armour income for the first half of the present year was $16,712,000. From this sum $3,582,000 was charged off for depreciation.

Best Way to Pick Figs

THE high cost of fig picking may be materially reduced by the use of a hook to pull the branches within reach, according to the California Peach and Fig Growers' Association. The hook is screwed into one end of a broom handle. Four-foot ladders are recommended and the leaving of fruit which cannot be reached, to ripen and cure on the tree is advised.

Storing Water in Rocks

ORANGE COUNTY has appropriated $5000 for spreading the water of the Santa Ana River over its rocky bed, to lessen the runoff and hold it until needed for irrigation. The appropriation is contingent upon San Bernardino and Riverside Counties, spending equal amounts on the project. The three counties are now spending $20,000 a year for storing water in rocks.

"Cryps" Destroy Mealybugs

IN an intensive campaign to destroy mealybugs in Covina, 3300 "cryps," an insect which preys on mealybugs, were shipped from the State Insectary at Whittier and liberated in the infested district. One thousand three hundred ninety-four cans of Argentine ant poison was used on as many trees to aid in destroying the mealybugs.

"Mealybug control measures have been generally neglected during the past few years," explains J. J. Ryan, Los Angeles County horticultural commissioner. "As a result, severe infestations of Citrophilus have occurred throughout Southern California during the past season."

Ben Gonnadooit Says

Th' hardest part of any job is gettin' started. For that reason I don't start any more'n I have to.

I suppose I should a' started callin' my poultry before this. But I'm a great b'liever in th' survival o' th' fittest, so if I leave 'em alone, I reckon th' ones that ain't fit t' keep 'll die off sooner or later anyway.

"Let Nature take her course," is my motto. That's why I ain't made no effort t' poison th' jack-rabbits on my place. They may eat considerable green stuff, but I like th' sport o' shootin' 'em, and they sure do cut down th' meat bill.

Speakin' o' bills reminds me of a conversation I had with Jud Peters last week. He said: "Th' merchants in our town is certainly boostin' prices again. Seems like all they know now t' do is charge."

I says, "Jud, yer all wrong. They won't charge nothin' fer me any more. I have t' pay cash."

But where t' get th' cash t' pay, that's th' question. I would a had some pigs t' sell to th' butcher about now if they hadn't all been drowned when their shed washed into th' river last spring. I've been gonna move that shed fer six years, but I didn't get around to it quite soon enough.

Oh, well, there ain't no use cryin' over spilt milk. They's a silver linin' to every cloud. Now they's one less job t' do an' besides I was relieved o' feedin' them pigs fer several months. Yes, sir, I'm a optimist if I ain't nothin' else!—BEN GONNADOOIT.

Managing Big Solano County Ranch

YIELDS INCREASE FOR FIFTY YEARS Intelligent management of diversified crops on the 3000-acre Curry Ranch near Dixon has resulted in increasing yields. One thousand acres of wheat this year produced an average of eighteen sacks per acre, the largest crop in the history of the farm. Two hundred acres are devoted to orchards. Although Solano County is not considered in the citrus belt, 41 tons of Washington Navel oranges were picked from a 5-acre grove. Hogs, sheep and chickens help maintain soil fertility and add to the farm profits.—The Editor

By RAY C. GRUHLKE

THE story of the Curry Ranch, Solano County, is the tale of a half century of successful farming on one farm and by a single family. The grandchildren are now carrying on the work started by Judge John Curry in 1872.

This fine farm consists of 3000 acres of land lying along the State Highway north of Dixon. Judge Curry was not a farmer. He acquired his thousands of unfenced acres while practicing law in San Francisco. Being a great lover of trees, he planted miles of shade trees along the roads and lanes he laid out. Today magnificient eucalyptus, walnuts and acacias shade the highway and byways there, a lasting monument to the forethought of this California pioneer.

R. J. Curry, the Judge's son, moved to the farm in 1872 and lived there until his death a few months ago. His children now carry on the extensive farming operations. The land adjoins Putah Creek and is considered the very highest type of producing soil.

WHEAT YIELDS BIG CROP

Robert S. Curry is in charge of the general farming. He gets right in and digs, too, and if any of his men keep up with him they are doing well. About 2800 acres of the farm are devoted to grain. Last year, after 49 years of continuous farming, 1000 acres of wheat produced an average of 18 sacks to the acre, the largest crop yet produced on the Curry Ranch.

"Bob" Curry is a graduate of the California College of Agriculture. I asked him if he used the knowledge of farming, which he acquired at Davis, to advantage on the ranch. "I would like to," he replied, "but I have been too busy."

They have farmed the same old way, year after year. Unlike many farmers, however, they started right in the beginning. The same ground is never cropped two years in succession. Some years it is summer fallowed, sometimes it is pastured, but every other year it produces a crop of grain. The land's present state of high productivity is a good recommendation of the system by which it is farmed.

SHEEP SAVE WASTE FEED

The Currys keep 600 Shropshire sheep merely as a side line. These animals are found very profitable, turning into wool and mutton much that would be lost otherwise.

Bob has branched out into the poultry business and his 3000 White Leghorn hens testify in many ways that here he was not too busy to use technical knowledge profitably.

One man has entire charge of the chickens and is able to do all the work. The hens are housed in eight colony houses, which are set two feet off the ground. Small yards adjoin each shed. The birds have no shade but the buildings, which are opened on all sides in good weather.

The hens are fed a commercial egg mash, which is kept before them all the time. Grain is fed three times a day. They are strong for sprouted barley, which is given as a regular daily ration. Eggs have been produced for six years and the success of this department proves that a big farmer can handle poultry to advantage.

BEST LAND GROWS FRUIT

The Curry Ranch is best known by its fruit production. Two hundred acres of the very finest bottom land is devoted to horticulture. C. B. Phillips is in charge of this part of the big ranch. He is is called "Shorty" by friend and foe, perhaps because he stopped growing when he reached a height of six feet and six inches.

Mrs. Phillips, who is a sister of Bob, knows good land when she sees it, and is a true farmer's daughter. Many girls in her position would demand a city life, but her interests are centered in her farm home and her four healthy children. The beautiful Phillips country residence, artistically arranged and with every convenience, is the envy of many a city matron.

Mrs. Phillips has a hobby, a flock of White Holland turkeys. "Every gobbler has his gobble and every hen her Gobbler," she says. It's a great hobby.

PHILLIPS' HOBBY IS HOGS

Phillips' hobby is hogs, purebred Duroc Jerseys. He keeps one sire for a dozen brood sows. His herd boar is College Uncle Wonder Second, from the University Farm. His females are all of Pathfinder breeding.

Shorty finds his hogs quite profitable. During the winter months they pasture on the natural cover crop in the 200 acres of orchard. Except during the fruit picking season, they have the entire run of the ranch and thrive on cull fruit.

Last season a six-acre olive crop, which was not picked on account of low prices, were turned profitably into pork, the pigs helping themselves as the fruit fell.

ORANGE CROP IS PROFITABLE

Curry orchards this year produced 41 tons of Washington Navel oranges from five acres. This is the only orange orchard in Solano County, although hundreds of acres are just as suitable for citriculture. The orange trees are 22 years old. They rarely fail to produce a large crop. The trees never require spraying. They are cultivated clean and irrigated during the summer.

The Curry ranch has forty acres in French prunes, which produce from two to five tons of dried prunes per acre. Most of the trees are young. There are 18 acres of Royal "cots" which produce about five tons of green fruit per acre. This fruit is all sold direct to the Sacramento canneries. The product of 20 acres of peaches also goes to the canneries.

There are also 20 acres of wine grapes, which last year produced five tons of grapes per acre. The fruit sold on the vines for $75 per ton.

The entire 200 acres of orchard is irrigated by the furrow method. Water is pumped direct from the bed of Putah Creek. The lift is 30 feet and the annual cost for electricity about $2 per acre.

EMPLOYS SPANISH HELP

The cost of labor is the index of profit or loss on the Curry ranch, according to Mr. Phillips, and labor prices are beyond the farmers' control. Spanish help is employed almost exclusively.

Mr. Phillips is strong for co-operative organizations. He belongs to all the fruit organizations which handle the Curry crops, and is a booster for them. Mr. Phillips is a leader in his community and the type of farmer that makes not only his own farm, but the entire community, a better place to live.

Phillips is president of the Dixon Community Council, unique organization which includes both town and country people. The success of this society is, to a large extent, due to its president, who insists that things for the benefit of the community must be done immediately and not postponed.

As a matter of fact, the success of the Curry farm is due in great measure to the fact that the Spanish employes understand that "manana" has no place in the farm vocabulary, "Do it now," being Phillips' motto.

C. B. Phillips in his young prune orchard.

Starting in the Rabbit Business

I EXPECT to go into the rabbit business on a large scale and should like as much information as possible regarding costs and methods. How many rabbits will a 12 by 60-foot rabbit shed, like Mr. Allen's, accommodate and what would it cost?

What does it cost to raise a rabbit until it is 10 weeks old? What is the best breed and the most profitable age to sell? How many does should be kept to each buck and how many litters should a doe raise in a year? Is there a ready market for rabbit meat?—C. L. Lowry, Nevada.

If you have never kept rabbits before, I would not advise you to start with a large rabbitry. Would suggest that you begin with eight does and one buck. Do not build expensive sheds and hutches until you are sure you can manage rabbits on a large scale successfully. If you start gradually, keeping all breeding does healthy and strong and getting new bucks as needed, you will soon be making good money in the business.

Most breeders including myself—are content with a fairly good rabbit shed, just a roof to keep off the rain and open at both ends to admit plenty of air. The hutches are quite expensive if you have to buy them ready made or hire them built.

Mr. Allen, whose 12 by 60-foot rabbitry was described in a recent issue of ORCHARD and FARM, could probably tell you what the building cost. ($1200.—The Editor.) A structure of this size should accommodate 250 rabbits, young and old.

It costs from $1.75 to $2 a year to keep a full grown rabbit, if you buy all the feed. It is difficult to estimate the cost of feeding young rabbits for the first ten weeks, as they are kept—or should be—with the does most of this time. The expense is small, however. They should be sold for fryers at this age, when they should weigh four pounds each.

Fryers are worth 16 cents a pound, live weight, here in Los Angeles in midsummer, which is the season of lowest prices. Values range down to 9 cents for heavier animals. A four-pound rabbit will dress two pounds and sell in that shape for 40 cents a pound.

Four to five litters a year is what most breeders get. The smaller number is preferred. A buck will serve a dozen does, or more if he is strong and healthy. He should not be used more than twice a week. You would have to find a market for large quantities of rabbit meat, but when you are able to guarantee a regular supply to a dealer or consumer you will have no trouble in selling your rabbits.

There are trials and troubles in raising rabbits and therefore I would advise you to go slow before you get in too deep, as you may not like the business.—GEORGE GREEN.

Finds Wild Blueberries

MRS. PEARL GAERTEL of Carrolls, Wash., is positive that blueberries grow wild in Washington. She writes: "I am enclosing a leaf of a shrub that produces large, dark blueberries. Smaller blueberries are found on other bushes, which have leaves like red huckleberries. There are thousands of idle acres here suitable for blueberry culture. The soil is sour wherever fir trees grow, which are very common in this locality."

MILK MAKES DANISH BACON

More than 90 per cent of the skim milk from Danish creameries is hauled by milk wagons back to the dairies, where it is used to feed hogs for bacon factories. The latter belong to the farmers and are managed co-operatively. One plant handles 25,000 to 30,000 hogs annually.

Preventing Soil Erosion

A LOS ANGELES COUNTY citrus grower plows his orchard "crosswise of the grade" in order to check erosion. A neighbor who cultivates in both directions lost many tons of soil during a heavy storm last winter and hauled back 300 wagon loads at great expense in order both to restore his orchard and to avoid a lawsuit with the unfortunate neighbor below him who was the recipient of the silt. The "washing" problem is very serious in some foothill and sharply-sloping districts. Care in cultivation may prevent serious loss.

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES
Contributing Editor

SELLING COWS TO THE ORIENT

It may be because I am in the midst of the dairy business that the possibilities for growth of this industry on our West Coast strike me so forcibly. In any event, there are new indications every day of golden opportunities for growth in the milk and butter business. The improvement of these opportunities will mean the advancement of our State along most stable lines.

Much has been said about the future market for Pacific Coast dairy products in the Orient, but it cannot be mentioned too often. The market is prepared to receive not only dairy products, but dairy cattle. Our dairy industry must arise to the opportunity to supply these markets.

Within a week the California Dairy Council has been visited by two men who have crossed the water to buy dairy cattle in America: Atsushi Miyawaki, professor of dairying in Hokkaido Imperial University, Sapporo, Japan, and Charles Lucas, proprietor of Miu Dairy at Honolulu.

Professor Miyawaki has been in the habit of going East to buy dairy cattle to ship to Japan. I was glad to tell him that hereafter he might make the Pacific Slope Dairy Show his headquarters to get in touch with the best breeders. Our dairy market is the Orient. Don't forget that it is a market undeveloped, but one where people are learning every day to use more dairy products.

WHY JAPS LIKE OUR RICE

I have been told that the reason why the Japanese prefer California rice is because it adheres to chopsticks better than the home-grown grain. To eat properly in Japan one must master the difficult feat of balancing food on, or caught between, two slim sticks. Anything that makes this feat easier is welcome hence the new market for California rice, so the story goes.

When our California rice industry began we did not think of the Orient as a prospective market. How could we sell there in competition with cheap coolie labor? American growers asked.

American machinery farming has made it possible. Rice is a machine-grown crop in California, almost to the same extent as wheat.

If we were forced to produce rice in the primitive manner of the Orient, also, no American could or would give rice growing a second thought.

It is said that Ralph Merritt was the man who first thought of Japan as a market for California rice.

THE LESSON RICE HAS TAUGHT

Probably rice is with us to stay, on cheaper lands unadapted to other crops and where the farmer will not settle down to more intensive farming. But I think rice's greatest service has been the teaching of a lesson. Rice was a bonanza crop just before and during the war and lured many good farmers along until they became so prosperous they went broke.

Rice has left its blight on the west side of the Sacramento Valley. Cities like Willows and Colusa, which were bustling like mining camps in the height of the rice craze, are now comparably dull and lifeless. What they need is subdivision of large tracts of farming land and a steadier kind of agriculture, with enough diversity to protect them against wild fluctuation in the business.

CALIFORNIA CLIMATE WINS

Helen Wills, the 17-year-old Berkeley girl who is now national tennis champion, and Billy Johnston, the San Francisco man who is now world's tennis champion, have added another chapter to an article which I wrote for Orchard and Farm last January.

That article was designed to show that the same factor—call it climate if you will—that makes greater yields per acre in California, also begets more robust and efficient human being; more productive dairy cattle and better developed meat animals.

We have something out here to lure the livestock farmer as well as the fruit farmer. As to the lure for the human being, Arthur Brisbane is telling of that more effectively than any of us can.

LEEK'S RECORD APPLE YIELD

Forty-seven boxes of early apples were picked from a single tree in August by Dr. L. L. Leek, Sonoma orchardist. A single limb two feet long bore a dozen large apples, one of which weighed nearly a pound.

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A. H. Grout, Sec. of State,
Montpelier, Vt.

Starting a County Fair

DISSATISFIED with a few old fair buildings and a poor location, the people of Jackson County—which includes the major portion of the Rogue River Valley, Southern Oregon—last year determined to have a first-class fair. The first step was to pick out a fine tract of level land just south of Medford, which is the chief city of the county, adjoining the Pacific Highway.

The State Agricultural College at Corvallis next was asked to furnish plans for the buildings and for laying out and beautifying the grounds. Armed with these, the fair association went before the people and asked for a one-mill tax levy. This was granted, and yielded—together with a small sum in the treasury—$39,000. All this and $7000 more was spent for permanent improvements, which proved inadequate to actual needs.

The first exhibition was a great success from every standpoint, except in the direction of wiping out the deficit, and it yielded a surplus of $4000 to apply on that. The directors assumed the indebtedness personally and borrowed $800 more to hire the grounds taken care of.

The fair cost $14,000, of which only $3277 went for premiums, compared to $5468 for races. Bona fide farmers complained of this unequal distribution of funds, objecting to the expenditure of nearly twice as much money for amusements, of which many disapprove entirely, as for rewarding exhibitors of farm animals and produce. The management also was criticized for continuing the races on Sunday. The local papers devoted columns of space to the racing, wrestling and prize fighting, but almost nothing to the agricultural exhibits.

Medford has a live bunch of boosters who are backing the Jackson fair, but if they want the farmers to vote additional tax levies for its upbuilding they will do well to make the exhibits more strictly agricultural. Some successful fairs are held without any races or other amusement features.

The attendance amounted to 5000 on the second day and 7000 on each of the last two days, a splendid showing for the first real fair Jackson County has held.

Only two livestock buildings were constructed, large tents being used to house the remaining animals exhibited. Both the horticultural building and the woman's building were filled with fine displays of orchard, field and home products. Canvas also protected the auto and other commercial exhibits.

Community exhibits of fruits, grains, forage plants and vegetables formed a prominent feature of the fair. The stock show was the pride of Southern Oregon breeders and a revelation to those who have not kept in touch with the recent progress in this important industry. Although the Rogue River Valley is chiefly famous for fine fruit, it produces some of the best domestic animals to be found in the State. Many cattle and sheep are ranged in the surrounding mountains and the raising of purebred beef sires to head herds in other districts is a profitable business.—O. H. B.

Type of new buildings being erected by Jackson County

Treatment for Orange Scaly-Bark

THERE is hardly anything which is doing so much to depreciate the yields and values of the fine old California orange groves as the scaly-bark disease. This ailment usually begins when the trees are about ten years old and, increasing slowly and insidiously does great damage before the owner is aware of its presence.

Scaly-bark is entirely preventable and in its early stages easily curable. In its last stages, after the disease has progressed through the bark into the wood, it is beyond cure, for the reason that while it is possible to grow new and healthy bark, it is impossible to grow new wood in the interior of a tree. In many such cases, however, hopelessly diseased limbs can be removed and a part of the tree, after proper treatment, is saved for future production.

No one knows the cause of scaly-bark, but we do know that an infected tree never gets well of itself. Once the disease appears in a grove, that grove is on the down grade. The sooner the disease is checked and further progress prevented, the cheaper will be the control.

The method of treatment consists in removing the surface of the diseased bark with a scraping tool especially made for the purpose and painting the wound with an antiseptic wash to prevent further infection.

The wash is not a medicine to cure the disease. The scraping, when skillfully done by experienced men, cures the disease and the wash merely insures a sanitary condition of the wound.

Experience leads us to prefer a thin wash of bordeaux applied in such a way as not to interfere with fumigation. When requested, however, we use carbolineum or lime-sulphur.

A little money spent every year in keeping a grove in good condition and maximum production is much better than spending a lot of money in the end in an endeavor to save a grove already "shot to pieces" with scaly-bark.

It is best to make an annual tree-by-tree inspection, at which time the new scaly-bark cankers, just beginning on the surface of the bark, are quickly and easily removed; trees buried above the bud are excavated to prevent foot-rot; an occasional gophered tree is given proper attention to hasten its recovery; any gum disease tree is treated; a few suckers on the trunk are removed; a broken limb or torn-out root is properly amputated and disinfected; in short, each tree receives individual attention and whatever treatment is needed to keep it in full production.

Every grove ten years old or older, requires such an annual inspection for its best production.—J. ELIOT COIT.

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ARIZONA CIRCULARS

The University of Arizona, College of Agriculture, Tucson, Ariz., has issued the following technical papers:

Establishing a Commercial Vineyard in Arizona	96
Distribution of Arizona Wild Cotton	3
The Efficiency of Legume Inoculation for Arizona Soils	4
Bust of Wheat	143

POWER POINTERS

By WALTER H. GARDNER

OIL CHEAPER THAN BRUSH—A volume might be written about false economy on the farm. Here's one man, for example, who owns an evaporator. Instead of using oil for fuel, this farmer went to the expense of building a shed over 100 feet long and covering it with a galvanized roof. He filled this shed with the cuttings saved from pruning his orchard. The limbs were picked up and stored in the shed to dry, after being chopped. All of one man's time is now used to fire the dehydrator. The heat is irregular; it takes longer to get started, and how much greater is the cost! Yet this man is a leader in his community in many large enterprises.

Contributing Editor of Orchard and Farm

NEW LOW-PRICED TRACK LAYER—A surprise is promised the farmers of California by a tractor manufacturer in this State. There is admittedly a widespread demand for an inexpensive tractor of the track type, and, unless plans now under way are upset, these columns shortly will carry a story of an ingenious device that will be a boon to the rancher on a comparatively small acreage.

HOUSE ORGANS WORTH READING—Many manufacturers publish free "house organs" that are brimful of useful hints and helpful pointers.

Facts have replaced adjectives. The stories are addressed more to owners of the goods described than to prospects. Thus can the prospective buyer learn how it feels to be an owner. If you are interested in receiving such publications write the editor of ORCHARD and FARM and tell him your conditions.

DRIVING TRACTOR BY STOP-WATCH—There was another man with a stop-watch who sat on the fence and determined with mathematical accuracy just how long it should take his tractor driver to drive the length of a row and just how many acres he should cover in an hour. Then he ordered his driver to hold to that pace and went back to the house serenely conscious of a good deed well done. As the ground dried out and the plow pulled harder the driver opened the motor wider. When the oil got dangerously low he kept the machine hard at work. Finally there accumulated a tremendous repair bill that was all due to the stop-watch.

FEW TRACTORS AT STATE FAIR—For several reasons the Tractor and Implement Club of California did not present a cooperative exhibit of tractors and allied products at the State Fair this year. A few individual members made the best of a difficult situation and showed their goods, but the splendid exposition of former years was conspicuously absent.

The tractor men declared their unwillingness again to risk a quarter of a million dollars' worth of machinery in a tent where wind and fire risks are so heavy. They hope that another year will see steps taken to give them a more accessible location on the fair grounds and the promise of permanent quarters.

STATE NEEDS POWER BUILDING—Several States have provided their fair grounds with a permanent building to house the exhibits of the multitude of machines that now add to the profit and comfort of farm life. In no State is the subject of so great importance as in California. Nor are these other States any wealthier than ours.

Tractor men declare themselves willing to pay any reasonable charge for space, but they must look to the directors of the State Fair for the first move. And the farmers who have previously attended the exhibit will certainly not be unwilling to say farewell to the hot, old tent, floored with ankle-deep dust and reached by long walk. The whole issue promises to be a live one during the coming year.

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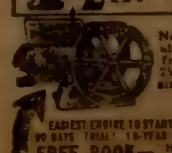

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Using Low Grade Tractor Fuel

By E. G. McKIBBEN

California College of Agriculture

THE troubles often attending the use of kerosene and other low grade fuels in tractor engines can largely be prevented. Badly carbonized cylinders and pistons, stuck rings and the rapid dilution of the crank case oil with the resulting damage to pistons and bearings are not the normal results. They are often evidences of inefficient operation.

Warm up the engine thoroughly before starting to use the heavier fuel. If the engine is not equipped with a thermostat control of the cooling water temperature, cover a part of the radiator during cool weather. Never allow the engine to run idle for any length of time. Keep the mixture lean.

Before stopping, shift back to gasoline and stop the engine by shutting off the fuel, rather than by shorting the ignition. Use a hi-- grade cylinder oil and completely change the crank case oil every thirty to forty hours. If these simple directions are followed and the engine has been designed to use kerosene, the results obtained should be satisfactory.

DON'T SWITCH TOO SOON

How many of you are guilty the practice of switching to kerosene just as soon as possible? You are proud of the fact that your engine will shoot on kerosene just as soon as you get it started. Of course, you have to open the needle valve an extra turn or so, but what of that? It means that the engine is too cold to completely vaporize the heavier fuel and that the additional fuel resulting from the extra turn of the needle valve is carried into the cylinder in the form of a fine mist.

There some of it is partially burned and deposited as carbon; some of it washes away what little oil there is on the cylinders and pistons, works down into the crank case and dilutes the oil there; while some of it is carried out through the exhaust where it appears as a bluish white vapor, which you have all seen. This situation is made worse by the fact that the pistons and cylinders are always poorly lubricated for the first few minutes after a cold engine is started.

A similar situation results if the engine is allowed to run on kerosene while idling for any length of time. It cools below the proper working temperature and usually begins to miss irregularly on all cylinders and may miss altogether on one or two cylinders. Whenever a cylinder fails to fire it means that there is a certain amount of the heavier portions of the fuel mixture deposited on the cylinder wells to thin out the oil and gradually work down into the crank case.

KEEP TRACTOR ENGINE WARM

If a kerosene burning engine is used on a light load in cold weather and is not equipped with a thermostat, an effort should be made to keep it warmed up to the proper working temperature. This usually can be accomplished best by covering a part of the radiator, thus reducing the effective radiating area and the amount of air flowing through the radiator.

Keeping the engine at the proper temperature is only half the battle. The mixture must be kept lean. Close the needle valve until the engine begins to slow down, backfire or miss, and then open it just enough to allow satisfactory operation. This simple precaution will do more than any other one thing to prevent the excessive formation of carbon and the rapid dilution of the crank case oil.

Several minutes before stopping, shift the three-way valve back to the gasoline. When the engine is started the next morning there will be gasoline instead of kerosene in the carburetor bowl. Stop the engine by shutting off the fuel supply rather than by shorting the ignition. Shorting the ignition means that the engine will stop with the cylinders filled with fuel vapor. As the engine cools down this vapor condenses on the cylinder walls and then destroys the lubricating value of the oil there.

In spite of all these precautions there will be more or less dilution of the crank case oil. Therefore, it should be changed every thirty to forty hours of operation. Many tractor operators and a few tractor owners feel that this is an unnecessary inconvenience and expense However, the experience of successful operators definitely has proved that the decrease in the repair bill and the added life of the engine will much more than offset the inconvenience and expense.

Judging Southern California Livestock

SOME of the possibilities of a Southern California branch of the State College of Agriculture were indicated by the summer livestock judging course conducted in July by the University of California at its Los Angeles branch.

Forty students, most of them agricultural teachers in the high schools of California and adjoining States, took the work, which was given by Professors Gordon H. True, Elmer H. Hughes and William H. Regan of the College of Agriculture, and Howard A. Miller of the Los Angeles Chamber of Commerce.

"It is doubtful," asserted Prof. Regan, "if dairy animals could have been found in any other place in the country equal to those used in this course." The stock referred to were Fred Hartsook's Holsteins at Lankershim, Dave Brant's Guernseys at Owensmouth and the La Lomita imported Jerseys at Palms (Los Angeles County).

The first week of the course was devoted to beef cattle and sheep, the second to hogs and the third to dairy cattle. The University Farm at Davis sent down seven beef cattle and sixteen sheep, which were quartered at the Union Stock Yards.

In order to illustrate the difference between purebred beef cattle and scrubs, a yearling Shorthorn steer weighing 1040 pounds was slaughtered and a six-year-old range steer of the same weight. Full sides of both steers were hung upon a rack at a meat cutting demonstration, which was attended by the students in home economics and several members of Los Angeles civic clubs, in addition to those who were taking the stock judging course.

James F. Mooney of Wilson Company divided the scrub and purebred beef into wholesale and retail cuts, showing the relative value of each.

Duroc Jerseys were judged at Charles LeMoyne's ranch at Lankershim, Poland Chinas at the Santa Monica dairy ranch and Berkshires at the Italian Vineyard ranch at Guasti.

Earwig Threatens Homes and Orchards

THE European earwig today is a potential menace on par with the dreaded Mediterannean fruit fly," declares A. L. Lovett, entomologist, Oregon Agricultural College. "Anyone familiar with the activities and food habits of this insect must consider its possible dissemination as little less than a catastrophe."

Coming to Seattle in 1915, the earwig has established itself in Portland, Astoria, Salem, Albany, Corvallis, Gresham and Roseburg, Oregon, as well as in several Washington cities. The rapidity with which the insect spreads is indicated by the fact that

The adult earwig is five-eighths of an inch long.

at the beginning of 1921 it was found in only 16 blocks in Portland, while at the end of 1922 it was infesting 600 blocks.

"Thousands of earwigs will enter a home," Professor Lovett points out. "Its loathsome presence alone renders it an obnoxious nuisance. It crawls over, under and into all manner of food and clothing. The choice basket of fruit on the sideboard, a loaf of bread, fresh vegetables for lunch—each will have its quota of earwigs.

REDUCE PROPERTY VALUES

"The basket of clean clothes, fresh from the laundry, invites them. They find their way into beds, wardrobes, clothing, slippers — everywhere — until the frantic housekeeper experiences a nausea and repulsion akin to mania. Property values are materially reduced, renters move out, houses won't sell."

The earwig is not particular in its food habits. Decaying fruit and vegetables, garbage and excretia are crawled over and fed upon, as well as choice viands. Such insects are filthy and unsanitary to a degree and constitute a serious menace to health. They look something like small cockroaches, being five-eighths inch long.

Earwigs injure flowers and ornamental shrubs. Potatoes are seriously attacked, the earwig being comparable to the Colorado potato beetle in its capacity for destroying this valuable crop. Beans, peas and other vegetables also are injured by this insect, which sometimes secretes itself between the leaves of lettuce offered for sale.

Apples, plums, strawberries and other fruits are eaten after ripening and before picking, earwigs sometimes being found in the cores of apples. The foliage of fruit trees has been destroyed in Portland back yards.

In Europe the earwig is held in check by natural enemies, which in the United States are lacking. It first appeared on this side of the Atlantic 12 years ago. Five years ago specialists of the U. S. Department of Agriculture began to study methods for its control.

Natural parasites, which destroy earwigs, have been discovered and are being propagated. Just how successful this means of control will be cannot yet be determined. Meanwhile, Seattle and Portland have spent $100,000 in extermination methods. Community co-operation is absolutely essential in fighting this pest.

Scattering upon the ground poisoned bran mash is the standard method for earwig control. Dissolve 12 ounces of sodium fluoride in six quarts of water, stir in two quarts of molasses, then pour over 12 pounds of bran, working it into a homogeneous moist mash. Scatter on the ground during the spring months, especially along foundations, sidewalks and hedges. Evening is the best time to put out the poison. —O. H. B.

Keeping Pet Rabbits

PLEASE give directions for keeping pet rabbits.—MRS. J. M. WILLEY, Fresno County.

If you wish rabbits for pets the best breed to keep is the Dutch. The animals are very beautiful and are also quite tame and friendly. They come in white, black, blue, gray, tortoise and steel gray colors.

There are many more nice breeds, such as the Himalayan, Black and Tan, English, Flemish Giant, American Blue and New Zealand Red. I myself keep only American Blue and Dutch.

Rabbits should be kept in hutches about three feet square, with about two feet head room. For the large breeds they should be four by three feet. The principal food is rolled barley, alfalfa hay, bread crusts and green food, with carrots. Bed the rabbits down with clean straw.

Clean out the hutches twice a week. Keep clean water in the hutches all the time, and always clean out the drinking cups when you clean out the hutches. Do not let the direct rays of the sun fall upon black or blue rabbits very long, as this will fade their color.

Rabbits are very healthy and with proper care are seldom sick. I keep rabbits because I love them and derive no end of pleasure from my hobby. Have had rabbits off and on, for 40 years. I make them pay their way and have won many prizes at pet stock shows.—GEORGE GREEN.

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HEMSTITCHING, picoting attach. Fits any sewg mach. Does beautiful wk. Attrac. premiums free with orders. Write for illus. descript. B. Krafft, Box 806-OF, San Francisco.

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GUERNSEY BULLS for sale from California's first Federal Accredited Guernsey herd. Last test June 11. JAMES BROWN, Capitola, Calif.

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PURE-BRED TOGGENBURGS from recently imported stock. Heavy milkers. Raised under ideal conditions. Sure to please. Canyon Goat Ranch, Redlands, Calif.

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SOMETHING NEW in subirrigation. If you irrigate write for full particulars, it will be a saving of many dollars to you. Add. F. H. BROWN, San Diego, Cal., R. R. No. 1, Box 268.

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KENTUCKY LEAF TOBACCO—5 lbs. chewing, $1.75; 10 lbs., $3. 5 lbs. smoking, $1.25; 10 lbs. $2; 20 lbs., $3.50. Pipe and recipe free. CO-OPERATIVE FARMERS, 189, Paducah, Ky.

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FARM wanted, immediately. Send particulars. Mrs. L. Roberts, 320 E. Tray, Roodhouse, Ill.

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Old Days of State Fair

(Continued from Page 3)

groups and so marked," the judges faced the difficult task of classifying apples, quinces, grapes, watermelons, muskmelons and cranberries, and making sure each was "correctly named."

That the horticulturists of that time fully appreciated the possibilities of California as a deciduous fruit center is indicated by this extract from the report of the Board of Managers: "Sufficient experiments have been perfected to establish beyond further doubt that the great western slope of the Sierra Nevada mountains is perhaps better adapted to the growth and perfection of the apple, peach, pear, plum and grape than any other section of equal extent on the globe."

But broadminded and farsighted as were these estimable men who laid the foundation for California's agricultural greatness, they were intensely human, and susceptible to the amusing controversies which characterize all public undertakings of every generation, including the present.

Many pages of the official report are given over to an argument as to where the next fair should be held. After the better part of two days had been devoted to discussion, a ballot was taken, with the result that Oakland, San Francisco, Washington, Benicia and Napa gave way to the Capital City, which swung a total of 190 out of 263 votes. At one point in the oratorical onslaught Sacramento boosters were accused of "wanting everything, from State capital to State conventions."

Another tense situation developed when a committee was appointed to examine the books of the society and express an opinion as to the propriety of certain expenditures, including $600 carriage hire and the employment of an "expert" at $10 a day! (Would these financiers could have anticipated our present taxi fares and our wage scales for plasterers, bricklayers and other laborers!)

Yes, we have made some progress since '59. Sixty-four years have brought much in the way of material advancement. But must we not confess that human nature is just about the same?

Bee Notes

Without Stingers

By J. D. BIXBY SR.

LYNN GOES TO MISSOURI

Granville J. Lynn, for many years prominent in Los Angeles County beekeeping affairs, has been appointed State Apiarist of Missouri, with headquarters at Chillicothe.

J. D. BIXBY SR.
Contributing Editor

MANY BEES IN ARIZONA

Arizona has about 32,000 colonies of bees, half of them in the vicinity of Phoenix. Disease has been troublesome, but is being closely watched. The mountains are becoming homes for hundreds of escaped swarms, which find quarters in hollow juniper trees and rock crevices. Italian bees seem to prefer trees, while native black bees prefer rocks. Honeycombs and bee nests are often found in comparatively open places, such as the overhanging of ancient cliff-dwellings and precipices.

EUCALYPTUS HONEY IN AUSTRALIA

In Australia, eucalyptus yields in an average year 150 to 200 pounds of honey per colony.

TULARE ORANGE HONEY

The orange honey crop of Tulare County this year amounted to over 4000 cases of 120 pounds each. There will be only a light crop of alfalfa honey.

HAWAIIAN HONEY "OFF FLAVOR"

Hawaiian honey often is fine in appearance, but we have never yet seen a sample that was free from the peculiar "New Orleans molasses" flavor imparted to it by the sugar cane aphis.

BEEKEEPING NEAR BOUNDARY

An Imperial Valley beekeeper has an apiary, the nearest hives of which rest within two feet of the Mexican line. The owner does not dare to move one over as that would make his honey dutiable.

BAKERS BUY ALFALFA HONEY

The alfalfa honey crop of the warm valleys of interior California, a rather dark-colored honey, is nearly all bought up by the large baking companies. The American Biscuit Company formerly used 125 carloads of honey per year, but of late is substituting to some extent other forms of cheap sweets.

PREPARE FOR RAINY SEASON

Now is the time to get the hives and supers in the apiary repaired and painted, before the rainy season. Use good paint; cheap paint is poor property. If you do not choose to mix your own paint then buy a really good mixed paint. Those having a liberal admixture of silicate of soda (water glass) will "chalk off" more when the oil is absorbed, than pure oil paint.

APIARISTS WILL EXHIBIT

At a recent meeting of Riverside County beekeepers it was decided to have the exhibition fixtures, which recently were destroyed by fire, replaced and the usual exhibit made at the county fair in October. The value of Riverside County's honey crop in 1922 was three times that of her apple crop, or $400,000.

ADD HONEY TO FEED SYRUP

Many colonies, especially in the citrus districts, are already short of stores and must be fed to prevent their dying of starvation. Add just a little honey to your sugar syrup—the bees will take it up better. Feed inside the hive and only towards nightfall to avoid robbing.

REGISTER ALL APIARIES

Riverside County has an ordinance requiring registration with the county recorder of all bees within the county. This can be done through the assessors or the deputy bee inspectors. For some reason the law has never been enforced. This is a [illegible] measure, as such a law greatly facilitates the checking of foulbrood and other diseases, as well as adding to the assessable property of the county.

HAWAIIAN HORNED TOAD HONEY

Much of the Hawaiian honey which reaches us is pretty crude stuff, innocent of strainer or settling tank, and usually packed direct from the extractor. A San Francisco firm that was shipping to an Eastern house felt impelled to explain to its customers the presence of an occasional "impurity" in the shape of a mouse or horned toad.

The customer replied, "We don't kick at a mouse or two, but for heaven's sake don't send us any horned toads; our men don't know what they are."

DANGER OF QUEEN RAISING

Don't try to do any queen raising in a large apiary of strong colonies, for it is sure to induce robbing and consequent loss of the young queens. A small apiary of strong colonies is more dangerous than a large apiary of queen rearing nuclei. In the latter case, the colonies are small and weak—only two to four frames—and the instinct of defense is not strong. Furthermore, they are accustomed to frequent handling, which is not the case with honey-gathering, full colonies.

HONEY FOR BOOZE MAKING

Early in July there passed through the revenue collector's office at Calexico a single shipment of two hundred tons—yes, 200 tons—of honey from southern Mexico and Central America, consigned to booze factories below the border. Even after paying export duties from Mexico and import duties to Uncle Sam, the honey cost less than sugar. Native labor is cheap. This shipment came up the coast by water, then down across the boarder by rail. Calexico has the second largest customs office in Southern California, the collections ranging over $500,000 per year. It costs Uncle Sam over thirteen dollars to collect one dollar of revenue at some customs offices, while at Calexico the cost is only six and a quarter cents.

MOVING BEES BY RAIL

In moving bees by rail or taking them on long journeys by truck, nuclei or small colonies go through far better than large colonies. Divide these and re-unite, if necessary, at end of trip.

The best way to water bees in transit is to fill an empty comb with water and insert it when the hive is closed up.

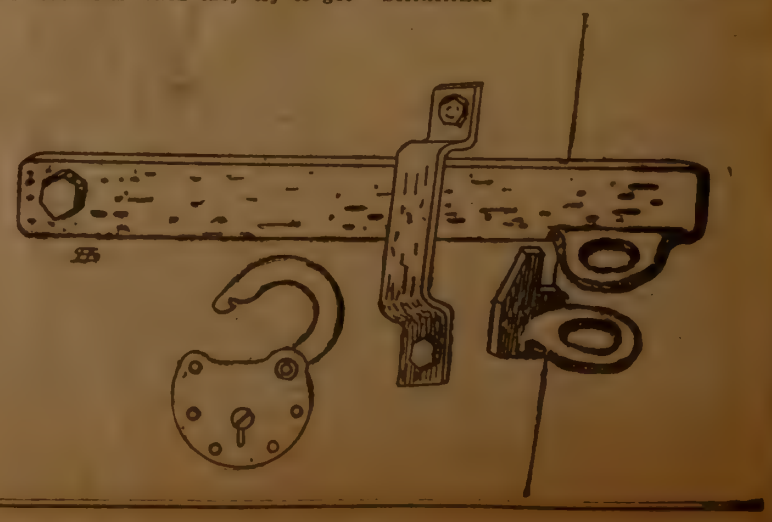
The greatest loss in shipping bees by rail is in stop-overs. An entire car was lost because icing was delayed nine hours.

Regular shippers of bees to the Utah and Idaho fields have sets of covers and bottoms at each end of the line, to save weight and freight.

Barn Door Latch Lock

THIS latch lock was made in our farm blacksmith shop. We put it on the horse stable door because we missed from time to time parts of horse and mule harness. The round wooden pin is for day time use to "fool" the colts when they try to get into the oat bin or open the door just for mischief.

At night we snap the brass padlock into the latch and "keeper." The latch parts are made of ⅜-inch flat iron, 1½ inches wide. All bolts reach through and have nuts on the inside.—H. A. SHEARER.



Sheep or Dairy?—A Problem

Producer Who Wants to Change His System Finds Many Questions to Be Decided

By W. S. GUILFORD

Contributing Editor

ONE of our neighbors is doing some hard figuring lately.

His affairs demand more revenue than grain and rice produce, one year with another.

His choice now is wavering between sheep and dairy cows. He would like to have the monthly income from the latter. But the daily grind; the high cost of labor; the possibility of himself having to milk the entire string of cows, should all the men quit; the recent University report about minus dairy profits; the tuberculosis problem; the time required to weed out poor cows—all these things, and more, caused him to hesitate.

W. S. GUILFORD

As for sheep, prices of wool and lambs have been good, but breeding stock is comparatively high priced. My neighbor feels that if he had been going into the sheep business a start should have been made during the time of low prices a few years ago.

Dairy labor is one thing of which my friend is very much afraid.

"If I had a big family and could make the wife and children help and could be sure the children would stay with me for several years, the labor problem would be solved. But I shall have to depend on hired labor entirely. We are, furthermore, a long distance from Sacramento and other sources of labor supply.

"In order properly to handle a dairy it would be necessary for me to milk about 100 cows. That's a good many to handle alone, even with a milking machine.

"This recent University report to the effect that there is no money in dairying doesn't look good to me. Not much use switching from grain growing if I have to sell butter at less than it costs to produce.

"Vets say the tuberculin test is almost absolutely sure and the results on some Northern California range herds seem to bear out their claim. In dairy districts, however, the loss from rejected animals during the first couple of years one was assembling a dairy herd might be considerable. And it would be folly to start dairying on other than a tuberculosis-free basis.

"And yet, a hundred cows bringing $10 a month apiece—$12,000 a year—would be a big help towards straightening out my affairs.

"On the other hand I could handle a lot of sheep with much less expense and constant, twice-a-day attention would not be required. But I should have to build considerable more fence, plant a good deal of alfalfa—for either cows or sheep—and probably get some outside range for the sheep at certain times of the year.

"Wool twice a year and lambs once would bring in a good deal of money, if prices stay anywhere near what they have been."

And there you are! How would the reader like to have this problem to solve? Would you decide by the toss of a coin?

"Colony-and-a-Half Plan" Is Explained

By J. D. BIXBY SR.

Contributing Editor

THE "Colony-and-a-Half" system of producing honey lately has many advocates. All experienced beekeepers know that a normal colony—a colony headed by a virile, active queen—reaches its "peak" in brood-rearing at about the close of the first heavy nectar-flow in spring.

At this point (when the orange flow begins to decline in the citrus districts) the queen is laying at her maximum and the working force is at its strongest.

Henceforth the population of the colony gradually declines; the queen lays fewer eggs per day, the extreme activity of the workers wears them out rapidly and there are not sufficient young bees hatched to take their places.

Consequently, your colony goes to the sage or buckwheat ranges in a reduced condition that even a heavy late flow will not bring into profitable production. The chances are that about this time the exhausted old queen will be superseded, leaving a run-down, broodless colony to build up for winter.

To obviate these conditions and have every colony ready for the mid-summer flows is the object of the "Colony-and-a-Half" plan. When the main early flow has well begun, form a small nucleus from each old colony, being careful not to remove the old queen. If you have no young queens ready let each nucleus raise one of their own. The conditions are the most favorable of the year and the queens raised are sure to be good ones.

By the time these are mated and laying, the peak of the season will be past; the old queen can be hunted up and destroyed; in 24 hours the new colony (nucleus) can be united with the old and you have a big, strong colony, headed by a queen which is on the upgrade instead of the down and will make surplus honey.

How Not to Co-operate

HERE is some good advice, given in an ironical vein, by T. R. Robinson of the National Poultry Society of Great Britain, to those who would assist an agricultural organization:

"Don't go to the meetings. If you do go, go late. When you go, find fault with the work of the secretary and other officials. Never take office. It is easier to criticise than do things. Nevertheless, find fault if you are not appointed on a committee. Should you be appointed do not attend the committee meetings. If you go and are asked by the chairman to give your ideas on some important questions, tell him you have nothing to say. After the meeting is over, tell everybody how things ought to be done. Do nothing more than is absolutely necessary, but when members roll up their sleeves and unselfishly get going, howl that the association is run by a clique. Hold back your subscription as long as possible, or, better still, don't pay at all. Don't hustle round to get new members. Let George do it."

Baling Hay From Shock

ANTELOPE VALLEY ranchers bale alfalfa direct from the shock, thus saving $2 to $3 worth of labor per ton. The mowing is done late in the afternoon, usually, and the following morning the hay is raked into shocks, where it is allowed to remain three to five days before being baled.

The shocks are made in straight rows and the baler driven between two of the latter. The bales are dropped where made and later hauled to the yard and stacked. By this method four men handle 110 acres, including irrigating, cutting, raking, baling and hauling in the hay.

"The big saving in labor is a strong argument in favor of this method," admits H. J. Wilder, San Bernardino County farm adviser, "but hay made in this manner is inferior in quality to that which has been stacked and gone through the sweat before baling."

Vineyard Sand Control

(Continued from Page 2)

summer legume. This not only would be equally effective in preventing the movement of the sand, but also would do away with the intensity of the heat reflected from the dry, light-colored sand.

This heat apparently is too great to permit proper development of size and quality in the grape. Such a summer legume crop would be of great value in improving the texture and fertility of the soil by adding vegetable matter and nitrogen.

None of the legumes used extensively as cover crops at present seem quite suitable for this purpose. Most of them grow too high and too vigorously and would render difficult irrigation and especially harvesting. It is possible that the Moth bean from India, recently called to my attention by Professor Kennedy of the College of Agriculture at Berkeley, may be exactly what we need for this purpose. It is a low growing, spreading annual legume producing a large mass of vegetation that can be plowed under easily at the end of the growing season in early winter.

In establishing a new vineyard, the tree wind-break should be planted sufficiently early to be effective by the time it is needed by the vines. This usually means at least one year before the vines are planted. The rye strips should be planted at or before the beginning of winter so that they will be two or three feet high when the vines start in the spring.

These strips are a protection not only against wind and drifting sand, but also against the attacks of leaf eating animals and insects which in most cases confine their attention principally to the grain so long as it is green. By the time the grain is dry, the vines should have made enough growth to be much less easily injured by nibbling of the leaves.

By proper use of annual cover and green manuring crops after the vines are two years old, the bearing vines can be protected and the loose movable nature of the surface soil gradually changed until all danger from drifting sand has been removed. In the meantime, the high wind-breaks will have developed sufficiently to give efficient protection against the wind.

Doing the Chores

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Settling the Crop Disputes

AN interesting and rather unique aspect of the Danish co-operative associations is that in the constitution and by-laws of practically all such organizations provision has been made that all disputes and disagreements arising between members and the associations are to be settled by a board of arbitration, and in most cases the association's constitution and by-laws specifically state that such disputes and disagreements can not be carried into the courts.

The members of this board of arbitration are elected from among the members by the associations. The system has worked out satisfactorily, as the men on the arbitration boards have a sympathetic understanding of the farmers' problems.

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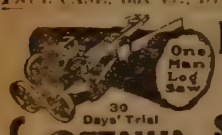

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What Readers Want to Know

GROWING DICENTRA SPECTABILIS—Why is not the Dicentra Spectabilis seen in California gardens? It is a very desirable plant, but I have had no success in growing it.—F. SPANGENBERG, Los Angeles County.

Dicentra Spectabilis is grown in California, though it is not as popular as many of our better known California flowers. The nurserymen seldom list it, as it is rather delicate under some conditions. It grows wild in the Sierra meadows, also on our coast ranges. It is a shy flower and owing to this quality and its beauty it is enthusiastically admired. It is a native of North America and Asia and is a perennial.

I have not grown the Dicentra Spectabilis, but have learned from others who have grown it in California successfully that it requires a rather sheltered position, also that it cannot be grown where the heat is excessive. It requires protection against both heat and wind.

The soil must be rich and friable. One grower raised wonderful plants in soil enriched with old barnyard manure, while her neighbor had no success in a common garden unfertilized.—HELEN TEMPLE.

DEHORNING AND DAIRY FEEDING—Is three pounds of barley daily the proper amount for increasing the milk flow? What is the best way to dehorn calves?—MRS. J. H. SMITH, Arizona.

As a general practice, three pounds of barley per day per cow is not recommended for increasing the milk flow. The particular recommendation for a dairy ration would have to depend on the condition of the cows and the feeds most available. Uusually one pound of barley, or at the most two pounds, is sufficient for dairy cows under average conditions. If a cow is in poor flesh it is desirable to feed larger amounts.

I would recommend that calves' horns be removed as soon as they begin to appear through the skin, by scraping the horns slightly and applying caustic potash. Care should be taken not to get the potash on the skin, but only on the horns themselves. This work can usually be done when the calves are a month to three months old.

In case the horns are allowed to grow out a little farther, they should be clipped or sawed off very close to the head. If there is any bleeding I would suggest that you paint the wound with pine tar, which will aid the wound in healing and also keep the flies from bothering.—G. E. GORDON.

HENS EATING SOFT-SHELLED EGGS—Can you tell why hens eat eggs and why the latter are soft-shelled?—MRS. B., Los Angeles County.

Soft-shelled eggs and egg-eating hens usually go hand in hand. The habit of egg eating is usually brought about by broken eggs or soft-shelled eggs, which are easy for the hens to eat.

Soft-shelled eggs indicate that hens are not being fed enough lime. I would suggest that you always keep crushed oyster shells before the hens. If the mash or scratch feed does not contain considerable other mineral, your trouble lies in your feeds. If you put the hens on a well-balanced ration this trouble will be largely corrected. It may be necessary for you to mix the shell in your mash to get the birds to eat plenty. There is no danger of them eating too much shell.

Egg eating also may be caused by the hens being shut up without enough exercise, to insufficient supply of meat, to too much light in the nests or to a poor ration.

Feed a well-balanced ration and make the hens work for it. Take out the hens that have the egg-eating habit, if possible, so that they will not teach others the habit, and you will likely have little more trouble.—W. J. DRYDEN.

PLANTING PISTACHIO NUTS—Can pistachio nuts be grown profitably in the San Joaquin Valley? What is the best variety? At what age do they begin bearing? Where can I obtain young trees, cuttings and bud wood? I should like to propagate the trees and plant 30 acres in Madera County.—A. A. RUSCHHAUPT, Fresno County.

The pistachio is not now grown commercially in California, chiefly because there is not an adequate stock of nursery trees available. Nurserymen produce trees for which there is a large demand and as few people know much about the pistachio there is no chance for nurserymen to make as much money on them as on the standard fruits.

Pistachio Vera is the nut of commerce. It is grafted on another species known as Pistachio Terebinthus. The tree is well suited to the climatic conditions of the San Joaquin Valley generally. The best trees I know of are at Elk Grove, at the old Tribble place.

The trees are planted about 20 feet apart, including several male trees to each acre of females. They begin to bear at five or six years old.

Mr. G. P. Rixford, 1813 Pierce street, San Francisco, is the Government agent who is most interested in getting pistachio culture established in California. He has introduced the best commercial varieties from Europe and has produced a small stock of grafted trees, which are being distributed to interested applicants.

I suggest that you write him and ask for some seed to start a small nursery of stock plants. When your plants are ready he can furnish budding or grafting wood of the best varieties from the Government trees now growing at Chico, Calif.—J. ELIOT COIT.

GROWING TREES FROM SEEDS.—Please describe the method of growing trees from seeds.—MRS. J. CAZAREE, Marin County.

The process of growing trees from seed is quite simple, yet experience is necessary for good results. Peach seedlings are grown as follows:

Select seed of some variety well adapted to the growing of seedlings—Salway is the best, although Lovell, Lemon Cling and other varieties do very well. Seed can be procured from the canneries and should be from the current season's crop.

The seeds are stratified in the fall any time between the middle of October and the first of December. A pit is dug about 15 inches deep, and the seeds placed in alternate layers of two or three inches in thickness, with layers of light soil or sand between.

Do not stratify in clay soil. Here in Southern California, where our soils generally are quite light, we use nothing but the soil in the pit. Where soils are heavy, sand should be used. The pit is filled to within three or four inches of the top, a slight depression being desirable to hold the water.

The most important consideration in sprouting seeds is moisture. The beginner will seldom apply enough. The seeds should be kept very wet by the application of water once a week, except during periods of frequent rainfall.

About the middle of February the seeds should be split and some of the sprouts may have grown to a length of an inch or more. This is the time that planting in the nursery row should take place. No breaking of the seeds is required except that which takes place naturally.

The sprouted seeds, together with others that may not yet have split, are planted about three inches deep in rows three feet apart.

The method described will give results with any of the stone fruits, including the apricot and plum, and also is applicable to the walnut. Seeds are dry when put in the pit.—GEORGE P. WELDON.

HOT BEDS, LATH HOUSES, COLD FRAMES—What kind of equipment is needed for keeping cuttings and raising sedlings?—J. C. MARSH.

Various kinds of lath houses and semi-glass houses have been used with success in raising seeds for garden purposes. I have found that a lath house which may be constructed as a lean-to to a garage or shed will serve very nicely for the rooting of cuttings and the raising of seedlings during the summer months. A bed of sand three or four inches deep on a table makes an ideal place to start cuttings. Hardwood cuttings can be kept in this manner through the winter.

It is a decided advantage to supplement the lath house with a small cold frame made by fitting a couple of window sashes over a box two and one-half to three feet wide and about four inches higher at the back than at the front. During the cold weather such an arrangement keeps the seeds warmer and causes them to start more quickly.

A section of the box can be made into a sand bed and cuttings likewise started in it. Such a box can be set in the ground or the dirt heaped around it for a distance of about a foot to help hold in the warmth during cold nights. During the warmer part of the day the sash can be raised slightly to permit the heated air to escape.

In very rainy weather seed boxes in a lath house are apt to become pitted by the water dripping from the laths. This can be avoided by stretching a piece of canvas over the top of the house. Wire cloth under the laths has a tendency to check the air circulation and reduce the amount of sunlight. It is seldom used.

Some propagation houses are glassed at one end. This has some advantage during the warmest parts of the day, but the heat is soon lost when the direct sunlight is over.

Where cuttings are desired to root quickly and where a large number are to be raised, a hot bed will give better results than a cold frame. The only difference in construction is that the box is placed over a bed in which two or three feet of manure has been tramped down. The resulting fermentation keeps the box and contents at a very uniform warm temperature.—KNOWLES RYERSON.

RABBITS' SPOTTED LIVER DISEASE—Have lost nearly all my young rabbits. I opened those that died and found their livers were twice the natural size and covered with greenish-looking spots. Should like to know the cause and cure of this mysterious disease.—MRS. L. COVINGTON, Sonoma County.

Your rabbits are afflicted with "spotted liver." This disease is caused by bad food, poor water or by hay or alfalfa grown in marshy or sandy soil. There is a deposit of lime or sodium of salts on the liver.

When the ailment gets a firm hold of a rabbit, there is no cure, but it is easy to prevent. If you live where you can obtain dandelions in their wild state, feed them to the rabbits. Start with a little at first and gradually increase the quantity till you can feed all they will eat once a day. This is for the old stock. Feed the young just a little each day. Do not be afraid to feed dandelions. Once you get them used to the plant they make real good rabbit food, and keep the kidneys and liver in fine shape.

If you cannot get dandelions, take 1½ pounds common salt, 1½ pounds common baking soda, 1 tablespoonful powdered dandelion root, 1 tablespoonful powdered licorice root; mix all together thoroughly and sift through an ordinary flour sieve. Keep in a tightly closed can. Take out a little for use when feeding and dust this on the rations with a salt shaker. Keep this up for quite a while; then only twice a week.

This is a preventive and a tonic and will cure cases not too bad. I am afraid your stock has got past the first stage, and would advise you to kill one of the old rabbits. If the liver is spotted, kill all the rabbits and make a fresh start, getting your stock from a reliable breeder, who should guarantee that his stock is healthy. Feed good, clean grain and hay and wash out the drinking troughs quite often.—GEORGE GREEN.

BUILDING CONCRETE RESERVOIR—J. D. Long of the Agricultural Engineering Department, California College of Agriculture, writes as follows in reply to an inquiry regarding the construction of a concrete reservoir:

Unless you have some very good reasons for the design you have in mind for the reservoir—25 feet square and 12 feet deep, with concrete walls 6 inches thick—I wish to advise that you consider a shallower tank with sloping side walls. Such a tank, with side walls sloping at 45 degrees and curved ends, 30 by 60 feet at the extreme borders, will give approximately the capacity you desire.

The advantages of such a design are: Much shallower excavation, less concrete required in side walls, less reinforcing required, no forms needed, and in general a much simpler and faster construction.

For such a job the earth should be excavated to desired size, depth and shape and thoroughly settled and compacted to prevent settling and cracking of the concrete. A layer of one-inch mesh poultry netting should then be laid over entire area for a reinforcing, the netting being held about one inch from the surface of the ground by being tacked to small stakes under the netting. Three and a half or four inches of concrete are then placed on the area, worked well down about the netting and floated to a smooth, dense surface.

The concrete mixture should be one sack of cement to 3½ cubic feet of gravel and sand, such as is secured from a gravel bank. Care should be taken that such gravel be clean and contain about 40% sand and that accurate measurement is made to secure the correct strength of concrete. The gravel should contain no stones much larger than a walnut. The concrete should be kept wet for three or four days after being poured and preferably should be covered to prevent rapid drying.

Your letter stated that you desired to build an underground tank. If this means that you desire to cover the tank, 4 by 4 posts on 10-foot centers may be placed down the center of the tank to carry a framework supported from the edges. Such posts should be provided for at the time the concrete is poured by placing an extra concrete footing under the post.

To accomplish this, a hole about one foot deep and two feet in diameter should be dug at the location of the post and filled with concrete as the remainder of the surface is covered. A bolt set in the concrete and extending above it three or four inches to fit in a hole in the post will help hold the post in place.

Walnuts Profitable Where Prunes Are Famous

THAT walnuts will thrive in many parts of the Santa Clara Valley, as well as other valleys and foothill districts in Central and Northern California, is the belief of Weller Curtner of Milpitas, near San Jose.

The Curtner ranch, in fact, includes one of the most profitable walnut groves in the central part of the State—25 acres of Concords, from 12 to 14 years old. Mr. Curtner has a private walnut nursery and has achieved unusual success in budding. He plans to set out a large additional acreage to nuts. Seedlings were planted in December and budded in September. In order to hold back the development of the root system, Curtner gives the budded trees no water during the first summer in the nursery. This practice, he points out, lessens the shock of transplanting. He is experimenting also with Payne's, but believes the Concord will do best in his locality. The Eureka and Payne, however, he thinks would be more successful in the interior valleys.

"Our walnuts," said this progressive young producer, "are not spectacular in their performance, but they produce a good, steady income and that is what counts after all. They rank right with the 'cots' in average annual returns. To achieve success, however, it is essential to have the right variety and to plant where the trees will enjoy good drainage and freedom from frost. In fact, our so-called thermal belt along the foothills appears to be the only section of the valley really suitable for walnut growing."

GOOD AVERAGE YIELD

The Curtner groves yield an average of 1000 pounds an acre. The nuts are marketed through a San Francisco commission house, which has handled them for several years.

Curtner believes dehydration of walnuts can be overdone, and feels that this modern development cannot be adopted generally without further study. An oily product of this nature, he points out, if dried too hastily will become rancid quickly. The practice on this ranch is to dip very quickly, using a strong solution and washing after dipping, then drying slowly.

A few trees on the Curtner place have been affected by oak-root fungus, which "jumped" the black walnut root and attacked the budded stock.

The high quality of the nuts produced on the Curtner ranch has commanded a market premium for several years. In a cracking test only one blank was discovered in 500 average nuts.

This property is one of the oldest and best known in Santa Clara County. It has been in the family for three generations, the present operators being William M. Curtner and his son, Weller. The latter is actively in charge of ranch operations. Weller is a Stanford graduate who chose agriculture because he liked it, and who has made a special study of entomology and horticulture. Upon the writer's recent visit to the ranch he was operating a tractor, cultivating one of the prune orchards.

The orchards include French, Imperial and sugar prunes, as well as a large acreage of apricots. Some of the trees are very old but by the application of modern cultural methods, the Curtners are maintaining productivity and vitality with remarkable success.

ALMONDS ARE REMOVED

A large planting of almonds, however, recently was removed to make way for walnuts and apricots. The almond trees, some of which were more than 30 years old, were blown out with blasting powder, fifteen tons having been required for seventy acres. Then the roots were jerked out with a Fordson tractor. Although this plan meant a new rear end for the Fordson about every forty hours, young Mr. Curtner figured this expense in with the dynamite and charged it off to "improvement."

The labor problem was solved many years ago when Portuguese families from the Azores were established on the ranch as tenants. Living happily in their cottages, these families remain year after year without any written agreement, but perfectly satisfied with their share-crop system. One of these Portuguese who now has a family was born on the ranch. They specialize on green peas, potatoes and sweet corn, which are shipped to San Francisco. A ready and profitable market for the produce has been built up through a commission firm which has handled the Curtner business for years.

SUPERIOR CORN DEVELOPED

Through selection and careful cultivation, a superior strain of corn, known as the "Alameda Sweet," has been developed. The tenants years ago found the corn which bore ears low on the stalk matured earlier and selected their seed from the short stalks. On this ranch corn may be planted in December and consequently the very earliest market is found. The production averages 50 to 60 bags per acre and has reached 110 bags. The winter peas, also, strike the season of highest prices.

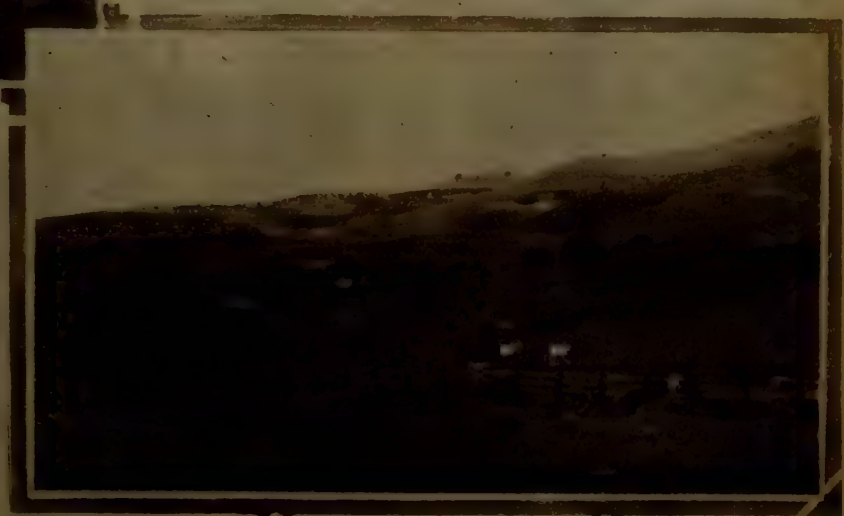
Among the old landmarks on the Curtner ranch are a fig tree said to be 145 years old, a chestnut which probably is the largest and oldest in California; an enormous cactus hedge of ancient origin and an old adobe building which was used as a hotel by the Spanish owners in the romantic days of the great land grants.

The ranches comprise more than 1000 acres—including much of the picturesquely rolling foothills which stretch above the orchards. Garden truck is raised by the tenants far up on the slopes and below the beautiful homestead one sees row on row of corn and orchard trees. Surely California holds no more interesting or attractive agricultural enterprise.—J. C. K.

More than 100 years old, this building on the Curtner ranch is a famous landmark.

The Curtner homestead is one of the finest in the valley, with beautiful flowers, trees and shrubbery.

Portuguese tenants have worked on the ranch for three generations.



The frost-free foothill area produces winter peas and other vegetables.

Angular Leaf Spot

THE leaf spot disease has proved very destructive to cucumbers, an Orange County grower having lost two-thirds of his crop as a result of injury to the vines.

The fungus lives over winter on bull nettles and other nurse plants and the following summer is carried by insects to the cucumber leaves. Spores of the disease also infect the seeds, which before planting should be soaked in mercuric chloride, according to plant pathologists of the U. S. Department of Agriculture.

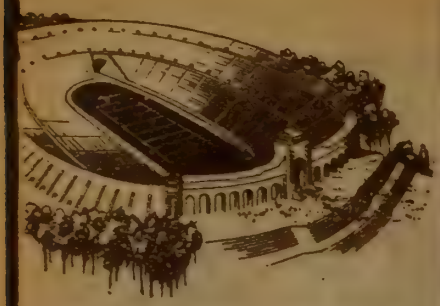
Dusting the vines once a week with lime, nicotine and sulphur also is recommended. The purpose of this latter treatment is to kill the insects which carry spores of the disease from one plant to another. Both treatments, however, proved ineffective on the Haven Seed Farm, Santa Ana, this year.

NITROGEN OF THE FUTURE

A gigantic chemical plant in Saxony, Germany, is producing urea from the air. It is expected this substance will be converted into nitrate of urea, which is nearly one-half available nitrogen. Germans believe this work indicates that the most of the future supply of nitrogen will be taken from the air.

CHINESE PLANTING TREES

In the Shansi province, China, 100,000,000 trees are being planted annually on barren hill land. This afforestation work is part of a project for clothing with timber 26,000,000 acres of denuded lands.



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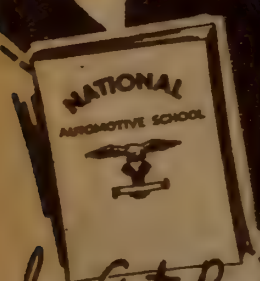

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

SEPTEMBER 23, 1923

Richardsons' Hens Number Twenty Thousand

George Richardson starting out with a home-made grain cart to feed his flocks.

By O. H. BARNHILL

IS IT possible to make a fortune in the chicken business, not by selling breeding stock at fancy prices, but just by producing eggs? Well, what man has done, man can do. Starting in the industry with little capital and no experience, Fred and George Richardson have in thirteen years acquired 42 acres of land worth $3000 an acre, 20,000 good hens, much valuable equipment and personal property.

The proof of the pudding is in the eating thereof. The Richardsons not only have plenty of fresh eggs three times a day—if they want them—but live in comfortable homes and enjoy about as many of the good things of life as does the average well-to-do citizen.

"Are we making money? If we weren't, where would we get $100 a day with which to feed our birds and $60 to pay our hired help, to say nothing of other expenses?" George asked, declaring they wouldn't last long, under pressure from such heavy overhead and underfoot, unless their hens supported them with a suitable income.

THEIR METHODS EXPLAINED

Those who wish to learn by what methods the Richardson's have attained such conspicuous success by following a line of business that has led many men to failure are invited to accompany the writer on a little journey to the big poultry plant at San Gabriel. The chicken houses do not suggest prosperity, being very cheaply constructed of unpainted boards and building paper. But appearances are sometimes deceiving. Big factory buildings often are very common looking structures.

"We do not believe in spending a dollar unnecessarily," explained Fred. "Where a heavy investment is needed, however, the funds always are forthcoming. For example, we spent $6000 for a fence to enclose a 32-acre field."

Location admittedly is important in poultrying. Just why was this particular location chosen?

"When, in 1910, we came here from Denver, where we had been engaged in other lines of business," related George, "we studied the requirements of an egg factory and then looked for the best possible location. Soil, climate, market and transportation were the chief factors taken into account. Here these conditions approach perfection. If there is a poultry paraside, surely it is in the San Gabriel Valley.

"Los Angeles was and is one of the best egg mar-

(Continued on Page 9)

Flock of Richardson hens scratching up self-sprouted barley. Note tilting shed fronts on left.

Above, one of the big brooder houses. Below, hauling green Sudan grass.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
SEPTEMBER 23, 1923

Fall Spraying Deciduous Fruit Trees Important

Timely Hints on Controlling Insect Pests and Fungus Diseases—Good Materials and Thorough Work Necessary

By GEORGE P. WELDON
Pomologist Chaffey Jr. College of Agriculture. Contributing Editor Orchard and Farm

AFTER the season's crop of fruit has been harvested the grower usually finds time for a breathing spell which has been fairly earned. This is all right—unless the spell lasts too long. Certain work in the fall or early winter is highly desirable, if not absolutely necessary.

Among other things that sometimes have to be done at this time in order that the orchard may be preserved in health and made to produce profitable crops is spraying. Only in special cases is it needed, but when these occur the orchardist should be on his guard before disastrous results follow.

PROFESSOR WELDON

Black scale, one of the worst pests of citrus trees, also has a liking for the apricot, and orchards are sometimes severely damaged before the owners realize that this insect occurs in sufficient numbers to demand attention.

Its presence may be recognized by the black discoloration on twigs, fruit and leaves about the time the crop is ready to harvest. So severe may the attack become that the growth will be meager; the leaves will turn yellow and drop early, and the buds which are to make the next season's crop will be injured to such an extent that light production will result.

BROWN APRICOT SCALE

In addition to the black scale, there may be found on the apricot another scale pest, known as the European Fruit Lecanium or brown apricot scale. This pest seldom becomes as abundant as the first-mentioned species; no doubt because of the fact that it is heavily parasitized.

A thorough application in December, or as soon as possible after the foliage has completely dropped from the trees, of a miscible oil spray will control effectively these pests.

There are various brands of oil emulsion that can be purchased from insecticide dealers, which bear the name "miscible oil." Most of these are put out by reliable firms and can therefore be depended upon to do the work that is required of them. All miscible oils contain carbolic acid, and a very strong odor of this material is recognized while the spray is being applied.

MISCIBLE OIL IS SUPERIOR

Other forms of oil emulsion, such as ordinary crude oil, or distillate and soap emulsions—which may be easily prepared at home, can be used, but results are more or less uncertain. The writer's observations of orchards sprayed with miscible oil have convinced him of the uniform results and great value of these preparations.

This spray is usually applied to dormant trees at the strength of one gallon of miscible oil to ten gallons of water. Several apricot orchards that were sprayed in the vicinity of Ontario last fall had the scale reduced to a point where there was little or no injury, while others near by sprayed with a home-made distillate emulsion were very little benefited.

Emphasis should be placed on the importance of spraying rather early in the winter, but not until after the leaves have dropped—early, because the black scale grows during the winter and early spring months, and the larger it gets the more resistant it becomes to a spray; after the leaves drop, because the young scales spend the latter part of the summer on the foliage, migrating to the new growth of twigs in the fall.

WAIT TILL LEAVES DROP

Thousands of little scales stay on the leaves too long and perish with them on the ground. This natural mortality reduces the infestation to a considerable extent and makes unnecessary the treatment of the foliage.

While only the apricot has been mentioned as needing attention in the fall because of black scale infestation, there are other trees which occasionally need the same kind of treatment. The olive is a favorite host of the scale, and control in this case is accomplished in exactly the same manner as with the apricot. Peach trees are seldom troubled with this scale, but pears at times show a considerable infestation and may need the same treatment.

Black scale, one of the worst pests of citrus trees, also has a liking for the apricot

Practically all of our deciduous trees are attacked at times by the San Jose scale. In California the apple and pear are the most subject to infestation. Frequently trees of these fruits have a coating of scale on the bark so thick that growth is checked and death of certain branches or even entire trees may ensue. Again, miscible oil is a good remedy when applied exactly as outlined for the black scale.

Lime-sulfur, which is considered to be one of our most valuable sprays because it will kill many species of insects and mites as well as fungous organisms, finds a place in the fall spraying program. First of all, its value when applied to peach trees infected with blight is well known.

Many orchardists, however, prefer to apply Bordeaux mixture in the fall, following this spray with lime-sulfur in the spring, as peach blight requires the two sprays for complete control.

Pear growers whose trees are troubled with the serious little pest called blister mite will do well to spray with the lime-sulfur in the fall and again in the early spring. The fall treatment should be given to the pear trees just as soon as possible after the leaves have fallen.

THOROUGHNESS IMPORTANT

In all spraying, whether in fall, spring or summer, too much emphasis cannot be placed on thoroughness. It takes only a few spores of a fungus to infect a whole tree. A single female scale may be the start of countless millions at the end of the season.

Therefore in all this work the effort should be made to kill 100 per cent of the organisms for which the spray is applied. Of course, this is impossible, as those who are familiar with spraying well know, yet the closer one can approach the 100 per cent mark the better will the spraying operation pay.

Spraying carelessly done may represent a total loss of time, material and effort, for enough insects or disease organisms may be left on the trees to cause losses fully as great as though no spraying had been done.

Getting Cheap Nitrogen and Humus by Raising Cover Crops

Timely Directions for Growing Green Manures—Valuable Aid to Orcharding

By J. ELIOT COIT
Contributing Editor of ORCHARD and FARM

THE advantages of growing winter cover crops are so many and the need is so imperative, especially in Southern California, that the practice should be almost universal. Southern California soils need nitrogen and humus. Leguminous green manures furnish both of these substances cheaper than they may be had in any other way.

DR. J. ELIOT COIT

When citrus trees grow large enough to occupy all the land there is, of course, no room to grow intercrops, and it is then necessary to use manure or bean straw or grow cover crops in walnut orchards to be cut and hauled into the citrus groves. But while the trees are young there is opportunity to grow large cover crops and build up the soil in fertility and humus against the time when the trees will be in full bearing.

EXPENSE IS ECONOMY

For some reason not readily understood many citrus growers are averse to planting cover crops and always are looking for excuses to lull them into the belief that such work is unwise or unnecessary. But the fact remains that $10 spent for seed and labor will usually produce a benefit to the trees which would cost from $50 to $75 if bought in the form of manure or bean straw.

One of the common objections to cover crops is that in case of a cold spell the presence of a cover crop results in greater frost injury to the trees. In spite of many apparent cases of such injury, this assumption is not justified by facts.

In order to settle this question, Floyd D. Young of the U. S. Weather Bureau carried on scientifically accurate tests. A grove containing a very heavy cover crop was divided into two parts and readings from tested thermometers were made for some time in each part. Then the crop on one part was turned under and harrowed off smooth and the comparative readings continued.

TEMPERATURE VARIATION SMALL

The average difference in temperature for sixteen cold nights during which serious damage was done in both parts was about one degree in favor of clean cultivation. This is certainly not enough to warrant discontinuance of the cover crop. Mr. Young found the difference somewhat greater in very young orchards; but small trees may be given protection at small expense by wrapping.

Another cover crop "bogey" is the fear of aphis. This pest has been serious the present year on vetch and also on orange trees, but the presence of aphis on vetch does not increase the aphis on the trees, for the simple reason that each host plant has a different species of aphis, which is not interchangeable. Vetch aphis is not the kind found on orange trees, as any one will recognize if he will take the trouble to compare the two species.

The cheapest cover crop to grow is melilotus indica. It has been well tried for many years. The seed should be sown in September in citrus groves and turned under early in February, before it has reached full size. If left until it is in bloom much harm may be done by interfering with fruit setting.

In walnut orchards melilotus may be planted later, even up to January, and the crop turned under in May, or cut and used for green-manuring orange trees. Farm bureau tests have shown a very large increase in the yield of potatoes following the turning under of a crop of melilotus. This plant is not affected by aphis or disease. It is sown on dry ground, one-half the seed one way. Then furrow out the ground for irrigation and sow the remainder of the seed the other way and irrigate.

Purple vetch is one of the best cover crops for general conditions. With seed at 11 cents, 40 pounds—enough to plant one acre—would cost $4.40. A yield of 20 tons per acre, containing 228 pounds of nitrogen worth at $6.50 per unit $74.10—is often secured in young groves.

Vetch grows faster than melilotus in cool weather and makes a much greater tonnage in time for turning under. On the other hand, it is sometimes affected by aphis and is a host for cottony mold fungus.

One of the promising new cover crops is the Bell strain of horse bean, which recently was described in ORCHARD and FARM. This is a small-seeded, tall-growing variety specially bred for cover-crop purposes. When planted alone in young groves, 40 pounds of seed per acre at 13 cents a pound would cost $5.20.

This crop grows rapidly in cold weather, can be sown and disked in after irrigation and one crop of weeds eliminated. Many groves have become so foul with nettle and chickweed that it is a difficult matter to get a good stand of melilotus or vetch, which is crowded out by the weeds.

In such cases Bell beans would be a good alternative, as the seedlings are so large and vigorous that they quickly rise above and overshadow weeds. A large tonnage can be secured in time to turn under early.

Where the walnut harvest can be pushed to early completion these beans may be planted and allowed to grow to full size for cutting and used in orange groves where the trees are too large for cover-cropping.

On steep hillsides, particularly in the Sierra Madre-Duarte foothills—where there is some danger of heavy rains in early fall—there is need for a cover crop which will grow quickly and act as a soil binder for preventing erosion. For this purpose a mixture of purple vetch and rye is used to good advantage.

Rye quickly forms many fibrous surface roots and holds the soil in place, while the vetch provides the nitrogenous green manure and has a tendency to climb on the rye, the two giving a very satisfactory mass of green material for turning under.

Cover crops enrich the soil; improve its physical condition and water-absorbing capacity; increase the number of soil bacteria; puncture the plowsole and admit air and water to the subsoil; bring plant food up from below and leave it near the surface; conserve the nitrogen which is leached out by winter rains, prevent erosion, and decrease the amount of money which would have to be spent for manure and bean straw.

It is poor business for the owner of a young orchard to be a bidder in the manure market and help boost the price of manure to others, when he may with much less expense provide ample food for his trees by growing it in the orchard.

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THE CALIFORNIA AGRICULTURAL WEEKLY

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

MACHINERY VERSUS ORIENTAL LABOR

The selling of $50,000,000 worth of American rice in Japan looks like "carrying coals to Newcastle." It proves, however, that we can beat the Japs at their own game of rice raising. It indicates, furthermore, that machinery and efficient methods, as well as tariff taxes, make possible successful competition with cheap foreign labor.

While American farmers are fearful of their market being demoralized by the products of low-priced Oriental workmen, Japanese agriculturists are complaining bitterly of California rice being sold in Japan cheaper than it can be raised there. And yet, American growers were forced to sell their crop so cheap that a large per cent of the rice land in California has been left to grow up in weeds the past few years. Who has a solution of the rice problem?

DEALERS INJURE ALMOND MARKET.

An example of one of the ways in which private dealers injure the market for a co-operative product is given by T. C. Tucker, who recently returned from a trip east, where he went to sell nuts for the California Almond Growers' Exchange.

Such dealers quoted prices to the trade, "subject to confirmation," several cents below exchange figures. They did not own any 1923 nuts, but hoped to buy at sufficiently low prices to enable them to sell at the low figures named—in much the same way that speculators sell "short" on the stock exchanges.

The low prices named by these irresponsible dealers make it difficult for the exchange to sell to the trade at profitable figures.

PRACTICE FARMING BEFORE THEORY

It is generally considered desirable to learn the theory of farming before practicing it as a profession, but in Germany they put practice before theory—or did when Paul H. Steude, Sacramento's champion back-lot farmer, lived there.

"Before I was permitted to attend an agricultural college," relates Mr. Steude, "I was required to learn farming and several other things by doing them. I put in three years practicing all kinds of farming; shearing sheep, butchering hogs, making brick, butter and limburger cheese, repairing harness; running a vineyard, brewery and distillery, as well as many other things which would seem ridiculous to an American college professor.

"Too few of our agricultural instructors know how to do such things as run a straight furrow, milk a cow and take a mower to pieces and put it together again."

RETAILERS RECOGNIZE FARMERS' NEED.

"Pay farmers a fair price for their products," was the warning sounded to the convention of the New York State Retail Grocers by P. A. De Puyt of Rochester, National president.

"Farmers must receive prices that will give them a fair return for their efforts," he told the 400 delegates.

It is encouraging to find retailers cognizant of farmers' problems. Too often their attitude has been out of sympathy with the producers.

Not all farmers have felt friendly towards retailers as a class; there has been dissatisfaction because of the great spread in prices between crop values and the cost of articles the farmer must buy.

The retailers' leader is wise enough to know that this feeling must be overcome if it is not to react unfavorably upon the retail trade.

In fact, the whole country is beginning to realize that something is wrong and that if our National prosperity is to continue there must be more equable adjustment of prices.

FARMERS COMING INTO THEIR OWN

"We farmers are at last well equipped to do business in the modern business world in the modern way," declares Gray Silver, Washington representative of the American Farm Bureau.

"We are free men dealing with free men according to our abilities and opportunities. The rules of the game are the same for us as the others. We are no longer necessarily subjected to artificial handicaps added to those of nature, which are inherent in our business. We collectively have the right to assemble our products so that we become a factor in the business world on a scale commensurate with our productive capacity and the demands upon it.

"The co-operative marketing law gave that to us. We have the machinery and the capital for the mobilization of our credit so that credit will be provided automatically according to our needs and our collateral. The rural credit and warehousing laws gave that to us.

"With all of these we have converted, or at least cleared, the way for the conversion of an unorganized group of 6,000,000 farmers blindly and destructively competing with each other into a disciplined industry which will serve the public with regularity and certainty and at the same time be enabled to secure adequate and just rewards for itself."

"What's New?"—Keeping Abreast of Agricultural Progress

Everbearing Plum Tree

JOHN HENLE has a plum tree at Davis bearing 29 varieties of fruit, the first of which ripens early in June and the last the latter part of October. Some of the cions used in top working the tree were imported from Italy. This is the second year the tree has borne.

Blood Red Navel Orange

A BLOOD navel orange has been discovered on the ranch of F. C. Eells of Pomona, California, according to press reports. This fruit, which is the result of a cross between blood and navel orange varieties, is seedless, with the general characteristics of the Washington navel orange, but the flavor and color of the blood orange.

Zelzah Farmers Growing "Cukes"

TWENTY-FIVE acres of cucumbers planted experimentally for pickling purposes near Zelzah (Los Angeles County) yielded so well this year that it is likely the acreage will be greatly increased next year. The cucumber is subject to so many insect pests and fungus diseases that old fields often must be abandoned and new locations sought.

California's "Four Hundred"

FOUR HUNDRED carloads of fresh California fruit were being shipped East daily in the middle of August, the total for the season being 16,000 cars, compared to 8800 for the same period last year. The supply of refrigerator cars west of Ogden was 13,000. Only 3800 were available August 15, 1922. Since that time the Southern Pacific has built over 6000 new "reefers."

Walla Walla's Onion Money

THE 1923 onion crop of Walla Walla is estimated at 600 carloads, which is expected to put into the pockets of producers more than a third of a million dollars. The bulk of the crop is being handled by the Walla Walla Gardeners' Association and the Walla Walla Vegetable Exchange. Their sales agent, A. A. Prince, reports the onion market as strong as the flavor of Walla Walla's odoriferous crop.

California Gets Better Rates

A CUT of $51 a car on express charges on fresh fruit from California into New York City was gained when the Interstate Commerce Commission decided that the American Railway Express Company should absorb docking and floatage charges in moving cars across the river to Erie Railroad piers. Heretofore these charges have been added to the express rates, but the American Fruit and Vegetable Growers' Association protested and won.

Oregon Cherries Pay Well

NEARLY a million and a half pounds of sweet cherries were handled this year by the Oregon Growers' Association at The Dalles. Royal Anns netted growers a little better than 8 cents, which is considered a very satisfactory price. The first Bing pool netted 10 cents.

Most of the fruit was sold to dealers for canning and making Maraschino cherries. Twenty-five cars of black cherries were shipped east without processing.

Plummer Plugging for Oxen

IN spite of autos and tractors, O. M. Plummer, general manager of the Pacific International Livestock Exposition at Portland, thinks that some day oxen may be re-discovered by farmers who need great power at small cost.

In order to encourage people to think along these lines, Plummer is trying to induce Edward H. Best of Boston to bring out a yoke of Devon oxen from his Batchelder Farms at Mt. Vernon, N. H., to the Portland show in November.

Best has expressed his intention of showing his Milking Shorthorns and Devon dairy cattle at the International. Stockmen are expressing great interest in this consignment.

Lassen County Horse Market

A HORSE marketing association has been organized by the Lassen County Farm Bureau for the purpose of selling stock direct to buyers. Over 600 animals have been listed at the following prices:

Broken horses, 1400 to 1600 pounds, $70 to $125; 1200 to 1300 pounds, $60 to $90; unbroken, latter weight, $40 to $75; 1000 to 1100 pounds, $30 to $40; horses for chicken feed, $10 to $20; miscellaneous sizes, $20 to $100. A few large animals, 1600 to 2000 pounds, priced on application.

Orders should be sent to either of the following Farm Bureau committeemen: Willis Brockman, Madeline; W. S. Shoaf, Termo; J. H. Godman, Ravendale; Ira Hamilton, Lassen; Roy Harwood, Milford.

Grain Dealers Taking Sacks

THE farmers of Yolo County have spent over $137,000 for grain sacks, for which they have received no compensation, according to Fred Shaffer. Grain growers in other districts have a similar tale to tell.

"It is to be hoped," comments G. H. Hecke, director of the State Department of Agriculture, "that the Legislature will pass a law requiring grain dealers either to return sacks or pay for them by adding the cost of the container to the price of grain."

"It is indeed unfortunate," adds Charles F. Hagedorn, acting chief of the Division of Weights and Measures, "that the law does not provide for the return of the sacks or their equivalent in cash. In hundreds of cases where other commodities are sold the producer has been guaranteed the return of the container. The grain grower should insist upon this in making sales."

Fined for Watering Milk

SCHULER & MARKS, Los Angeles milk dealers, recently were fined $200 for adulterating their product with water, reports the State Department of Agriculture. "Water is an excellent drink, but 16 a quart is too much to charge for it," comments Director Hecke.

Growing Avocadoes in Florida

WHILE avocadoes in California are considered by many an experimental crop, in Florida they are a staple orchard product. Dade County, Florida, has 2000 acres of avocado trees and expects to have 10,000 acres in ten years from now. Wilson Popenoe, agricultural explorer of the U. S. Department of Agriculture, is of the opinion that in twenty years from now avocadoes will be the dominant crop in the section named.

Bull Kills Ventura Dairyman

JAMES STRAWN, Ventura dairyman, recently met his death at the horns of an infuriated bull. The tragedy was witnessed by his brother and employer, who were unable to save the victim of the enraged animal. Strawn had been warned that the bull was dangerous, but nevertheless entered the corral where the brute was confined. The bull charged upon the man, pushing him through the fence, his body pierced with one of the animal's horns. A widow and two small children survive the unfortunate victim.

"Citrangequat"—New Fruit

A NEW citrus fruit, the citrangequat, claims the sweet orange, the trifoliate orange and the kumquat as its ancestors. The first step toward this new fruit was made a number of years ago when the Chinese trifoliate orange was crossed with the sweet orange to form the citrange, a fruit which instantly won favor because of the valuable combination of the hardiness of the trifoliate stock with the juice and flavor of the sweet orange.

The final step—that of crossing the citrange with the kumquat, resulting in a fruit that is one-half kumquat and one-quarter each of sweet and trifoliate orange—has produced a type that has many admirable qualities. In addition to possessing the ability to grow in any place where the trifoliate stock will grow and the juice and flavor of the sweet orange, it is also remarkably resistant to diseases of all sorts.

While it is perhaps true that there are few prospects of getting cuttings from the limited number of trees at present, it is believed that the propagation will be spread over a wide area within a short time. Mr. P. J. Hjort of Thomasville, Georgia, who owns the greater number of the existing trees, is taking steps to extend the growth to other sections suited to the production of the fruit.

"THEY SAY"

JOHN L. KNORPP
Courtesy Farm and Ranch Market Journal

JOHN L. KNORPP

President Southwest State Bank and Southwest Cattle Loan Company.

CONSUMERS are demanding better beef. Packers must meet this demand. This year they are accepting only 35 to 40 per cent of average California range cattle for slaughter. In a few more years this percentage may be reduced to 20.

What is the cattle man to do about it? Being a producer myself, I have worked out the following plan:

Of the three "cuts" of steers made on the ranch, the first will be classed as finished grass beef and will go to the packer. The second cut will be fed oil cake for 60 days, starting with one pound a day and gradually increasing to eight pounds a day, plus all the barley or alfalfa hay they will eat.

In this way I feel it is possible to add at least $10.00 to the net profit per head, as well as spreading out the marketing period.

The third cut, which must be carried over until the next season, is put on a ration of one to one and one-half pounds of cotton oil cake beginning early in July, supplementing with the usual range feed or hay, if available. This will carry them until grass is good, and they can be marketed "grass fat" 30 days earlier than under the old method.

Olive Growers and Packers Open New Markets

Co-operative Marketing Organization Will Assist Packers in Educating Public to Eat More Ripe California Olives

FOLLOWING a year and a half of hard, persistent field work, covering the entire State of California, olive growers recently have succeeded in signing up the acreage required by their new co-operative organization, California Olive Growers, Incorporated.

With 7000 acres of olive orchards pledged and more being added from time to time, this new factor in the olive business has assumed a position of great importance in the olive industry. It is the concrete expression of over 500 olive growers that their industry now has reached the stage where co-operative effort is vital to its stabilization and development.

While the organization contemplates packing and selling olives when advisable, the association plans this year to pool their output and sell to packers. Prices were fixed by a joint committee of packers and growers.

LARGE CROP FORCES ACTION

The 1922 crop carry-over and the large pack that is expected to be made this season have resulted in an arrangement being made by the growers' organization and the California Olive Association, whereby the growers will join with the packers in putting on a big educational ripe olive advertising campaign next winter. This advertising, nation-wide in scope, is regarded as necessary to move the large output of packed olives that will go on the market around the holidays.

During the past three years the California Olive Association, comprising the leading olive packers of the State, and financially assisted by several prominent growers, has been exploiting the ripe olive through consumer and trade campaigns. In 1920 it advertised in leading women's magazines and The Literary Digest and in 1921 put on a combined consumer and trade campaign. A limited trade campaign, combined with demonstrations, exhibits at food shows and distribution of ripe olives to women's clubs and various men's organizations, was made in 1922 and 1923.

All this activity, of course, has been national and designed to influence the consumption of ripe olives throughout the country. In California the demand for the ripe olive already is so large that were the big cities of the East to consume this product in the same ratio as do the cities of San Francisco and Los Angeles, California's output would fall far short of meeting the demand.

GROWERS REINFORCE PACKERS

The efforts of the California Olive Association to increase the use of ripe olives through advertising and other forms of sales promotion now will be greatly reinforced by the co-operation of growers through their new organization. Future campaigns will reach more people in the East, will be carried on continuously instead of seasonally—as in the past—and will have financial backing that will achieve material results in opening new markets.

It is only through the expenditure of considerable money in effective educational advertising and other sales methods that markets where the ripe olive is now practically unknown can be opened up and made to contribute to the welfare of the industry. It is a matter for congratulation in the California ripe olive business that it has been found possible at this time to so combine the forces of both grower and packer as to assure this great development of Eastern markets at an early date.

There should be no difficulty experienced in selling every olive grown in California at good prices to growers and packers. Stabilization of values will result, if the question of possible new markets is handled rightly, for it is a fact that the number of potential consumers of ripe olives in this country is so large that the present supply of olives is far and away inadequate to satisfy the demand.

OLIVE HAS BRIGHT FUTURE

The ripe olive business in California has not been overly prosperous the past few years, for reasons that need not be emphasized in this article. The future of this industry, however, bids fair to bring the olive into line with the best-paying fruits of the State.

The olive acreage in California is not large as fruits go in this State of huge plantings—something like 30,000 acres. About three-fourths of the trees are of bearing age. The present annual output of canned ripe olives is about 500,000 cases of 24 quarts each. It is hardly likely that this amount will be increased much more than 100 per cent during the next five years. The olive tree is an irregular producer, a heavy crop almost invariably being followed by a light one.

By J. J. HOEY
Secretary California Olive Association

So chaotic is the present selling of ripe olives that this fruit, grown and packed at large cost, often is sold at prices that pay neither the grower nor the packer any profit whatever. Instead of opening up the great, untouched and profitable markets of the big Eastern territory, through proper educational methods, the olive crop is each year forced into the restricted areas in which a demand has been created through the painful efforts of the past twenty years' pioneering. The result is that there is the keen st competition to sell on the part of packers, resulting, at times, in the utter demoralization of prices.

This destruction of profits, with the consequent loss of stability in the industry—affecting both growers and packers—is the price this business pays annually for failing to develop its possible markets. It is hoped that this unhappy stage in the history of the California ripe olive business soon will be passed.

QUALITY BEING IMPROVED

Vital to the subject of increasing consumption of ripe olives is the improvement in the quality of the product we offer to the public. In this regard the industry is making marked progress and the ripe olive of poor quality is now the exception. Science is giving valuable aid to the processors and packers in the working out of newer and better methods in the canning plant and the product is now vastly more uniform and dependable than in years gone by.

Growers, too, have learned that the fruit must be delivered to the canner in exactly the right condition and at the right time, else the latter is heavily handicapped in his efforts to turn out a first-class article of food.

Standardization of the ripe olive pack with reference to sizes, grades of quality and color texture is another important step already taken. This is in the line with the general improvement that is taking place the country over with all food products that are canned or preserved. Proper standardization is of vital importance to the olive industry, second only to the improvement in quality of the packed fruit itself.

PLANTING BOOM UNLIKELY

As a result of these improvements being made in the olive industry, are we likely to experience a boom in olive planting, with orchards being set out on nearly every hillside? Presumably good prices for any product of the soil will induce increased plantings, but in the case of olives the time required to bring the trees into profitable bearing is decidedly longer than for almost any other fruit tree. This fact alone will deter many prospective planters.

This question of orchard expansion is one that safely may be left to the future. If planters are enthused enough over the profits of olive culture to wait eight years for their first returns—and there are such enthusiasts—then we can figure on a certain increased acreage as a result of better prices.

Order Out of Olive Chaos

WHEN the California Associated Olive Growers went "in the hole" after building plants at Fallbrook, Lindsey and Oroville, prospects for concerted action in the handling and marketing of the California crop seemed far from bright.

Organized in 1916, this association finally settled upon the plan of pooling the members' crops, representing the product of about 1400 acres, and has followed this procedure until last year.

Later the California Olive Association—"a non-profit organization to standardize olive products and promote the interests of the industry" was organized, and while it neither grows olives nor sells co-operatively, its membership includes owners of nearly 6000 acres of bearing orchards. Packers, dealers and growers contribute to its support, the former a certain amount per case and the latter a proportionate amount per acre, based on the tonnage produced.

Now a new marketing association, known as the California Olive Growers, Inc., has been launched under conditions described by Mr. Hoey in the accompanying article, and promises to do much towards stabilizing the ripe olive industry. —*The Editor.*

Bananas Profitable Florida Crop

BANANA growing is a commercial success in Florida, according to W. E. Bolles, secretary of the Florida Banana Growers' Association, who claims this fruit will pay $400 to $1000 an acre when properly cared for.

Single bunches weigh 50 to 100 pounds and sell at 6 cents to 8 cents a pound, wholesale. Taking the lesser price and the lower weight and counting one bunch per plant, 400 plants per acre—the usual number—gives a total return of $1200 per acre for the third year after setting.

"When properly grown and cared for," says Mr. Bolles, "bananas grow nine 'hands,' each with 13 fingers, on each bunch. The standard commercial varieties are Cavendish, Hart, Orinoco, Martinque and Red Jamaica.

"Bananas for 30 years have been grown successfuly in Florida, Louisiana and Texas. The experimental stage was passed long ago. This fruit now is being planted commercially by money making men and women. The acreage is increasing every year.

"This fine tropical fruit begins bearing 14 to 18 months after planting. Banana groves produce crops every month in the year. Close planting is recommended, as the shade keeps the ground cool and moist and prevents weed growth. The rows may be 8 or 10 feet apart and the plants 6 to 10 feet apart in the rows. Plenty of water and fertilizer are essential.

"No insect pest or fungus disease affects the banana. The fruit is very nourishing, exceeding the potato by about 20 per cent in food value. The United States imports 43,000,000 bunches of bananas annually, or about 40 bananas for every man, woman and child in the country.

"As an ornamental emblem of a semi-tropical character, the banana is in the same class with the cocoanut and the Royal palm, lending an appearance of luxuriance which no other plant can equal."

HOME FARM HAPPENINGS

By ONE OF US

SHEARING SMALL FLOCKS. Sheep shearers will not bother with small flocks when there is work to be done with larger bands. For this reason it is always necessary for the small wool-grower to have his shearing done either early or late in the season.

We recently finished shearing and if sheep could talk they would be thanking us for relieving them of a heavy coat that they feel no need of during August and September. It was a case of getting the job done in August or waiting until October or later and we always have it done in the former month.

Wool does not bring so much, perhaps, when sheared twice a year, as the longer, full-year fleece, and there is a double cost of shearing. Wool, however, is not the largest item with a small, purebred flock and the sheep do so much better when sheared every six months that other advantages are more than offset.

KEEPING PRUNE PICKING RECORDS.—Last season we kept a careful record of our prune picking operations: How many boxes were picked and dipped each day; what the weather was; when we started to take prunes from the trays—everything, in fact, up to the final date of delivery.

Now when we are in the midst of the prune harvest again we refer to this record almost every day. We are making an even more detailed record of this season's work.

Keeping a prune diary is something like making records of registered livestock—easy if you do it every day and do not let it get so far behind as to be a burden.

We picked the first prunes last year September 15; this year we started August 19.

BUYING BULLS EARLY. Some cattlemen who use a good many purebred bulls every year are looking around now for animals they will not use until next spring. They can buy young bulls now cheaper than they can buy older ones at breeding time next season—at least, they should be able to do this.

But even if the animals cost the same money the fall buyer has the advantage of having his bulls well used to his feed and conditions, thoroughly acclimated and "making themselves at home."

This is a point that is worth more than many folks realize. The usefulness of a bull the first season is very greatly increased if he is taken to his new quarters a few months before the usual time.

The breeder generally is glad to get rid of his bulls as soon after weaning as possible, because they are some bother, and if they are out of the way there is more feed and room for the remainder of the herd.—W. S. GUILFORD.

AFRICAN IRRIGATION PROJECT

An irrigation dam having a capacity of 100,000 acre feet of water and costing $3,000,000, recently has been completed in the Sunday River Valley, South Africa. The land is divided into 20 and 40-acre tracts, which are to be devoted to dairying, alfalfa and citrus orcharding.

BEST HOUR FOR FARM RADIO

From 7 till 8 o'clock in the evening is the best time to reach the farmer by radio, according to those who have investigated the subject. From noon till 1 o'clock is considered a favorable hour for sending out market and weather reports.

CHAMPION LOGANBERRY PICKER

Mrs. Sam Riggs, pretty young Indian matron, has been acclaimed the champion loganberry picker of Oregon. In one day she gathered 336 one-pound boxes, for the picking of which she was paid $6.72.

EASTERN DAIRY COUNCIL

An increase of 11 per cent in milk consumption in Pittsburg for 1922, a period when the population increased only 2 per cent, is attributed largely to the work of the National Dairy Council, which is spending $50,000 in that district in 1923.

OREGON IS "JERSEY HEAVEN"

Six of the nine Jersey cows holding the world's highest butterfat records live in Oregon, which is sometimes called "Jersey Heaven."

RAISES SIX-FOOT CANNAS

Cannas six feet high are grown by J. T. Riley at Normandie and Sixtieth street.

Agricultural Leaders of the Pacific West

DR. GEORGE P. CLEMENTS

Agricultural Director, Los Angeles Chamber of Commerce

IN THE fullness of his life and the service he has rendered to humanity, Dr. George P. Clements, head of the agricultural department of the Los Angeles Chamber of Commerce, ranks among the most distinguished citizens of our great West.

DR. CLEMENTS

He was born of the blood and in the atmosphere of adventure. His boyhood days in New Brunswick, where he was born in 1865, were replete with exploits among Indians and wild game.

In his early 'teens he came to "the States" with (as he expresses it) but one intention, to study medicine and surgery.

But in order to fulfill his ambition it was necessary for him to make his own way, and so his adventure continued—on the Great Lakes, in the forests of Michigan and on the prairies of the Middle West.

While still a mere boy, he held responsible positions with the Burlington Railroad and the Armour-Cudahy Packing interests. As passenger agent for the former, he traveled over and became acquainted with a great portion of the States of the Union. In the latter connection, he established many of the branch houses of the Cudahy Packing Company to the South and Southeast.

WIRES FOR "DIGNITY"

An interesting and true story is told of one of his dealings with the Armour Company. He had been sent to Milwaukee to represent the company in the bankruptcy proceedings of another concern in which Armour was interested. When he arrived in Milwaukee he surveyed the situation and wired to the head office to "send him dignity and he would supply the brains." So an aged man with flowing whiskers was sent to sit beside young George, who whispered directions for the settlement.

When he had finished up this business he received a personal wire from P. D. Armour, requesting him to come immediately to the Chicago office. It must have been with some skepticism as to the future of his position that he stepped into the office of this man who established and developed one of America's biggest industries. But this giant of the packing industry had only commendation and said it was the first time in his experience that he had ever known a youth to recognize that he lacked dignity!

But during all these years George's early ambition was still before him and his work with these companies was only the means to the end. His nights were spent in the study of chemistry, biology and other of the sciences, and so much had he accomplished in this night work that he was able to graduate from the University of Nebraska, College of Medicine and Surgery, as one of the honor students with only two years in the regular day course.

Then, having his degree, instead of picking the easier path through the door that was offered him, by becoming the junior partner of one of Omaha's physicians with an established practice, young Clements set out into the prairie districts and became a cowboy doctor.

RIDES TO PATIENTS

In these years of strenuous work, good saddle horses were his closest companions, and hundreds of square miles of Western Nebraska the field of his endeavors. Often he would receive calls that required an entire day or perhaps two days of strenuous riding before he reached the case. Frequently messages were relayed, and many times he did not know whether he was expected to treat a fever patient or set a broken leg.

Then on the long trip home, for rest and recreation, he would stop at some cowboy camp and join in the sports. In a few years Dr. Clements had come to be known through all that part of Nebraska and his fame had extended to the larger channels of his profession.

His excessive exertions in behalf of his fellowmen, however, resulted in a physical breakdown, and in 1900 he came to California. In a year or two, when he could give some constructive thought to his future, he began studying and planning the work on his ranch near Riverside. Never a step was taken until the reason therefor had been determined definitely and considered thoroughly. The scientific training and learning acquired in his former work now was turned to the creation of experimental plots in the horticultural industry. During the next twelve or fifteen years, new grasses and other products were introduced from abroad, new varieties tested and adapted to California conditions, soil and moisture surveys made and considerable knowledge of the agriculture of Southern California thereby acquired.

During these years, too, Dr. Clements was exploring the desert districts of Southern California, as well as the agricultural lands of the Southwest Empire and Northwestern Canada.

CALLED TO CHAMBER

With the coming of the World War, a stimulated agricultural production was called for and Dr. Clements was asked to create and become the head of the Agricultural Department of the Los Angeles Chamber of Commerce. That was only five years ago, but today that department has personal contact throughout all of the Southwestern Empire, and the Los Angeles Chamber of Commerce, through the work of Dr. Clements, is looked upon as one of the main factors in directing the attention of all of the Southwestern States to that city as a market and metropolitan center.

Dr. Clements undoubtedly has settled upon the agricultural lands of the Southwest with satisfaction to the settler, more families than any other one man. These have not been confined to Los Angeles County or even to Southern California, but have included ranches of the great interior valleys of the North coastal districts, as well as some other States within the realm of Los Angeles' influence.

The placing of these settlers upon land suited to their own individual conditions has been only a small part of the work of the Agricultural Department, however, and the same spirit which in his early life led Dr. Clements to many varied adventures has led him in unraveling many of the agricultural problems and complexities of this fast growing country.

But be it the reclamation of thousands of acres of land or the consideration of the widow's problems on her five-acre orchard, the same deep understanding and sympathetic co-operation marks all his dealings with his fellow men.

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Lettuce in Merced

THE experience of the Bonner Orchard Company, near Planada (Merced County), in growing lettuce this year, is a good illustration of the old adage, "There's many a slip 'twixt the cup and the lip," in farming.

Last November the manager, J. G. Howden, took the advice of a produce dealer and planted 80 acres of young orchard to cauliflower, peas and lettuce. The first was a total failure, the second was badly injured by aphis and the last had to be irrigated, owing to an unusually dry winter.

But just after the last irrigation heavy spring rains soaked the ground, causing many lettuce plants to send up seed stalks, which rendered the heads unsalable. Except for unfavorable weather, 60 to 75 carloads of lettuce would have been harvested. As it was, only 14 cars were cut.

The crop was harvested early in May, after the Imperial lettuce was off the market and prices good. The first car sold for $1.60 a crate f. o. b. Planada, the second for $1.85.

As the market continued to rise, the produce dealer decided he could make more money taking the lettuce on consignment than by buying it outright. Although the price rose to $2.10 and $2.35 and 10 cars could have been sold at these figures, f. o. b. Planada, the dealer gave the orchard company nothing but red ink for the last 12 cars. So much for taking the advice of a commission merchant and consigning a crop.

Although this little flier in truck gardening proved disastrous from a financial standpoint, it showed the possibilities of profit in raising Merced lettuce. Mr. Howden is preparing to plant a smaller acreage this year and to profit by his marketing experience.

The per acre cost of producing the crop was as follows: Preparing the land, $3; seed, $1.56; planting, $1.57; thinning, $11.94; hoeing, $11.28; cultivating, $1.52; irrigating, $9.29; total, including other items, $41.19.

The soil is a rich clay loam, near Bear Creek, and seems well suited to lettuce growing.—D. J. WHITNEY.

Pomona Prepares for L. A. County Fair

WITH increased facilities and a much stronger organization, the Los Angeles County Fair, to be held at Pomona, October 16 to 20, promises to excel in all departments the successful event of 1922, says Manager C. E. Afflerbaugh.

"More than 25 cities and four counties will be represented in the agricultural and horticultural departments," Afflerbaugh adds. "The night horse show promises to be the most important ever held in Southern California; in fact, we predict our show will be pronounced from every angle this season's best fair held on the Pacific Coast.

"Since the harness and running horse race program will represent the windup of the season's circuit, there will be some real competition."

BIG PREMIUM LIST

Premiums and prizes, according to the manager, total nearly $10,000, and in addition to this premium money, 60 handsome cups will be presented by merchants of Los Angeles County and the cities of the Pomona Valley.

Construction work now is progressing on a $25,000 building program, consisting of four stock barns, each 200 feet long; seventy-five box stalls, an art building, 40x80, and a 90-foot addition to the grandstand. With the above improvements completed and with the present accommodations now on the grounds, exhibitors are assured that their wants will be cared for.

A corps of the finest judges to be found has been employed. These include such well known authorities as Frank Morris, Woodland, to judge Holsteins; F. E. Duffy, West Hartford, Connecticut, Jerseys, Guernseys and Ayrshires; C. E. Howell, Davis, horses, and Prof. Oliver of Oregon Agricultural College, to judge hogs.

Chas. A. Gibson, Elwood, Indiana, and Lewis H. Salisbury will judge rabbits. William C. Tallant of Edmond, Oklahoma, licensed A. P. A. judge; A. G. Goodacre of Compton Calif., Fritz Thott of Alhambra and George Masterson of San Diego will place the awards in the poultry department.

Dr. J. T. Barrett, Ph. D., Riverside Experiment Station; Ernest Braunton, Los Angeles, and George P. Weldon, Chaffee Union High School, will act as judges in horticultural and agricultural departments.

The junior livestock show will be in charge of H. A. Miller and Frank Ernst of Los Angeles, and Chas. Perrin of Ontario. It is hoped to make this department one of the largest of the fair, and liberal prizes are being offered in all the junior classes.

The Giant Bamboo

THE accompanying illustration shows a forest of giant bamboo near Bakersfield. This grove has spread by natural extension of the root system from the original offshoot until it now covers an acre or more of ground. It

has had no particular care, attention or irrigation, but the ground water is not many feet from the surface.

In Japan the bamboo is the source of great wealth, being used in arts and manufacture of inconceivably large number of purposes. If this grove were in Japan it would be worth much money. The question naturally arrives, why can not bamboo be utilized here?

How far will the rapid consumption of our natural timber supply be carried before mounting costs of lumber force us to wake up to the vast possibilities of utilizing the delta lands of San Joaquin and Imperial Valleys for commercial bamboo culture? If this magnificent grove at Bakersfield just volunteered, what could we expect as a result of proper spacing, thinning, and other cultural care?

Considering the one item of the manufacture of light, cheap furniture alone, there would seem to be an opportunity for some one with capital and vision.—J. E. C.

Pruning Burbank Blackberry

ONE reason why growers of Burbank blackberries fail is because the plant is pruned like other blackberries, whereas it should be treated something like a grapevine, according to N. E. DeGolier of Atascadero (San Luis Obispo County), who has picked 60 boxes to the plant.

The method recommended is to grow four strong vines, without pruning, training them on wires, two on a side. The next year the vines are cut back to the desired length and all side branches headed back to two or three buds. All new canes are removed, as the fruit is borne on the old wood, like a grapevine.

ALMOND CO-OPERATIVE BENEFITS

The Philadelphia retail price of Nonpareil almonds in 1899 was 35 cents; in 1922, 39 cents, an advance of only 9 per cent. In the first named year growers received 10 cents for their nuts; last year, 20 cents, an increase of 100 per cent. In 1899 growers sold their crop independently and competitively; in 1922, co-operatively.

PLANTING FOREST BY AIRPLANE

Arthur Brisbane, famous Hearst editor and writer, predicts that our denuded mountains and watersheds will be replanted by the airplane method, which has been tried with good results by the United States Forest Service. "What men have cut down in centuries," he points out, "flyers could replant, scattering seeds from airplanes, in four or five years easily."

How to Bud Walnuts Properly

By W. C. TESCHE

Deputy Horticultural Commissioner of Santa Clara County

PROPAGATION of walnuts by budding has proven so difficult to many orchardists that this method has been generally discarded in favor of grafting. Several Santa Clara Valley growers, however, have been markedly successful in budding and use this method wherever possible. Under certain conditions the advantage of budding over grafting is obvious.

One of the leaders in walnut culture in the valley is Wilbur Ward of Morgan Hill, who relies almost entirely upon budding for the working over of black walnut seedlings, generally from two to five years old, set in permanent orchard rows. His favorite variety is the Payne seedling.

Budding also is greatly preferred by Robert Westcott, in charge of the experimental orchard of the Leonard Coates Nursery Company at Morgan Hill. Westcott top-works large numbers of seedlings each season, and his methods differ from Ward's only in minor details.

An interesting and noteworthy application of Ward's budding method occurred on the Curtner Ranch at Milpitas the past season. The manager, Weller Curtner—after witnessing a demonstration on the Ward Ranch—explained the details to a workman, who budded a good sized block of Shasta County black walnut seedlings set in nursery rows. The success was phenomenal, resulting in an almost perfect "stand" of top grade Concords.

THE METHOD IN DETAIL

The method used by Ward is essentially the same as that customarily practiced in general nursery work. While some propagators use the patch bud, measured and cut with the double, parallel-bladed knife, the ordinary T-shape cut on the stock is equally satisfactory and more easily worked.

The vertical cut is nearly three inches long, on current season's wood of adequate thickness properly to accommodate the bud. Two-year-old wood can be used as stock, but with less success. The edges of the bark flaps, in the latter case, need to be loosed a bit to facilitate insertion of the bud.

While dormant one-year-old buds which have failed to push out in the spring may be used, the recommended procedure is the use of new buds in the leaf axils of new shoots. The character of this bud formation is more or less dependent upon the variety. In some cases only three or four strong buds can be found, near the base of the shoot.

A week or ten days before budding these shoots are selected, but not cut. The leaves growing over the desired buds are "snipped off," leaving an inch or two of stem, and in some cases the terminals of the shoots are pinched off. When the day for budding arrives these leaf stubs rub off easily.

REMOVING THE BUD

The bud is not sliced from the stick. Instead, with the knife point penetrating the bark only, a long section is cut around the bud, clearing the leaf-scar at the sides and extending from 1½ to 2 inches above and below the bud. Thus the bud, including bark, has somewhat the same outline as a cigar with the ends blunt.

With the thumb and knife point the bark above and below is peeled from the stick as far as the bud. Then with the thumb the bud is finally severed from the stick with a rubbing motion. This improves the condition of the bud, to which a small bit of wood underneath usually adheres. Full peeling may tear away this under protection, mutilating the bud internally or preventing a close fit with the stock and encouraging subsequent drying out.

The long bud shield is then slipped under the bark flaps of the stock in the usual manner and forced down until the cross cut of the T and the top of the bark shield meet. A slight trimming of the shield at this time will facilitate a square joining of the two cuts.

A thorough job of wrapping is important. Use heavy cotton twine that will not break under strain and draw it tightly around the stock, making six to ten complete wraps above and below the bud. Mr. Ward tightens up on this wrapping until a slight amount of juice exudes from the bark. Drying of the bud is an important thing to guard against. Budding should be done on the north side, to prevent evaporation. About a month after budding the strings are cut.

By using dormant buds grafting can be done as early as June, in which case growth often will be made during the current summer. However, when using the new bud as recommended, work may be done up to September, depending on local conditions affecting growth and sap flow. In the warm, interior sections, where growth is rank and continuous late into the summer, budding may be done successfully at a later date than in the Santa Clara Valley, where July and August are the preferred months.

Torpen Goes Into Action in Glenn County

By W. S. GUILFORD

Contributing Editor ORCHARD and FARM

WE have a new farm adviser, Enoch Torpen, in Glenn County, and if all of our folks who have seen him read the signs right, he is one of the sort who will make himself extremely useful.

He is young, full of enthusiasm and ambition, has had some useful experience and is apparently more interested in helping the farmers of this county work out their problems than in anything else. If he can do that he will make a tremendous reputation for himself. He is married, therefore, a great deal of "running around" that single fellows have to do will not interfere with his work.

W. S. GUILFORD

His first job was at Codora Center. He is doing everything he can toward the marketing of 20 to 40 cars of fresh fruit from this section this season. At the next Farm Bureau meeting he will compile a census of the number and kind of fruit trees, with the probable crop they will bear next year.

At a succeeding meeting representatives of shipping organizations will be invited to attend and tell us how they think the packing, shipping and selling should be handled.

The farm adviser then will advise with all of us about spraying, pruning and later about thinning.

Next spring—long before any fruit is ripe—the shipping concern selected to handle the crop will be in touch with prospective markets, making such progress with sales as is possible, getting boxes made up and shipping quarters arranged.

At shipping time the packing and loading of the fruit will be put in charge of some competent man who has had experience in such work.

Sounds easy, doesn't it? It isn't, not by any means. The plan has been tried here before, but something always happened to prevent its being carried out.

If our new man can "put it over" it will be a real accomplishment, one that will make us all much more willing to pay our dues to the Farm Bureau than we have been in the past.

If we can get some real money from fruit that has largely gone to waste, it will be an accomplishment we can understand more easily than the stories we hear of the great work our high-priced lobbyists claim they are doing in State and National politics.

One hopeful thing about this new Farm Bureau project is that we all realize that we must do everything in our power to help Torpen. We know that no miracles are being performed any more around here. We also know that we shall not eliminate the gambler from fruit growing, or the action of the law of supply and demand from marketing.

We shall watch the situation with a great deal of interest and report progress from time to time in these columns.

Monster California Pansies

AN unusually fine bed of pansies was grown last year by W. F. Kasselbaum on his ranch near El Monte. The flowers volunteered in August and in late autumn were thinned to five inches apart. They were fertilized three times, a gallon of fishmeal being used on the 6 by 15-foot bed at each application. The soil was sandy loam.

The flowers began blooming in January and were the wonder and admiration of all beholders. The plant grew knee-high and the blossom stems were six to eight inches long. One plant growing among some lilies was over four feet high.

KEEP ALMONDS SEPARATE

Each year the California Almond Growers' Exchange endeavors to impress upon its members the necessity of keeping varieties separate. "The first-class almond trade does not care for mixed nuts," explains an official of the exchange. "When varieties are mixed the nuts must be classed as 'Mixed Almonds,' no matter how high the quality, and can be sold only to the cheap trade."

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Rails vs. Sails

WESTERN boxed apples shipped to England via the overland route arrive in better condition than those which are sent all the way by water. This is due to inferior ship refrigeration. Proper ventilation often is lacking, the result being an accumulation of injurious carbon-monoxide. There is also an excessive variation in temperatures.

The United States Shipping Board has nine refrigerator ships, but none is equipped with cold storage refrigerator machinery. Furthermore, the vessels are too slow to be of much help. By the use of suitable steamers, proper packing and careful handling, Pacific Coast apples could be landed in London in as good condition as when they went into the ship's hold.

One dollar a box is the present cost of sending Oregon and Washington apples to Europe. This amounts to $40 a ton, an excessive charge. As additional ships are being taken over by the fruit trade and refrigeration equipment improved, not only will this high freight tariff be reduced, but goods will be carried to distant markets in better condition than at present.

Moving apples across the icy Rocky Mountains often results in frozen fruit. Sometimes this injury is not apparent when the apples leave the cars, but even slightly frosted fruit deteriorates rapidly when it is removed from storage.

One reason why shippers are willing to take the risk of frost injury is because when the fruit is moved by rail across the continent there is a chance of disposing of it on the Atlantic seaboard, provided market conditions are favorable, before the last leg of the journey is begun.

The Panama Canal has made possible the present trade war between rails and sails for the profitable fruit shipping business. Whichever side wins, growers will benefit. O. H. B.

Questions Asked by Rabbit Growers

Answered by George Green

WHERE TO SELL RABBITS FOR MEAT.—Can you tell me where to sell rabbits for meat in Los Angeles? —LANNIE FINNEY, Imperial County.

Live rabbits, young and old, are sold at and have been by J. C. Spencer, 2016 East Seventh street, Los Angeles, and J. H. Pelphrey, 2424 Hunter street. The city hotels and restaurants use a great many dressed rabbits. If you could deliver a regular number each week you could no doubt make good paying by supplying such customers, as the demand exceeds the quantity produced.

This information will not, of course, help you in Calexico, as rabbit meat could not very well be shipped here from there, owing to the distance and excessive heat. You should be able, however, to build up a good business in supplying local customers.

CAUSE AND CURE OF RABBIT SLOBBERS.—What is the matter with my rabbits? They slobber at the mouth, bleed at the nose and grit their teeth. Something appears to please them, although they do not appear to be very sick.—MRS. L. M. LUCAS, Nevada.

The disease you describe is slobbers. It generally occurs when the young are from one to three months of age and usually is caused by eating before they can digest their food properly.

Keep the young rabbits in the nest as long as you can—eighteen days at least. Take out the doe and feed her in another hutch.

As soon as you find that the rabbits have the slobbers, make a mixture of common table salt and baking soda half and half, and rub the parts affected two or three times a day. Do not give them any food except a little toasted bread. If they have any vitality, they will be well in a couple of days.

Don't feed lettuce to young stock, as it does not agree with them. Don't give old stock much lettuce. Do not use slacked lime in the hutches, but fresh sawdust. If the stock is healthy, give a sprinkling of salt with the barley once every week.

RABBITS FOR FUR AND MEAT.

I expect to go into the rabbit business near Salt Lake City and should like to know what kind are best for fur and meat and to withstand Utah's cold winters.—C. R. EMERSON, Nevada.

American Blue, New Zealand Red and Flemish Giant are the best rabbits to raise for meat. The first named variety and the Himalaya are the most profitable for fur. The American Blue is the best all-around rabbit. The does weigh 10 pounds, bucks a pound less. The Reds are just as good for meat being about the same size. The skins are valuable for fur, but have to be dyed, while the Blues have a pretty natural color. The Giants are good for meat but they come in all colors and while some have very fine fur, most of the pelts have to be dyed.

All these breeds stand cold climates well, if protected in the winter. The Himalaya is pure white, with black points. The fur is used to imitate ermine. The animals are too small for meat.

Good, thoroughbred young rabbits sell for $5 each, meat stock. Exhibition animals bring higher prices.

SELLING CAVIES AND RABBITS.

I have 35 cavies which I cannot sell. Can you tell me where there is a market for these animals?

I should like to raise rabbits. What is the price on foot and dressed? How many litters will a doe raise in a year? What does it cost to feed them? I raise my own alfalfa and green stuff. Should also like to raise rabbits for show purposes and would be interested in them.—ERNEST WOODRUFF, San Diego County.

There does not appear to be any regular market for cavies. If you are afraid of having them around, dig a hole and bury them you will save time and money. Most scientific laboratories raise their own cavies. The cavy business was ruined two years ago by rackets and get-rich-quick methods.

In the city there is and always will be a good demand for rabbits. They can be sold for food in Los Angeles in any quantity. Restaurants continually advertise for them. Fryers—young rabbits, weighing 1½ to 2 pounds, bring about 35 cents a pound dressed on foot, that sell for 15 to 25 cents, according to the season of the year.

In your locality you may have to carry for a market, but if you once get started in the rabbit business and can furnish dealers and customers a steady supply I have no doubt you will do well.

A good doe will raise about four litters of eight each in a year. She may be bred five times, but will not live as long as when bred less frequently. The young should be kept with their mother until eight weeks old.

As to the cost of feed, all you will need to buy is a little rolled barley. Here in the city, where all food must be bought, it costs me $3 a week to feed 100 rabbits, young and old. By growing your own alfalfa hay and green feed you can effect a substantial saving.

Common rabbits cost $1.50 and up, but I would not recommend getting that kind. The purebred pedigreed animals cost a little more, $5 and up, but are more profitable because they are larger and more uniform and always look well and the best ones can be sold at good prices for breeding stock. The most profitable varieties are American Blue, New Zealand and Flemish Giants.

Bee Notes

Without Stingers

By J. D. BIXBY SR.

CONDITION OF BEES LOW

The U. S. Department of Agriculture reports the condition of bees on July 1 as the lowest in seven years and the condition of honey plants the lowest since 1917. This unfavorable showing is largely due to bad conditions in a few important honey-producing regions.

HONEY WAREHOUSE BURNS

The Superior Honey Company's warehouse in Redlands recently was destroyed by an incendiary fire, and a large amount of honey, mostly of the crop of 1922, held for the winter trade, was consumed. The company operates extensive apiaries in Idaho and Utah, as well as in California.

GOOD BEAN HONEY CROP

Apiarists in the lima bean growing sections report a good crop of honey, although overstocking of the territory is complained of. The season has been exceptionally favorable, owing to the frequent morning fogs.

QUEENLESS COLONIES PRESENT PROBLEM—An unusual number of queenless colonies are being reported. This is the natural result of drouthy and unfavorable conditions. The bees supersede their failing queens, and these young queens fail to become mated, owing to the scarcity of drones in a dry year. This means the speedy decline of the population of the hive until it is too weak in numbers and morale to defend itself from robbers and moths, and the honey is soon carried off by some stronger colony.

Very little use trying to repair under such conditions; when you have such a case give both stores and bees to some stronger colony with a good queen.

YIELD FOR STATE LOW

The yield of honey to July 1 for the country as a whole averaged 8.6 pounds per colony, the lowest since 1917 when it was 13½ pounds. The yield for the State of California for the same period (to July 1) was 13 pounds per colony, compared with a five-year average of 36 pounds.

PASTURING BEES AFTER SPRAYING.—How soon after spraying is it safe to put bees in an orchard for pollenizing plums?—S. TAYLOR, Sacramento County.

Forty eight hours should be ample time. The nectar and pollen in the blossoms that were open at the time of spraying will then be dried up and the newly-opened blossoms will be free from poison.—GEORGE P. WELDON.

FIRE DESTROYS ARP DAIRY

The modern dairy plant of May Arp of Eugene, Ore., which was described in ORCHARD and FARM last year, was destroyed by fire August 24. The property destroyed included the big dairy barn, cow, horse and bull barns, milk house, two silos, 150 tons of hay and 500 sacks of feed. The total loss was estimated at $45,000. Insurance, $20,000. Sixty-Holstein cattle were in the buildings when the fire started, but all were saved.

LARGE SICILIAN ALMOND CROP

California and the Island of Sicily are this year producing about the same quantity of almonds, 10,000 tons. Sicilian growers carried over an extra quantity of 1922 nuts.

Richardsons' Big Egg Farm

(Continued from Page 2)

...gs in the United States; a short truck haul over hard-surfaced highways solves the transportation problem; the weather is warmer than on the coast and not so hot as farther in the interior, while the soil is a rich, sandy loam and there is plenty of water for irrigation.

"Good chicken soil does not get muddy or sticky and is sufficiently fertile quickly to grow big crops of green feed. It is possible and generally profitable to buy grain and mash material, but an abundance of succulent forage must be produced on the poultry farm in order to obtain best results."

NOVEL BROODER METHODS

The laying houses do not differ materially from those in use on the average poultry farm. They are located on the old home places, south of the highway. The 32-acre breeding farm, north of the road, is unusual, however, not only in size, but in some other respects. After getting a good start in the big brooder and incubator houses, the chicks are kept in large colony yards until big enough to fry or lay, after which the cockerels are separated from the pullets and the latter allowed to deposit eggs in the pullet sheds.

The colony houses are built for utility rather than appearance, both the walls and roof being of black building paper. The latter is supported by wires laid lengthwise across the rafters. Each shed accommodates 125 pullets, or 75 laying hens, being 8 feet wide and 11½ feet long. The construction is as light as possible, to facilitate moving. The dropping platform rests upon the ground and is removable, as are the nests. The latter are made of half-inch material and have in front a hinged board, which is used to close the nests at night in order to keep the birds from roosting there.

One side of the building, below the nests, is covered only with wire netting. This open side is turned in whatever direction wind and weather conditions require. These light, floorless houses cost $30 each and are moved by lifting them upon a low truck.

"We grow immense crops of Sudan grass in the summer and barley in the winter for green feed," explained the Richardsons. "The former is a gross heavy feeder, yet the yard droppings supply more than enough manure to furnish the necessary fertility. Sudan grows waist high in three weeks, when it is mowed and chopped for feed. The last crop is allowed to mature and is used for straw litter."

Irrigation is accomplished by means of whirling sprinklers, to which water is carried by heavy, seven-ply rubber hose, which lasts three years. These sprinklers are moved as needed, sometimes being allowed to run in one place all night.

Alternate cropping of the poultry yards not only furnishes feed, but rids the soil of disease germs and other impurities.

It is interesting to learn that the average yearly egg production of Richardson's 20,000 hens is 144, which is the average for all commercial egg plants in the State, large and small.

NO RIGOROUS CULLING

"We could cull our flock until the average production was 200 eggs per bird, or even more, but would it pay?" asked George. "A 12-dozen hen is profitable, so why sell a paying egg machine for meat?"

Unlike most big poultrymen, the Richardsons do not sell baby chicks and breeding stock. They do, however, dispose of about 1,000,000 eggs each year for hatching purposes, all of them going to a single incubation plant. The fancy price secured for these eggs is what makes the credit side of the ledgers look so attractive. The hatchery obtains a premium of $1 per hundred from chicks hatched from Richardson eggs.

The expensive fence previously referred to was built to keep out chicken thieves. On the home grounds "Beware the Dog" signs warn marauders of the presence of Belgian police dogs, which are friendly enough in the day time, but cross and "quick on the trigger" at night. Electrical connections ring alarm bells whenever chicken house doors are opened at night.

JUSTICE IS METED OUT

"Since our Poultrymen's Protective Association sent a thief to prison for stealing a poor woman's poultry, chicken thieves have not given much trouble in the San Gabriel district," said Mr. Richardson.

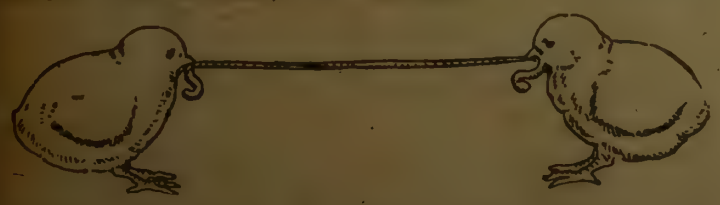
When the Richardsons bought 32 acres of land for a breeding plant five years ago, they planted the tract to walnuts for shade and fruit. The trees have made a night growth and enterprising realtors consider the property ripe for subdivision.

The Richardsons, however, believe that in deciding whether or not it will pay to sell, they should consider other things besides the rate of interest which the plant is earning on the amount of capital tied up in the industry.

"Where could we find a better location for the egg business?" inquired George. "We like the work so well that we have no thought of retiring. We want to stay in the game at least a few years longer. Meanwhile our land is advancing in value. We are able to face the future with confidence and satisfaction."

"We Like the Chicken Game"

THE rising tide of Los Angeles' population is pushing these progressive poultrymen so persistently that land in the vicinity of their big chicken farm is selling for $3000 an acre, yet they refuse to budge, because they are so well pleased with their location and occupation. They enjoy their work and would rather keep on running their egg factory than retire on the fortune it has made for them. —*The Editor*



Autumn Work in the Almond Orchard

THE California Almond Growers' Exchange gives the following advice regarding autumn work in almond orchards:

If irrigation water is available and the trees still retain their leaves after harvest, as they will if red spider is properly controlled, the soil should be mandised with an anger to a depth of at least three feet. If the soil is too dry to ball up easily in the hand, then it would be well to irrigate. Apply the water in a way that will secure deep penetration of considerable amounts.

The trees must be kept green till frosts. If difficulty is experienced in securing proper penetration it might be well to make plans for fall subsoiling, in which case previous irrigation is inadvisable.

In soils that have become packed and impenetrable to water and air one should carefully consider the feasibility of subsoiling to a depth of from 15 to 30 inches—the deeper the better. This should be done in the fall while the soil is comparatively dry, to avoid puddling and to secure a maximum of cracking and pulverization to a considerable depth. Decidedly beneficial results in most cases may be secured from such treatment.

PLANT LEGUME COVER CROP

If possible, plant a good leguminous cover crop early in October, to be brought up by the rains, or irrigated, should adequate rains fail to appear.

If shot hole fungus has been prevalent, spraying with Bordeaux should be done as soon after the first frosts as possible, when the leaves have fallen. In any case it should be done before December 15.

If trees are old and bark-bound a good spraying with crude oil emulsion in December will put them in good condition by softening the bark, cleaning off moss and lichens, and killing brown mite eggs.

Do not begin pruning until the first heavy frosts have taken the leaves from the trees. Then plan on a thorough pruning program through the winter.

For further data and methods to be followed, every almond grower should have a copy of each of the following bulletins issued by the College of Agriculture at Berkeley, Calif. These booklets may be secured from the college without cost, for the asking:

"The Almond in California," No. 297; "Almond Pollination," No. 306; "Almond Pollination," No. 346; "Control of Red Spiders in Deciduous Orchards," No. 347; "Plant Disease and Pest Control," No. 227.

Natron Cutoff to Open New Farm Lands

THE Natron cutoff, which the Southern Pacific is preparing to build, will open up a rich farming country in Central Oregon. This land lies east of Crater Lake and north of Klamath Lake and is tributary to Klamath Falls. Wood River, a beautiful stream having a good flow of water every month in the year, flows through a portion of the land. A large area is swampy, but can be drained.

Most of the area is within the borders of the Klamath Indian Reservation, which extends northward from about 10 miles north of Klamath Falls and eastward from the Cascade Mountains. The Reserve is about 40 miles square. Most of the land is owned by Indians, but white people have had little difficulty in getting possession of large tracts.

The elevation is 4000 feet and the winters quite cold, with danger of frost every month in the year. Hay is the principal crop grown. Grain ripens very slowly and does not always mature. Cattle grazing is the chief occupation. Wood and water are plentiful, but the rainfall is very light.

A branch of the Southern Pacific leaves the main line at Weed, Calif., and extends northward through Klamath Falls to Kirk, Ore. The line between the two places last named can best be described as "two streaks of rust and a right-of-way," but it is to be made a standard gauge road. Fort Klamath, where the Indian Agency is located, lies a few miles west of Kirk and north of Klamath Lake.

At the north end of the cutoff a stub line leaves the main road at Natron, near Eugene, Ore., and extends for 50 miles up the middle fork of the Willamette River, to Oakridge. The proposed extension will cross the Cascades near Lake Odell and run south, east of the mountains, passing within perhaps fifteen miles of Crater Lake, one of the world's wonders. This lake is five miles across and 2000 feet deep in the middle, with precipitous banks 1000 to 2000 feet high. The water is fresh, but has no known outlet.

Klamath Falls is the center of a rich farming district. Grain and alfalfa are the principal crops. Government irrigation and drainage projects have reclaimed large areas. Lumbering, cattle and sheep grazing are leading industries.

The Klamath Falls Chamber of Commerce or the Southern Pacific Company at Portland will gladly answer all questions regarding the territory tributary to the new cutoff.—O. H. B.

Don't Prune Trees Early

INSTEAD of listening to the theories of every "tree butcher" that comes along, tree and shrub owners—no matter how small their holdings—should inform themselves regarding at least the first principles of pruning. Otherwise, they are in danger of having their trees ruined by irresponsible workmen.

The fact should be borne in mind that pruning removes part of the top of a tree or shrub, but none of the roots; therefore, the same amount of sap continues to flow upward. The remaining branches, being more heavily gorged with sap than before, send out premature growth, when the tree has been pruned too early in the fall, especially if the weather continues warm. Then, when the sap does go down, the immature new growth is killed by the first cold nights.

It is best not to prune until the sap has gone down and the tree or shrub is dormant, or until growth has begun the following season. In either case, the increased amount of sap per branch is evenly distributed among all the buds, with no bad results.—E. S. CALLAWAY.

HAULING BULK EGGS

In Denmark eggs are hauled to market in bulk, a single truck taking 22,000. An inch of straw is placed on the floor of the truck, which has solid tires, and the eggs laid in promiscously, same as in a basket. No greater breakage occurs than when the eggs are packed in crates, it is claimed.

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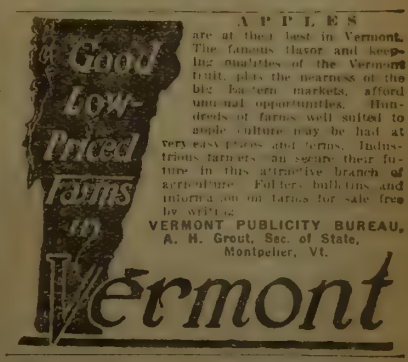

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Beautifying Rural Front Yards

By ANNE McCORMICK

Home Demonstration Agent, Santa Cruz County.

EVERY farm home should have an attractive yard, one that is a source of pleasure to the people within the home and gladdens the heart of the passerby. The exterior of the house and its surroundings are the views which are presented to everyone and are the chief means we have of judging a place. Many housekeepers are not thoughtful on this point, keeping their houses clean on the inside, but allowing their dooryards to become woefully neglected and unsightly.

Does it not give one a thrill of delight when driving along a country road to come upon a house inclosed by a well kept yard? However humble the home itself be the clean yard and blooming flowers lend to it dignity and enchantment. Yet in passing country homes, how few are the places that show any attempt made to have clean and attractive yards.

A shabby house and an ill-kept yard are silent acknowledgments of mismanagement somewhere. Dirty and commonplace surroundings at length breed a dull and uninteresting outlook on life. Disorder and ugliness are destructive agencies in character building.

Orderly and attractive homesteads have an influence to create like habits of mind and thought. A home environment should be such that it will encourage the fullest enjoyment of life.

The best way to begin the improvement of a country place is to let each member of the household go out and view the house and frontage from the road. Then let each one suggest improvements that can be made.

MAKE THE YARD CLEAN

The yard must first be made clean. All rubbish, unsightly bushes, grass clumps and other undesirable objects should be removed. Holes should be filled and the yard leveled as much as possible. A gentle slope from the house is desirable if such can be secured.

Old fences often are the most objectionable features of a yard. These fences should be removed and new ones placed in their stead, or the yard left open. A wire fence with dull green or white posts is usually attractive. Such a fence can be made very picturesque by planting along it certain flowers or shrubs.

Old-fashioned hollyhocks along a fence lend to it an irresistible charm. Nasturtiums and sweet peas are very effective if trained up on a wire fence. Native California shrubs may be arranged artistically in clumps around the border of the yard.

A well-kept walk leading from the gateway to the home adds much to the general appearance of a place. Concrete and gravel walks are usually preferable. A few flowers well placed along a walk are restful and inviting. Small flowers, such as rockcrest, candytuft, forget-me-nots are best to have bordering a walk.

KEEP YARD CENTER OPEN

The next thing to do it to get the ground in condition for seeding a lawn. A lawn grass mixture is probably the best to sow. Keep in mind that the center part of the yard should be kept open and the lawn kept clean and smooth. Trees, shrubs or flowers in the center of a lawn are like patches on a carpet.

Trees should be few and well placed. A tree should stand on the southwest side of the house to protect it from the afternoon sun. For small trees the acacia, hawthorn, birch, purple plum or apple may be used.

Shrubs should be planted along the house to screen the foundation and to serve as a background for the flowers which may be planted in front. The common household flowers, such as asters, petunias, California poppies, cosmos, and scarlet sage may be planted here.

FLOWER BEDS ARE PLEASING

A rose bed may be made on one side of the yard. Tulip, crocus or other beds can also be grouped to give a pleasing effect, if the yard is a large one. Sometimes a vine on the porch may be used to an advantage. Heavy, dense vines are objectionable and not attractive. Boston ivy may be used if there is a chimney. English ivy is never desirable on a house.

In the making of an attractive yard a pleasant and a healthful diversion is created. No country man or woman should be so busy but what time can be given for work among the flowers. The best flower gardens one sees usually are those planted and cared for by women who have much work to do.

A beautiful and well-kept yard not only gives pleasure to the owners, but by adding beauty and charm to the community becomes an inspiration to the whole neighborhood. In this way the standard of farm life is raised.

Best Time to Prune

THERE is no set time for pruning fruit trees. When they are dormant is considered by most people the best season. Any time from November 1 to April 1 for trees that shed their leaves is a good time to prune, except in very early season when April 1 is rather late for this work.

One who long-prunes intelligently, using the shears with judgment and foresight can work much earlier and later than one who practices the cutting back system.

In fact it is much better to prune too late than too early, because any cutting back on a tree or plant to crowd new wood.

I should not be afraid to prune trees in full bloom and have done it many times with excellent results when I could not get to the work earlier. If I belonged to the school of heavy cut-back pruners I should have to limit my pruning to a much shorter season. The severe short-pruner doesn't do this but he should.

The thinning out system removes branches entirely in most cases which does not force new growth as does cutting-back. Furthermore when the branches are removed by thinning the fruit also is thinned.

Do not be afraid of pruning late in the year, if you thin well, but if your pruner is of the cut-back type, keep him away from early or late pruning.

Once I called upon a lady early in November to look at her orchard. I found apricot trees which had been pruned two weeks by a rigid, old-fashioned cut-back system. The trees already had young shoots on the terminal branches, four to six inches long.

This lady had been advised by the pruner that early pruning was desirable and that orchardists had pruned apricots in August. She saw that her trees did not look right and called in a specialist to find out what was the trouble.

"But" tree owners object, "how can we tell whether or not a pruner is reliable and knows his business?"

Make them give references. Call the latter by phone and learn who they are. If they include the county horticultural commissioner, farm advisers or chamber of commerce officials, you are safe in employing the workmen.

Visit places which they have pruned and see what class of work they perform.

Many "fly-by-night" pruners work cheaper than do established horticulturists. Cheap orchard work, however, seldom pays in the long run.

E. S. CALLOWAY.

Small Pullet House

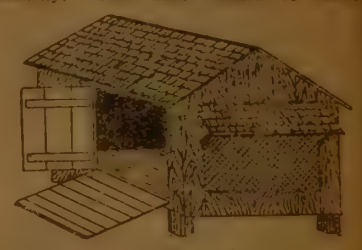
TEN by eight feet and six feet high to the peak of the roof is the size of this little poultry house.

It is intended to supply roosting quarters for twenty-early pullets that are hatched in plenty of time for winter laying.

Pullets that are well bred and fed for early maturity will lay well all winter when every one wants eggs, and prices are always satisfactory, but they will not lay many eggs the following summer.

Hens do not require much head room. Most poultry houses are built high up in the air to accommodate a tall attendant.

This little house may be cleaned from outside by using a hoe and a long-handled brush. Likewise, spraying can be thoroughly done through the front doorway. This door should be made



double to hinge at the sides and meet together in the center. One door only is shown to avoid complicating the drawing.

The roosting poles are made removable for easy cleaning. A good plan is to have two trestles to support the roosts at the ends. The poles should have auger holes bored part way through to fit over iron pins driven into the trestles. Some poultrymen set the pins in large auger holes and keep oil in these holes to discourage lice and mites.—HERBERT A. SHEARER.

That Slow Horse

THERE is an endless argument among farm hands about doubletrees and whether the slow horse or the fast horse pulls the most.

The drawing shows what happens when the clevis bolts are not in a straight line. Some farmers like the looks of a doubletree ironed with the front and rear evenings as shown. These irons are quite common in some parts of the country.

This doubletree is six inches wide and four feet long. When the doubletree lies square across the wagon tongue the pull of each horse is the same. But when one horse gets a little ahead of the other the fast horse lengthens its leverage and the slow horse gets a shorter lever.

The drawing is made to scale and the measurements as given are practically

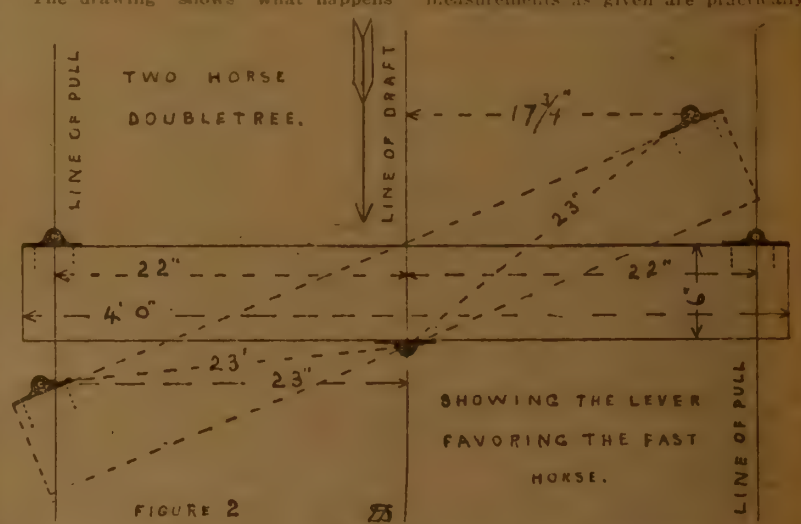


FIGURE 2

correct. At the angle shown, which is 22½ degrees, the fast horse has a leverage of 23 inches while the slow horse has only 17¾ inches. When the doubletree is straight across, then each horse has a leverage of 22 inches.—HERBERT A. SHEARER.

Large Southern California Fair Awards

THE livestock exhibits at the Southern California Fair, which will be held at Riverside October 9 to 13, have been increased materially by the timely action of the committee from the Los Angeles Chamber of Commerce, the Union Stock Yards and the Los Angeles banks in securing a very material fund to be used as special prizes in the beef, pork and mutton classes.

A very persistent effort has been made by these Los Angeles interests to spur on in every possible way production of beef, pork and mutton in California and to bring about an increased exhibit of the most popular breeds of livestock.

At least three fine herds of Herefords have been assured for the Riverside and Pomona shows. Two wonderful herds of Aberdeen Angus also will be exhibited, as well as a very strong showing of Shorthorns, including several herds of dairy Shorthorns.

GREAT SHEEP SHOW

The sheep show will be by far the largest ever seen in Southern California. Sheep breeders have been the most prosperous of livestock men during the past two or three years, but they are not resting on their ours as the result of this season of prosperity, but are honestly endeavoring to establish their industry.

A very material increase offered by these same interests in Los Angeles for the swine classes will assure a much better show than was anticipated. The four leading breeds of dairy cattle will be very generously represented at Riverside as usual. The annual meeting of the California Dairy Breeders' Association will be held on Wednesday, October 10, and a large showing of Guernseys is assured.

The exhibit of agricultural products at the Southern California Fair will depict the rapid advance in agriculture and horticulture in the South with very beautiful and attractive exhibits from eight or ten of the leading agricultural and horticultural districts of the Southern counties of the State.

A new and very attractive feature for the fair this fall will be an International Dog Show, showing in great detail the wonderful advancement and development of the date industry of California and Arizona. Every variety of date that it has been possible to produce and develop in this country will be shown, including a complete exhibit of commercial packs.

This show will be housed in a unique oriental setting and a strong suggestion of the Old World will be mingled with the atmosphere of our own desert in an attractive display.

Plan Orchard Heating

FIVE years out of the last ten, damaging frost have occurred in citrus districts in November. Equipment should be ordered [illegible] of having it in the orchard in time to give full protection.

For growers in cold districts, even these [illegible] only once in a decade there is no kind of an investment which pays higher dividends than adequate frost protection. The cost of equipment varies with the risk and the type installed, but good protection can be had for $150 to $300 per acre, including fuel for three or four nights' firing.

Briquet heaters are satisfactory for small places and should be installed at the rate of one hundred to the acre. Two or three tons of fuel per acre should be in the field at all times. For average districts the grower will need enough oil heaters to give him at least 400 gallons per acre of oil in heaters in the field. Storage capacity should be sufficient for three additional heater fillings.—R. W. HODGSON.

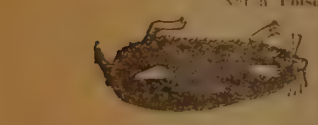
New Gland Treatment Makes Hens Lay

Gland Tablets Daily in Drinking Water Does It. Makes Hens and Pullets Lay Like Sixty.

Now is the time to put your Hens and Pullets into condition to lay all fall and winter, without any let up. Imperial Egg Maker contains prepared glands which QUICKLY stimulates and maintains the egg-laying organs of Hens and Pullets to their highest point of production.

Does away with expensive and messy prepared foods, meat, meals, etc. Easy to use. Comes in condensed tablet form to be dissolved clear in fowls drinking water. Every dozen pieces this amazing treatment. Remarkable formula. Nothing else like it. Regular $1 package contains a sufficient supply for the average flock.

Guaranteed Rat Killer Free.
Not a Poison



Easy now to wipe out Rats, Mice, Gophers and all Rodents. Imperial Rat Virus can be had quickly gets Rats and Pests the outside. Not a poison. Harmless to humans, poultry, pets, stock, etc. Regular $1 size contains Virus to kill 50 to 100 rats or more, time as many. More.

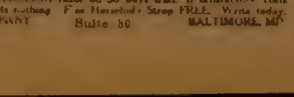
Send your name and address to Imperial Laboratories, Dept. 4-80 Kansas City, Mo., and they will send you, free, one regular size, or $1 size package of Imperial Egg Maker and poison free of charge a full size 4" bottle of Imperial Virus. Pay postman only $1 and postage when the regular $2 quantity arrives. If you prefer to enclose the price of these wonderful remedies instead of the money of each, for the price, so do when ordering.

For large users this Special Offer applies on four of the regular $1 size packages of their remedy at an additional saving, keeping $4 regularly for only $3.75. You risk no money as Imperial Laboratories will refund the cost, upon your request, any time within 30 days.

Tires With 500 Nail Holes Leak No Air

Mr. C. F. Milburn, of Chicago has invented a new Puncture-proof inner tube, which, in actual test was punctured 500 times without the loss of an air. Increase your mileage from 10,000 to 12,000 miles without removing this wonderful tube from the wheel; and the beauty of it all is that this new puncture-proof tube costs no more than the ordinary tube and makes riding a real pleasure. You can write Mr. C. F. Milburn at 127 West 47th St., Chicago as he wants them introduced everywhere. Wonderful opportunity for agents. If interested write him today.

30 DAY TRIAL



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We will send a STERLING razor on 30 days trial. If satisfactory costs $1.97. If not, costs nothing. Fine Household Strop FREE. Write today.
STERLING COMPANY Suite 80 BALTIMORE, MD.

Sacramento Demands Crown for Bartlett Pear

WHILE the writer is not disposed to engender jealousy among producers of California's many fruit varieties, it is hard to dispute the claim of pear growers that the Bartlett is "king" of all our deciduous fruits.

This distinction is not due to an excess of tonnage, but to its superior quality and flavor and the many ways in which pears may be prepared for consumption. (The California Pear Growers' Association, San Francisco, is enlightening the housewives upon these points.)

The Bartlett pear is adaptable to certain localities and its commercial success in any one of them is gained largely through compatibility of soil and climatic conditions. A condition thus arises demanding careful consideration by those who contemplate the planting of pears.

The delta district of the Sacramento River is considered the "home" of the Bartlett. It is readily accessible to rail and water transportation, and soil and climatic conditions are such as to make the growing of this "King" of fruits a permanent and paying industry, despite the necessity for blight control. The climate insures not only a large crop of quality fruit, but also vigor in the trees.

The deep, loamy soil, rich in nutritious plant food, and easy of cultivation, explains why there is such a remarkable tonnage per acre.

"Nile of America" Disputes Claim of Apple to Title, "King of Fruits"

PROBABLY no concentrated fruit district anywhere in the world enjoys such great and consistent prosperity as the pear-producing section "down river" from Sacramento. It is a fact that most of the established orchards of this rich bottom land are not for sale at any price. "There's a reason"—as Mr. Killingsworth's article shows. —*The Editor.*

By W. S. KILLINGSWORTH

MINERS CAUSED FLOODS

In early days placer mining in the foothills of the Sierras caused the washing down of millions of cubic yards of "slickin's," to be deposited in the bed of the Sacramento River. As a result, the flood waters during the winter and spring were beyond control, and damage to the extent of many thousands of dollars befell those prolific Bartlett pear orchards.

To combat this menace the growers, in a primitive way, began the construction of levees—but to little avail; each year saw them succumb to the uncontrollable torrents. This destructive agency, however, has been harnessed and now such damage is a thing of the past. Weirs and levees insure the Bartlett pear orchards protection for all time.

While the growers were the first to begin this gigantic undertaking, financial assistance finally was rendered by the Federal and State Governments, involving in the year ending 1922 the fabulous sum of $28,600,000. Now, where is the individual that would register a complaint when it is known that in 1922 there was hauled by the Sacramento River Transportation Companies—not including a vast tonnage hauled by the railroads—1,711,573 tons of orchard and farm products valued at $95,663,000, placing the Sacramento River fourth in point of commercial importance in the United States.

In 1922, California produced the biggest crop of Bartlett pears in the history of the State, amounting to 125,000 tons, 60 per cent of which were grown in the delta region of the Sacramento River. Of this production there were shipped to Eastern markets, 5421 carloads of fresh Bartlett pears. The canneries purchased 35,000 tons, and there were 5000 tons of dried Bartletts. The total production of all varieties of pears in the United States in 1922 was 250,000 tons, being but 125,000 tons more than California Bartlett pear crop alone, which is cited as prima facie evidence that the Bartlett is really the "King" of California deciduous fruits.

While the California Bartlett pear industry is not at the present time threatened by any perceptible pitfalls, it would be well, at all times, to consider the possibilities of marketing future increased production, and to that end cooperative marketing of both shipping and canning pears should be given careful consideration.

It is predicted by those most vitally interested in the production and marketing of Bartlett pears that during the next five years, due to increased acreage planted during the past ten years, there will be an annual increase of about 2 per cent, or 20,000 tons; therefore, the point now uppermost in the minds of the producers must be increasing consumption. This, it is believed, can be accomplished by making consumption last twelve months in the year, and this in turn can be accomplished by systematic advertising of the Bartlett pear, in the fresh, canned and dry state.

Less than one 2-pound can per family per year is consumed by the American public. Now, if that can be increased to two 2-pound cans per family per year, the canners of California will require 70,000 tons a year as against 35,000 tons in 1922.

To the uninformed, it might seem that the pioneers of the Bartlett pear industry along the Sacramento River long since had "crossed the bar," but not so! A few yet remain who are enjoying the wealth produced by these orchards whose value can best be estimated by their excessively large tonnage. Among the surviving settlers who witnessed the building of the first levees is Mrs. Sol Runyon, known as the "Bartlett Pear Queen." Her version of the first levee building is an interesting story.

When it became necessary to provide protection against the flood waters, the earth was transported by Chinamen in small wheel barrows. There is now a 30-foot levee in front of her palatial residence on which the State highway recently was constructed.

Dennis Leary, George McCollough, A. T. J. Reynolds, George Green, and a few others can tell interesting stories of the early day hardships when the spring floods ran riot, before the time of the monster, clam-shell dredgers. In those days the unclaimed land was worth but little, and the pioneer settler wanted but little. While for a time revenues were small, Oriental labor was in abundance, and the Chinamen worked long hours and at a minimum wage of 90 cents per day, boarding themselves.

To appreciate the marvelous development that has taken place within comparatively recent years, one has but to travel the burnished highway, atop the 20 to 40-foot levees, from Sacramento to Rio Vista, a distance of 40 miles. Mammoth packing houses and canneries line the river banks on both sides, and as an example of the wealth produced, there are to be seen scores of magnificent homes, the cost of some running into hundreds of thousands of dollars.

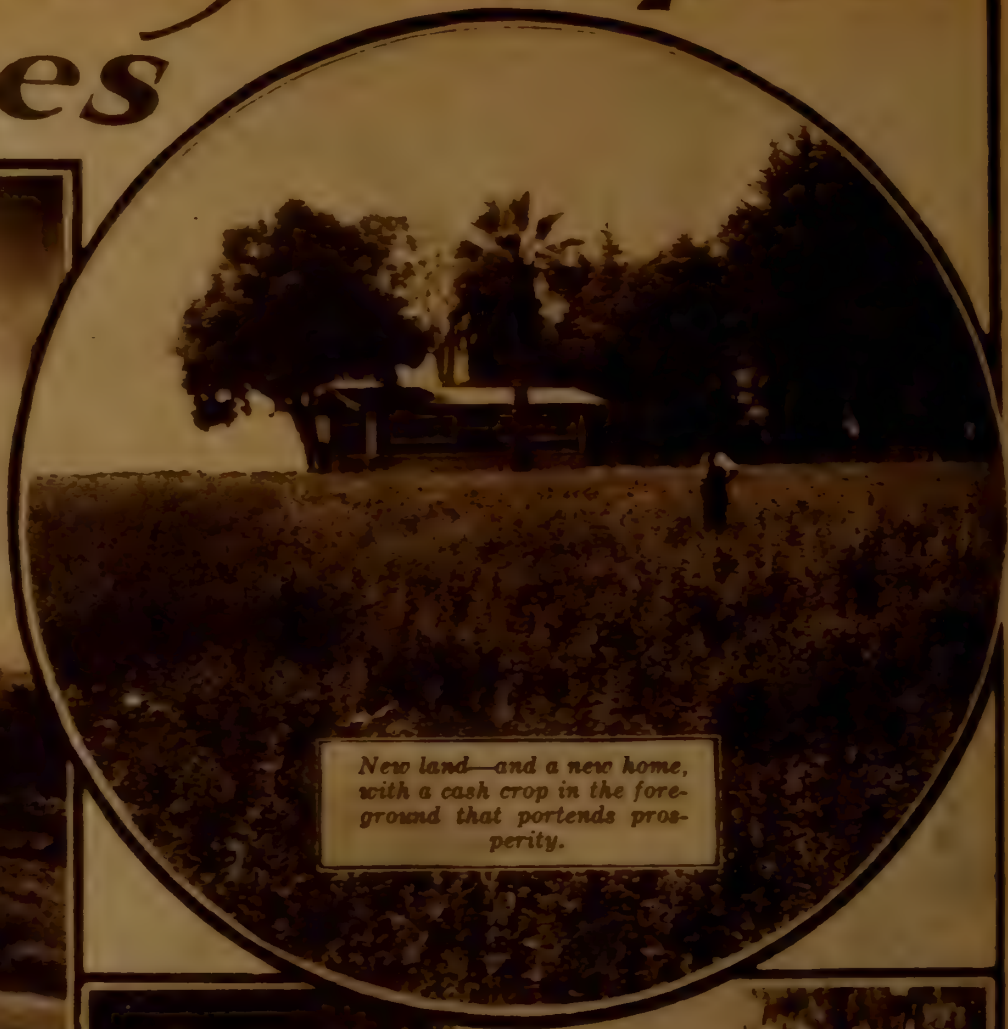
Well may it be said that the Sacramento River Bartlett pear growers are "rolling" in wealth, and when they are approached on the subject of disposing of any portion of their land, whether in bearing or simply lying idle, the would-be purchaser is met with the laconic reply: "What would I do with the money?" Sales of this land are rare, indeed!

Insert above—Mrs. Solomon Runyon, the "pear queen" of California, who has under cultivation on the Sacramento River delta lands more than 1000 acres of Bartletts. The orchard of E. A. Gammon is shown. Mr. Gammon neither prunes nor cultivates, but his ranch is one of the show places of the Delta.

A typical scene on the Sacramento River, showing how products of the delta section are conveyed to rail points for Eastern shipment.

Where Every Prospect Pleases

"The call of the open road" brought the camera man to this attractive scene, an orchard district where homeowners have co-operated with nature to the fullest extent.



New land—and a new home, with a cash crop in the foreground that portends prosperity.

Picking apples in the Rogue River Valley of Oregon, which Californians affectionately include when they speak of the great Empire of the "Pacific West."

Giant eucalyptus line this California roadway. How many new roads are being planted with a view to future adornment!

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

SEPTEMBER 30, 1923

Hogs, Cows, Walnuts Diversify Great Vineyards

Guasti Company No Longer Carries All Eggs in One Basket

By GEORGE P. WELDON

Pomologist, Chaffey Junior College of Agriculture. Contributing Editor of ORCHARD and FARM

SCARCELY outside of the city limits of Ontario as one journeys east on the Colton boulevard, a huge vineyard property to the north and east occupies practically the entire landscape. The traveler's attention is attracted by a large sign, "Italian Vineyard Company; 5000 Acres."

The Iowa or Illinois farmer, as he drives by in his automobile which has borne him to California, is impressed with the bigness of the proposition. In comparison to his 160-acre farm, it assumes giant proportions and he wonders how any one could have the nerve to farm so large a tract.

The visitor cannot help being impressed by the evidence of care on every hand, for the property is always in the pink of condition. It is not the care of the vineyard, however, that the writer wishes to emphasize in this article, but certain other activities that have grown out of an effort to make the place still more attractive and profitable than if vines only constituted the source of income.

Like all other people who were growing wine grapes, the Guastis (father and son) of the Italian Vineyard Company experienced considerable uneasiness with the coming of prohibition. Little did anyone who was growing grapes then think that unheard of high prices were soon to be received for the fruit.

WALNUT TREES INTERPLANTED

Perhaps this uneasiness had something to do with the decision of the company to interplant with walnuts a part of their vineyard. At any rate today there are 500 acres of vines which have growing among them some very fine walnut trees of the Eureka and Placentia varieties.

These trees were planted 54 feet apart, five vines being removed for each tree, as follows: One where the tree was to be planted two adjacent vines in the same row, and one vine from each of the adjoining rows. Since the vines were planted 9 feet apart, every sixth row is planted with walnuts.

Despite the difficulty usually encountered in getting trees to grow in a vineyard, the Guasti trees have done well, and at the present age of four years are capable of bearing a considerable quantity of nuts. This planting constitutes one of the largest walnut orchards in California and represents practically a new industry in the part of San Bernardino County where it is located.

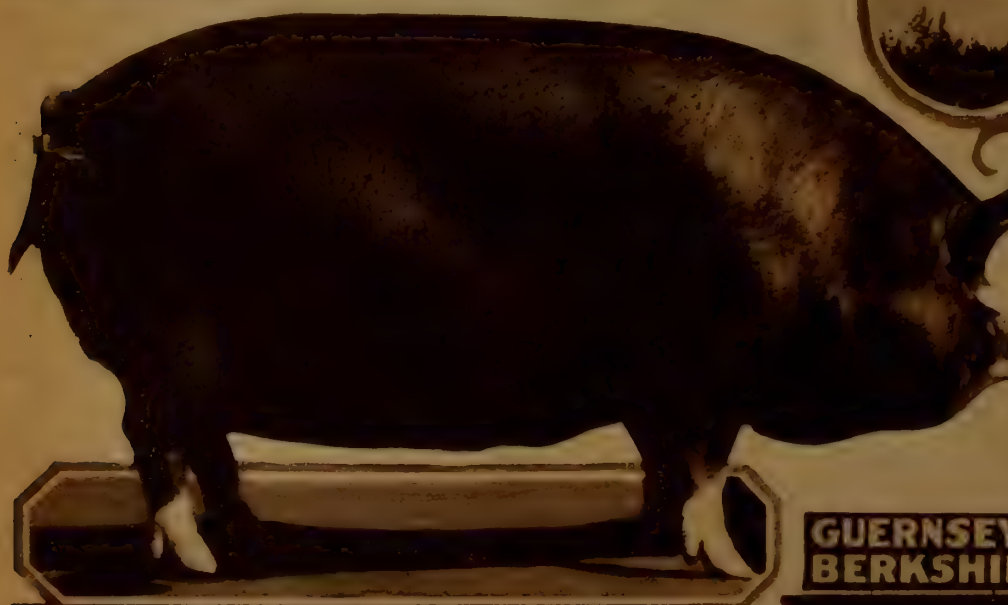
FERTILIZATION FORCES GROWTH

The trees have been fertilized to force satisfactory growth, proving that even in a vineyard it is possible to get trees started and later to secure good growth by means of fertilization. The present showing of walnut trees indicates it is only a question of a few years when the walnuts will furnish the principal income from that portion of the present vineyard where they have been planted. In order that the trees may do their best, the grapevines will have to be removed.

In any program of diversified farming, livestock plays an important part. As our agricultural industry becomes older, the need for fertilizers grows more and more apparent. Many a farmer is induced to invest in livestock because of the value of the resultant manure. Many tons of organic manures have been used on the trees and vines of the Italian Vineyard Company in recent years, and the supply of this valuable material from the ranch stock is an important consideration when the profitableness of the herd is taken into account.

Persons who have visited the State Fair and other California fairs in recent years have become acquainted with Guasti dairy cows and hogs. Animals that any lover of good stock would pride himself on owning have been on exhibition at many of our best fairs and have carried off their full share of premiums.

Four-year-old walnut trees, planted for fear of prohibition in a 500-acre vineyard. Present indications are that the nuts will pay better than grapes.



Violet Festline, porcine queen of the Italian Vineyard Company and many times grand champion.—Photo by Blackmore.

GUERNSEY CATTLE
BERKSHIRE HOGS

This big barn sign shows that other things besides grapes are grown at Guasti.

Caroline E. Langdon of Hollow Hill, one of the Guasti purebred dairy cows, a beautiful Guernsey. — Photo by Blackmore.

The Guasti livestock superintendent, Alex M. Wilson, takes a great deal of pride in the fine herd of dairy cows which is entrusted to his care, also the Berkshire hogs which have won for the company an enviable reputation among lovers of fine stock. Very few four-year-old animals have a record of being eleven times grand champion, but one of Mr. Wilson's pet Berkshire sows has brought home the G. C. ribbon that many times. Her owners and caretaker naturally swell with pride when they relate her accomplishments.

Hogs of the *(Continued on Page 9)*

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
SEPTEMBER 30, 1923

Preparing the School Lunch—Important Factor

Dietetic Authority Gives Valuable Advice Regarding Noonday Feeding of Most Important Farm Product—the Child

By ANNE McCORMICK
Home Demonstration Agent, Santa Cruz County

THERE are yet many schools which have not established the system of providing the children with warm lunches at the noon hour. Very few schools in rural districts or small towns have done this. It is, therefore, necessary for a large percentage of children to take cold lunches with them to school, because they live too far away to go home at noon to lunch.

Every mother who values the health of her children should feel her responsibility in providing wholesome and appetizing food for them at all times. An active, growing school child requires more food in proportion to his size than does his father or mother. He must have foods that are easily digested and that will furnish the materials needed for the necessary growth of bone, muscle, nerve and other tissues of his body.

It is estimated that from 10 to 35 per cent of the school children in the United States suffer from malnutrition. A well nourished body is essential to the best mind and the degree of a child's mental alertness is largely determined by what he eats. It has been definitely proved that when sufficient food is provided there are fewer cases of absences from school and pupils give more attention to their school work.

Dr. Wiley says: "One cannot be moral if one is hungry." If that be true, proper food makes the discipline of the schoolroom easier.

EFFECTS OF POOR LUNCHES

A well nourished body is more resistant to disease. It is the poorly fed child who first succumbs to colds and contagious diseases. Poor complexions, bad blood and much of the ill health of later years have been traced to habits attained in early school years through eating hurriedly ill prepared lunches.

As children must leave home early in the morning to reach school at 9 o'clock, the wise mother plans and prepares the greater part of their lunch the day before. Unless some thought is given to the preparation of lunches they will lack variety. Nothing is more jading to the appetite than monotony—the same things to eat day after day.

If nothing but white bread is used, if cakes are always made from the same recipe, and if the sandwich filling is always the same, the child will not enjoy his lunch as he would if a variety of food is provided. Too often lunches are made up of any leftovers which happen to be on hand in the early morning hours. To add variety to a lunch, the sandwich filling may be prepared in unusual combinations and custards and puddings replace the too-frequent pie.

A surprise now and then, as salted or cracked nuts, a few pieces of homemade candy or a bunch of raisins, will add variety to the lunch and delight the child. Those who live far from the markets should keep groceries on hand that can be used in the preparation of school lunches.

CHOOSING THE LUNCH BOX

The choice of a proper lunch receptacle is of importance. Leather boxes are not good, as food absorbs the odor of leather and it is impracticable to wash the leather lunch box. A tin pail can be scalded and may be used, if it is perforated for ventilation. The best lunch box is an enameled or tin dinner pail. A tin tobacco box makes a fairly good lunch box.

It is important to air and scald the pail each day. Paper napkins, wax paper for wrapping the different foods and a small jar or jelly glass having a tight fitting lid should be provided. If a special place is set apart in a drawer for these articles the work of putting up lunch will be much reduced.

Often unattractive or careless packing spoils an otherwise good lunch. Sandwiches are not appetizing when mingled with juicy pie or stacked under heavy fruit. Foods for the lunch box should be arranged in the order in which they will be eaten: The cake, salad or fruit in the bottom and the sandwiches on top, as the latter will be eaten first.

Wax or paraffine paper should be used for wrapping the different foods. These papers not only keep the food moist, but also prevent it from absorbing the odors that permeate a lunch box. Wax paper may be purchased by the roll and is not expensive, but in its place one may use the wax paper coming in cracker boxes and around certain groceries.

EAT LUNCHES INDOORS

A fresh napkin should go into every lunch box. These napkins may be paper or may be made out of toweling or other easily washed cloth. The introduction of napkins has been found to reduce the work of laundering of aprons and shirt sleeves.

Children seldom take time enough to eat properly if the lunch is eaten outside on the playground. It is a good plan to require the children to remain seated for a period of 15 or 20 minutes, in order to afford time properly to eat lunch.

Each child should remain in his own seat and spread his lunch out in front of him on a clean paper or napkin placed on the desk. It is much easier for children to handle milk or other liquid foods if seated at the school desk.

This plan would cause both the mothers and children to take more pride in the preparation of the lunch; it would encourage clean hands and better mastication of food and would give an opportunity for the teacher to observe the character of lunches being brought from home and to teach good food habits.

BEST KINDS OF FOODS

Growing school children need carefully selected food. The lunch box should not be filled with a quantity of bulky, coarse foods. It is quality that counts rather than quantity. Food for lunches should be nutritious, so that a small amount will supply all the materials necessary for a well-balanced light meal.

The season of the year should be considered in putting up a lunch. In the wintry, cold days more heavy food is required. When the warm, sunny days of spring come, lighter and daintier foods should be sent to school.

A well prepared lunch should consist of sandwiches made of bread and meat, or a meat substitute; a vegetable, if possible, such as celery, lettuce or radishes, to eat with bread and butter; a dessert, such as custard, cooked fruit or pudding—bread, rice or tapioca. Cake and cookies may accompany or take the place of a dessert. Fresh fruit should always be used in season.

The bread for sandwiches should be cut thin, and the filling be moist and generous. The mother should know how to make different breads, such as nut, raisin, graham and Boston brown bread in order to give variety to the lunch.

Biscuits are not good and should not be put in a lunch box, especially while warm. Dry bread cut in thick slices and put together with cold meat does not tempt the appetite. Sometimes it is well to put the meat through a food chopper and moisten it with cream or gravy. Thin slices of meat cut across the grain may be used. Fish may be heated and then seasoned with cream and used as a sandwich filling.

GOOD FOOD SUGGESTIONS

Substitutes for meat may be prepared with little trouble. Cottage or creamed cheese occasionally may be used for sandwiches. Peanut butter is especially good with whole wheat bread and is liked by nearly all children. Many mothers make their own peanut butter, as the process is a simple one. Stewed prunes, dates or raisins chopped together with a few nuts, make delicious sandwich filling.

Eggs may be prepared in different ways for sandwiches. A good way is to cook eggs slowly for 20 minutes, press through a sieve and season with salt and butter. Stuffed eggs, if wrapped attractively in paraffin paper are enjoyed by children. Steamed brown bread and butter sandwiches are excellent, for a change. Jelly, jam and honey sandwiches are also eaten with relish by many children.

For dessert, sponge cake, gingerbread or cookies are good substitutes for the richer cakes. If children do not have apples or other fresh fruits that they may eat at recess, cookies or crackers may be placed in the lunch box for that purpose. It is a good plan to send a pint of milk to school to be drunk at recess, if the child feels the need of a mid-morning lunch.

USE LEFTOVER FOOD

Instead of making a dessert especially for the school lunch, some of the dessert of the evening meal of the night before may be used. Custards, fruit salads, rice or bread pudding, cooked fruits or gelatine dishes may be sent in the lunch. A jelly glass with a lid can be used for these moist foods.

Milk is the ideal food for children and there should be a screw top bottle in which to carry it. Anemic or nervous children should be provided with a thermos "hot-cold" bottle in which to carry hot soups. The latter would act as a stimulant or appetizer, in case the cold lunch did not create an appetite.

Thermos bottles can be purchased for 50 cents and are cheaper and more effective than medicine bottles and doctor bills. Hot cream soups, such as celery or split pea, are nourishing and well suited for school lunches. The day now is rapidly approaching when every rural school will provide at the noon hour a hot soup to supplement the cold lunch from home.

Students at work in an orchard which they are judging according to the score card reproduced below.

Growers As Well As Students Profit By Orchard Judging

By W. P. DURUZ
Division of Pomology, University of California

ORCHARD judging trains horticultural students to know and appreciate the methods used to grow the greatest quantity of high quality fruit, and this is of far more concern to the average orchardist than is the knowledge of what constitutes a perfect specimen or a uniform box.

The first question a fruit grower must answer is, "How can I grow an abundance of perfect specimens?" Practice in orchard judging will aid finding the solution to this problem.

The Pomology Division at the University of California is responsible for demonstrating the practicability and value of orchard judging. The idea was suggested by Dr. W. L. Howard and worked out by members of the staff and students in Pomology during the past year. It now occupies a permanent place in the training of our students.

The primary object of orchard judging is to know the essentials of a good orchard. It is the practical application of the principles and practices taught by lectures and laboratory work.

The relative importance of soil, climate, location, pruning, spraying, irrigation, pollination and thinning is brought out and emphasized in the field work.

ORCHARD JUDGING SCORE CARD

Points

I. Location, site and soil 50
  A. Location 15
    1. Climate, temperature, rainfall, sunshine, frosts, fog, limit of growing season, etc.
    2. Transportation facilities—roads, rail and water.
    3. Area devoted to fruit growing in locality.
    4. Desirability of the place for a home.
  B. Site 15
    1. Aspect or slope.
      a. With reference to sun.
        1. Ripening and coloring of fruits.
        2. Frost injury on eastern slopes.
        3. Sunscald.
      b. With reference to winds.
        1. Does land slope towards prevailing winds?
      c. With reference to application of irrigation water.
        1. Can water be efficiently and cheaply applied?
    2. Atmospheric drainage.
      a. Will cold air drain off? Is there slope enough?
      b. Does cold air come down from slopes above; is orchard set at the foot of a long slope?
      c. Is there any obstruction at the bottom of the orchard to hold cold air?
    3. Windbreaks.
      a. Nearby or distant?
      b. Character of windbreaks.
      c. Position of windbreak for effectiveness against prevailing winds.
  C. Soil 20
    1. Surface soil.
      a. Ease of working.
      b. Sour or alkali.
      c. Humus.
      d. Depth.
      e. Plowsole or hardpan.
    2. Subsoil.
      a. Ease of penetration by roots.
      b. Depth.
    3. Water drainage.
      a. Surface drainage.
        1. Good? Does water stand?
        2. Too much?
          a. Washing, loss of soil and fertility.
          b. Loss of water.
      b. Sub-drainage.
        1. Enough? Is soil soggy?
        2. Too much? Is soil too dry?
        3. Seepage water in irrigated sections.
      c. Sub-irrigation.
        1. Present?
II. Condition of trees 35

(Continued on Page 8)

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ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of country and suburban editions of the
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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

NURSERY RENDERS CONSTRUCTIVE SERVICE.

A tribute to Luther Burbank and a truly constructive plan which should prove of great value to the State are included in a folder recently published by the Kirkman Nurseries, Fresno.

"The remarkable work of Luther Burbank in creating such plum varieties as Beauty, Formosa, Gaviota, Climax, Santa Rosa, Burbank, Duarte, Wickson and Sugar, besides numerous others, has given California the leading place in the production of this fruit," the nursery company points out.

"But," the author continues "It has always been a difficult matter to get new varieties tested out in all important fruit regions of the State and until that is done [illegible] to know accurately the value of any variety.

"We have therefore decided to inaugurate a new policy for testing out fruits and recompensing fruit breeders. To [illegible] propose [illegible] out a few of the seemingly most promising new varieties to growers in [illegible] section of the State [illegible] and asking that they report back to us on their performance." The Kirkman interests are to be congratulated upon this practical and valuable plan.

GREAT SERVICE OF PLANT PROPAGATORS

The great service rendered by those who labor patiently to improve our fruit varieties is not generally appreciated. Tribute is paid by the writer mentioned above not only to Burbank, but also to Hatch of Suisun, who originated our four leading almond varieties; to Millard Sharpe of Vacaville, who [illegible] possible [illegible] Pickly Smith plum; to Albert Etter, the Humboldt County wizard, whose apples were the subject of a recent article in this publication by Professor Weldon, to Leonard Coates, whose 1448 prune has made so favorable an impression; to others who have discovered chance seedlings, and to the U. S. Department of Agriculture and University of California, who are experimenting constantly with new varieties and types.

This year the Kirkman Nurseries will send one June budded tree of each of 10 varieties to any fruit grower for testing purposes, as long as a limited supply lasts. It is proposed to pay a small royalty to each originator for all buds that may be used in the future during his lifetime.

MANY LEADING VARIETIES ORIGINATED HERE

Few growers realize the commercial importance of fruit varieties which have been developed in this State. We are reminded by the same informant that "All our leading cling peaches: Tuscan, Peake, Paloro, Libbee, Sellers, Sims and Phillips were selections from chance seedlings appearing in California orchards. The Lovell and Muir, too, are natives and have displaced most other drying varieties."

Five of the leading varieties of cherries, we are informed, originated on the Pacific Slope. These are the Bing, Lambert, Republican, Chapman and Burbank.

BURBANK'S WONDERFUL NEW PLUMS

Following are brief descriptions of Luther Burbank's "El Dorado" plum and "Conquest" prune, which will be planted experimentally in different fruit growing sections this year:

EL DORADO—Described by Mr. Burbank as follows: "A black plum which the East has been calling for, of very large size and unique tomato shape; a never failing producer of a full crop of fruit during the past fifteen years. The trees are exceedingly vigorous and fruit so covered with large leaves that birds do not trouble them. The fruit is the best keeper of all known plums as far as I know, and is of most excellent quality with a small pit. I know of no fault of tree or fruit. It was made to order from a number of fruit shippers. Not excelled except by Santa Rosa."

CONQUEST PRUNE (Stoneless). Mr. Burbank's description: "Fruit exactly like the French but a little larger and in any series of ten years will bear at least double what the French prune does. Meantime the tree grows much more rapidly and is more vigorous and productive, and in every way more desirable. Ripens with the French, very firm and sweet. It has two faults; one is that the fruit of course shrinks more than the common prune, not having a stone; the other is that it sometimes has a little piece of stone in the fruit.

In an article written for ORCHARD and FARM, Burbank described this "pitless prune." He has prepared for early publication exclusively in this magazine another article on prunes, in which he relates his experiments begun in 1885 and continued until the present time. Watch for this intensely interesting "story" from the pen of the master plant breeder, in an early issue of ORCHARD and Farm. Luther Burbank writes for no other farm journal.

"What's New?"—Keeping Abreast of Agricultural Progress

New Wheat Selling Plan

LITTLE LAKE (Riverside County) Farm Bureau Center members have purchased 27 tons of wheat at $34 a ton—$1 a bushel—and will offer the grain for sale at the Southern California Fair at Riverside in October. A market tent will be erected for the accommodation of wheat producers and dealers.

Rest Periods for Pastures

ACTING upon the advice of the Extension Service, owners of the Sleepy Hollow ranch in Marin County, last summer removed all their stock from a large pasture and permitted the grass to go to seed. The plants had a chance to recuperate from long-continued cropping and the bare spots were reseeded. The mature grass was later pastured off. All pastures should be given a similar rest period each season, according to M. B. Boissevain, farm adviser.—K. R.

Advertising California Fruit

GETTING local newspapers to conduct orange recipe contests, giving boxes of oranges as prizes to housewives, is a plan used to promote the sale of California oranges. Such a contest was recently held by the El Paso (Texas) Herald. Each housewife was permitted to enter one recipe, the major component of which was oranges.

The winner received two boxes of oranges for the best tested recipe, the second one box, the third a half box, and the next ten a card recipe cabinet with orange recipes. Every contestant was given a colored orange recipe book. An excellent mailing list of orange users resulted from the contest.

Potato Scab Preventive

EXPERIMENTS conducted by Prof. G. B. Sanford, a graduate student under Dr. E. C. Stakman, nationally known plant pathologist of the University of Minnesota, show that potato scab can be controlled by keeping moisture in the soil a short time after the tubers are set.

The discovery is regarded of great importance in that it adds to the sum of knowledge concerning the potato, and also shows that under irrigation it may be possible to grow scabless potatoes by the simple expedient of turning on the water when the critical period for susceptibility to the disease is about to be reached.

"Kosherizing" Oregon Prunes

IN order to meet the modified demands of the Yiddish trade in the large Eastern Jewish centers, the Oregon Growers' Association has arranged to "kosherize" prunes at its Forest Grove plant. During the religious festival known as the Feast of the Passover, in celebration of the Jews' deliverance from Egyptian bondage, Jewish law prohibits the eating of leavened bread or any product which has come in contact with flour in any form.

In order to conform to this rule, no grain sacks or flour paste will be used at the Forest Grove prune plant. The labels will be fastened onto packages with imported mineral paste. Rabbi J. B. Fain of Portland will oversee the packing of kosherized prunes.

Almond Growers Buy Equipment

CONTRACTS for the installation of vacuum packing equipment in the plant of the California Almond Growers' Exchange in Sacramento have been signed by the almond growers co-operating with the American Can Company. These machines will enable the almond growers to blanch, salt and pack in vacuum a large tonnage of almonds per day.

The exchange hopes to divert a heavy percentage of the 1923 Blue Diamond Brand almond tonnage into the shelling machines and to the consumer in the blanched and salted form. Domestic science experts, chemists, and engineers are co-operating to forward the plans of the almond growers to enter the shelled almond industry.

Boll Weevil Gets Monument

A BRONZE monument to the boll weevil has been erected in the city of Enterprise, Ala. It bears this inscription:

"IN PROFOUND APPRECIATION OF THE BOLL WEEVIL AND WHAT IT HAS DONE AS THE HERALD OF PROSPERITY, THIS MONUMENT IS ERECTED."

By making cotton growing unprofitable, the boll weevil forced the farmers around Enterprise to adopt a diversified system of agriculture, raising other and better-paying crops.

New Milk Goat Association

SUPPORT of all those interested in the milk goat industry is being sought by F. N. Bigelow of the State Division of Markets, for the purpose of re-establishing the business upon a sound basis through the formation of a new organization, to be known as the California Milk Goat Breeders' Marketing Association.

Recently incorporated, the association already includes many of the leading breeders of the State. It was organized as a result of the continued depression of the market, both for goats and their products.

It is hoped to find new markets in other States, particularly by making carload shipments of combined consignments. Other purposes are to establish depots for goat milk, so that consumers can depend upon a regular source of supply; to establish active distributing routes in cities, through the combined efforts of members; to conduct an educational campaign demonstrating the true value of goat milk as a food for both adults and infants, and to assist in the manufacture and sale of goat cheese.

Iowa Farmers Making Money

LAST year 207 grain farmers in Calhoun County, Iowa, earned and received an average labor income of $1200, according to the Iowa State College, which made a survey of the situation. Thirty farmers made $2000 or more, an equal number made $500 or less, while only six had nothing to show for their work. A typical Calhoun County farm, including stock and equipment, is valued at $50,000.

Fertilizing Potatoes Pays Well

THE average grower can expect a crop increase of $2 to $5 worth of potatoes for every dollar's worth of fertilizer used, judging by the results of the test plots planted by the Los Angeles County Farm Bureau last spring. The addition of nitrogen and organic matter to the soil gave results which the farm adviser characterizes as "astonishing."

On the Messenger farm near El Monte, where certified seed potatoes are produced on a large scale, the application of $40 worth of fertilizer per acre increased the yield $124.

Sell Our Fruits in Mexico

THAT Mexico offers California fresh fruit growers a splendid market for their produce, which Tulare County associations and independents expect to take advantage of next season, is the statement accredited to Mrs. V. Monstretta who, with her husband, conducts a wholesale distributing agency in Mexico City. Mrs. Monstretta has just returned to Mexico from a trip through Tulare County points in California, during which several carloads of fresh grapes were purchased and shipped south.—F. B.

Cows in Walnut Orchard

A COW in a walnut orchard may suggest a bull in a china shop, but Frank Montgomery, Tulare farmer, finds the former combination very satisfactory. There are only six walnut trees in his grove, but they are big ones and bear good crops of fine nuts, which sell at two bits a pound.

Bermuda grass was permitted to cover the ground. The cow likes both the pasture and the shade and, aside from nibbling a few of the lower twigs, does not injure the trees. The little nut orchard looks like a big, shaded lawn.

Two years ago there were a great many sunburned walnuts in the vicinity of Exeter, where Montgomery's trees are located. The nuts in this particular grove, however, came uninjured through the hot spell, at which time the ground was heavily irrigated.—TULARE FARMER.

Ben Gonnadooit Says

TH' Farm Bureau fellers have be'n after me lat'ly t' jine up with their orgnization. But after takin' a couple o' days off fer my work t' consider th' matter carefully, I decided not t' be a member.

Yep, I b'lieve in takin' plenty time for d'liberation, an' this is th' way I reasoned it out: Ef I jined th' Farm Bureau I'd have t' go to their meetins' or they'd think I was a piker. But as it is now, I have t' do most o' my fishin' on Sunday, an' I sure kaint afford t' waste no time on useless argument.

Another thing they's dues t' pay, an' th' only kind o' dues I kin consider is my notes that will soon be due at th' bank. (By th' way, them bankers is due fer a surprise ef they think I'm gonna be able t' pay 'em anything.)

I understand th' Farm Bureau gits out a magazine that is sent t' ev'ry member, an' I don't want t' obliger myself t' do any more readin'. Why, I ain't even read th' new mail order catalog through yit, an' th' last two numbers o' Snappy Stories is still a'layin' on th' front porch with th' wrappers on! No, I don't want nothin' more t' read!

They tell me th' Farm Bureau is doin' a lot fer th' farmers at Sacramento an' Washin'ton. But shux, any intelligent feller knows there ain't no use tryin' t' influence th' Legislature or Congress. Why, I decided long ago th' moneyed interests had 'em tied hand an' foot, so I don't even vote no more.

Ef th' Farm Bureau kin accomplish anything of any kind, I reckon I'll benefit by it anyway, so I don't see no use "p'ttin' my time in" money. What's worryin' me right now is where t' borry a hay rack t' use till I kin find time t' fix mine.—BEN GONNADOOIT.

Orr Wouldn't Swap His Hills for Valley Land

MANY a warm and interesting discussion of the relative merits of hill and valley land—and most such arguments result in a victory for both sides. We asked Charles Orr of Ojai (Ventura County) for his views on the subject and he responded by taking us for a tour of one of the most attractive and interesting foothill ranches we have ever visited.

"I have put a lot of money in this place," said Orr, "which is evidence that I like the country and believe in its possibilities. Sometimes, in the face of conditions existing for the past three years, I think I have put too much money into it—but I believe the winner in the farming game is the fellow who sticks through good times and bad. Therefore I believe I shall win out in the long run."

Orr, like hundreds of other producers, suffered financially by the depression which followed the "boom" times during the war. He was involved in the failure of the ill-fated producers' honey exchange and it took most of his 1921 crop and part of his 1922 crop to pay the losses resulting from this disaster. But he still believes in co-operative marketing for beekeepers and thinks that out of present local activity in various districts will be evolved some sort of State organization.

Discussing the marketing problem, Orr said: "Honey, you know, is a summer crop that is consumed in the winter. This means it must be carried over in storage. Either the grower or a broker must finance the carry-over and assume the risk. As long as brokers are doing it, they will play safe and demand a good margin of profit. That is why I believe in the principle of grower-controlled marketing organizations. If such an association would advance only 40 per cent of the value of the crop, based on a five-year average, there would not be a repetition of the 1920 disaster."

From 350 colonies of bees Orr produced last year 20 tons of honey which sold for 8½ cents a pound. As compared with wartime prices of 15 to 25 cents, this seems like a low return, but he asserts the beekeepers would have been better off had the market remained on a nominal basis, as consumption was curtailed by the almost prohibitive prices. One large manufacturer of sweets, who has used as much as 100 carloads of honey in a single season, turned to molasses as a substitute. Now, it is said, this buyer again is in the market for honey.

IS LARGE HONEY PRODUCER

More than 550 colonies now are maintained on the Orr ranch, but the crop this year is very light, due to drouth. This condition, however, being quite general, is expected to result again in high prices.

Orr does practically all of the routine bee work himself, employing three extra men during the extracting season of from four to six weeks, when as much as a ton a day of the sweet stuff is removed. Black sage is the principal source of nectar, two or three extractings of this kind being followed by one or two of sumac honey.

"The care of the bees during the remainder of the year is comparatively simple," Orr points out. "It is largely a matter of inspection. Early in February I go over the apiary carefully and in March I watch the queens and rearrange the colonies in order to put them in shape for heaviest production. Then there is not much to do until the middle of May."

Beekeeping as conducted on the Orr ranch fits in nicely with fruit growing, and even allows a day or two for a deer hunt and an occasional trout fishing expedition between seasons—pleasures of which Orr takes full advantage. He is in every sense a "live wire," who believes in mixing hard work and recreation in the proper proportions for best enjoyment. His 11-year-old son inherits much of his father's "pep," riding his bicycle to school each morning and pushing it back up the hill to the ranch, 750 feet above the valley floor.

Nor has this enterprising mountain farmer overlooked the aesthetic side of ranch life. His home is one of the most attractive in the valley, the grounds being beautifully landscaped and the buildings equipped with all modern conveniences. Automatic sprinklers make it possible to maintain the lawns, flowers and shrubbery in good condition during the hottest weather.

The ranch consists of some 250 acres, a large part of which includes rocky, brush-covered land, held to protect the water supply. Orr has an adjudicated right to water from a mountain stream, from which the supply is taken through a ten-inch pipe. During some seasons sufficient electricity is developed by means of a water wheel to furnish light and power. Connection with a power line supplies current when needed.

The irrigation water is used principally in the citrus orchards, consisting of about 17 acres, equally divided between navels and valencias, both of which have been profitable. The orange trees are planted on a "red" soil, similar to that of many other citrus districts, while the decomposed shale found on other portions of the ranch seems to be ideal for grapes and deciduous fruits. Little or no irrigation water is required for the latter crops, this soil having unusual moisture-holding proclivities.

Pears especially seem to thrive on the Orr ranch, the owner having been forced to prop eight acres of four-year-old Bartletts which were loaded with fruit this year. It is planned to extend the acreage of this fruit. Other profitable crops are Pearmain and Bellefleur apples, and a small vineyard consisting principally of Muscats and Black Hamburgs. It is probable that several acres of Alicantes will be set out next spring. The grapes are grown for the local market, which at present is said to be partially supplied from outside points. Mr. Orr is of the opinion it would hardly pay to attempt to compete with close-in valley points in commercial grape production.

BELIEVES IN THE TRACTOR

Horses have been discarded on this ranch in favor of a small track laying tractor. In view of the contention of many hillside fruit growers that the tractor is a failure under such conditions, Mr. Orr's observations are of unusual interest:

"I do not think we could use a wheel type machine successfully, but after my experience with this little crawler, I don't believe I shall ever return to horse power. I am relieved of the annoyance of keeping horses for which feed must be purchased much of the time when they are not working, and moreover I get my work done quickly without hired help. The side hills are negotiated successfully and we use the tractor for all orchard operations. Considering everything, I don't think it costs me as much as keeping horses, and I can accomplish on time work which formerly had to be postponed on account of weather conditions."

Orr has established burr-clover on his hillside farm and this, together with melilotus and oats, is used to maintain fertility. As a double cover crop Ojai growers are now experimenting with the melilotus-oats combination as a winter crop and buckwheat for summer. The oats is used with the clover to increase the tonnage and also because of its root system, which tends to bind the soil and prevent erosion.

The mountain farm is particularly free from pests, no fumigation as yet having been required by the citrus trees. As some scale is now making its appearance, however, Orr plans to spray with oil emulsion. So far friendly "bugs" have waged a successful battle against the invader. An outbreak of blister mite in the pear orchard was controlled by means of late spraying with lime-sulphur. (The ranch equipment includes a power spraying outfit.) Orr has reached the conclusion that spraying when the blossoms are "in the pink" is more effective than a dormant spray under his conditions for this pest.

NO FROST INJURY

"Another advantage we enjoy at this altitude," Orr pointed out, "is freedom from frost. We went through the 1913 freeze as well as the more recent one without damage. And here's still anther point: Land values are considerably lower than in valley districts and we have less interest to charge against the investment. In our case there was no expense for water beyond that of installing the distributing system, and, owning our own water, we do not have to wait for it when needed."

Orr purchased his ranch for about $50 an acre, but it was expensive to clear and prepare for planting. It cost nearly $200 an acre to remove the stones on five acres, and one 3½ acre piece cost $2500 to clear, prepare for irrigation and set out to trees.

By his choice of diversified products, Orr has succeeded in spreading out his labor and income in a very satisfactory manner. The citrus association picks the orange crop, and the busy season with the other fruits comes at a time when there is little to be done with the bees. Moreover, there is not the danger of being caught without a cash crop, as is so frequently the case with the specialist.

We have enumerated many of the favorable factors in mountain farming. One of the unfavorable ones is the fact that it takes longer to get results and to bring trees into bearing—twice as long in many instances, Orr contends. Forest fires in some parts of California add to the difficulties of the mountain farmer—and then there is the transportation question in some districts; but Orr is as well off as most valley producers in this respect, being near a shipping point.

PLEASANT LIVING CONDITIONS

A good highway leads to the beach resorts a few miles distant, so that on occasions when old Sol beats down upon the hills with more than his usual determination, it is but a few minutes' motor ride to refreshing ocean breezes. The members of the Orr family are pleased with their mountain valley, with Ventura County and with California. In fact, Orr is a native son, his father having settled in Southern California at the age of 16, and his mother's father having come across the plans in '49.

Charles Orr did not tackle his farming venture "on a shoestring." He had considerable capital, which he has invested without stint. But while enjoying his pleasant home, he has the satisfaction of knowing that he is building up a valuable property. Prior to 1917 he enjoyed attractive cash returns; since that time it has been a question of recovery from a series of misfortunes. But Orr is no "quitter." Having chosen agriculture as his profession, he is staying with it to the finish—and on a scientific basis.

Unless somebody insists on buying his beautiful place we expect to find him continuing its improvement for many years—and even if he should dispose of it, we predict he would not long remain away from the musical hum of the honey bee and the fishing reel, or the perfume of orange blossoms and mountain sage. "There's something more than money involved in mountain farming," admits Charles Orr, "and—it gets in the blood!"

Likes the Mountain Country

CHARLES ORR is well up in the farming game—up about 1500 feet, in fact. And while he admits there are some disadvantages in mountain agriculture, he makes out a strong case for the hill country. Orr has been producing oranges, honey and other important crops in Ventura County for more than thirteen years, and has backed his faith in the district by heavy investment of both money and labor.

—*The Editor.*

By ALBERT J. MASON

Twin palms frame a wonderful view of the valley from Charles Orr's mountain ranch home.

Chamber Serves Farmers

THE following extract from a letter, addressed by S. J. Richard, manager of the Agricultural Department of the Sacramento Chamber of Commerce, to all farmers in the county, speaks for itself. It is evidence of the growing tendency of cities and towns to cater to farm trade and extend the hand of fellowship to the producers:

"A free checking service has been established in the Sacramento Chamber of Commerce building, located on Seventh street between I and J streets. It is realized that shopping in the business districts of Sacramento, owing to the congestion and lack of parking facilities, is difficult at times, and particularly if purchases are made in many different stores. With the full co-operation of our leading merchants, we have worked out a plan for a Central Checking Station.

"A checkroom has been provided, with a courteous attendant in charge. Check your wraps and parcels at the Chamber of Commerce. When making purchases at Sacramento stores, you can request the clerk to have your parcels sent to the Chamber of Commerce. Your name and address will be put on the parcel, and a check attached. A duplicate check will be given you to present at the Chamber of Commerce checking station.

"After making purchases in the different stores and directing that the parcels be sent to the Central Checking Station, you may call at the Chamber up to 6:30 p. m., and a courteous attendant will have your parcels all assembled prior to your arrival, and will carry them to your car for you.

"Your Chamber of Commerce wants to be of every possible service, and this is but one of the many problems to be worked out for the benefit of Sacramento County ranchers during the next twelve months."

Thank You, Mr. Smith

THE editor acknowledges with real appreciation a fine box of Thompson seedless grapes, sent by J. A. Smith of Merced.

Judging by the quality of this generous sample, Mr. Smith, you certainly have the right cultural system. The ORCHARD and FARM office staff bears witness that this particular fruit never will reach the raisin stage! This statement is made with the authority of "ultimate consumers."

Writes this San Joaquin Valley vineyardist: "I enjoy ORCHARD and FARM more than anything else I read. You keep the growers well informed."

Thanks again, and may the gods continue to smile on your fruitful vineyards!

IMPORTANCE OF COW VITAMINES

In a recent lecture in Petaluma, Dr. E. V. McCollum, nationally known nutrition expert, said Science recently has proved that cattle cannot be fed economically or properly without the addition of some green food to the ration. Heavy milk cows, he said, if fed chemically balanced dry diet, will lose 20 per cent of the weight of their skeletons during the lactation period, while if they receive green and succulent feed they will assimilate a larger percentage of minerals and will not lose in skeleton weight.

SMALL HOLSTEIN SHOWING EXPLAINED

The small showing of Holsteins at the 1923 State Fair is explained by C. L. Hughes of the Holstein Association as due to unwillingness of owners to take their best animals off of test. Dairymen and breeders, he points out, are loath to interrupt yearly tests which may mean more to them than blue ribbons.

PEACH YIELDS INCREASED

Thinning and long pruning have increased peach yields in Butte County as much as 35 per cent, according to a report of the Farm Bureau.

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Walnut Picking Problems Met

Early and Frequent Gathering and Dehydration Promise Much for Producers of This Great Staple

By ROBT. W. HODGSON

Agricultural Extension Service, University of California

GETTING the crop to market early is a matter of very great importance to the California walnut grower and means literally millions of dollars to him.

Although the California Walnut Growers' Association has accomplished miracles during the past five years in educating the general public to the all-year consumption of its product, the fact still remains that by far the greatest consumption occurs during the holidays, beginning with Thanksgiving and continuing through Christmas and New Year's. In years gone by, as well as at the present time, any hold-overs of the crop invariably have been from that part of the output reaching the Eastern markets after January 1.

ROBERT W. HODGSON

The importance of getting the crop to the consumer as early as is possible long has been recognized by growers and is reflected in the frantic efforts made to get as heavy a tonnage as possible into the first pool, which usually closes about November 15.

TWO TROUBLESOME FACTORS

Two principal factors contribute to delay in accomplishing the object of the growers: First, the usually long-drawn-out practices of picking up the nuts at intervals of ten days to two weeks, depending on weather conditions and labor facilities; and, second, the time required for curing the nuts either in the field or at the packing house before they can be processed satisfactorily.

With reference to the harvesting methods used in the past, many growers long have felt that it was possible and practical to speed up harvesting very appreciably, although it must be admitted that comparatively little has been done toward accomplishing this purpose.

The importance of speed has been amply emphasized during the past year by the announcement of results of an investigation conducted by the Citrus Experiment Station and the field department of the Walnut Association jointly, relative to the causes of moldy nuts and dark-colored meats.

The results of this investigation indicate not only that it is entirely practicable to hasten the gathering of the crop, which naturally would result in a better average price to the producers, but also that more frequent picking up greatly reduces the percentage of "off-grades" due to the moldy kernels and discolored and dark meats.

During this investigation many thousands of nuts were gathered at different intervals and examined for the presence of mold and color of meats. It was found that moldy nuts and dark-colored meats are due almost entirely to delay in picking up the nuts and especially in that percentage of the crop from which the hulls do not naturally separate in the field. It was found that practically all of the nuts where this condition occurs have either dark colored meats, or mold.

EARLY HARVEST THIS YEAR

Partly as a result of this investigation, which has been given wide publicity by the Experiment Station and Association, growers this year started gathering the nuts at least two weeks earlier than usual and are picking at much shorter intervals.

Poling of the trees to dislodge the "sticktights," which normally remain until the latter part of the season, started early this year and general poling will be done approximately two weeks earlier than usual. It is recognized that this will mean additional expense in costs of harvesting, but the fact is well established that this expense will be many times made up in the greater percentage of good nuts and light colored meats which command a premium with the trade.

It is believed that this year a much larger percentage of the crop will be in the first pool than has been the case for some years past, guaranteeing that it will reach the market several weeks earlier than usual and thus bring a better price and be much more readily distributed and out of the way for the gleanings which come later.

The second factor of relatively slow and unsatisfactory curing which is involved in the present practice of field or packing house treatment, it is believed also will shortly be overcome through the wide-spread adoption of dehydration.

For the past two years the division of food products of the College of Agriculture has been co-operating with the field department of the association in conducting dehydration investigations and in making a survey of the various dehydration plants which growers have established during recent years.

DEHYDRATION IS SUCCESSFUL

It has been conclusively demonstrated that by dehydration the nuts can be cured properly in 24 to 30 hours, giving a much more uniform product than resulted from drying and equally as good keeping qualities.

It is believed that through the use of properly constructed dehydrators, the time of field curing can be reduced 36 to 48 hours, which will reduce the usual period required for curing treatment by two-thirds or even more.

Further than this it is proved that the average quality of the nuts cured in dehydrators is considerably superior to that of the field-run-treated article.

The experience of a few growers who have been experimenting with dehydrators during the past three or four years further indicates that through the adoption of dehydrators, the expensive drying equipment consisting of trays and stands, and the use of valuable land may be dispensed with. This indicates artificial dehydration actually has proved cheaper as well as more efficient than natural curing.

DEHYDRATORS ARE TESTED

A number of types of dehydrators have been under observation and test during the past two seasons, and a large amount of data has been collected relative to the various conditions required for satisfactory curing. It is believed that the data at hand soon will be sufficient to furnish the basis for designing satisfactory commercial dehydrators.

Walnut growers are optimistic in believing that through the adoption of methods of harvesting designed to speed up gathering the crop and to hasten curing, it will be possible soon to put the bulk of the California walnut crop into the hands of the American consumer from two to three weeks earlier than is now the case and to market a product of decidedly better average quality.

The accomplishment of these studies will mean much towards insuring the future success of the California walnut industry, faced as it is with a production doubling approximately every five years, and with foreign competition increasing all the while—conditions which mean that the future success of the industry is dependent in a large measure on the growing and marketing of a product of uniform quality.

Bee Notes

By J. D. BIXBY SR.

"Lone skylarks out at dusk or pollened bees, droning their homeward way on vagrant breeze," may be reminded of the poetic side of bee keeping, but buying 10-cent sugar to keep bees alive until they can produce 8-cent honey another season smacks very much of the practical.

J. D. BIXBY SR.
Contributing Editor

• • •

Now is the time, while the colonies still have a considerable number of young bees, to feed them up for winter. Don't waste time and sugar on the weak or sickly ones; feed the strong ones, for these are the profit makers of another year. Unless weak colonies are headed by extra good young queens, let them shift for themselves, or, better, unite them and their scant stores with stronger colonies.

• • •

Already many colonies have swarmed out of sheer starvation. These little "starvations" will be plenty from now on until next March. Don't be enticed into hiving them, as nine times out of ten there are too few bees ever to build up into a colony, no matter how much they are fed: and four times out of five they come from a hive that had disease and have infected honey in their honey sacks.

Feeding must be done with some judgement. I knew an amateur who discovered his bees very short of stores for winter, late in November. Many of the colonies had dwindled to mere handfuls of bees, precisely the conditions prevailing now.

He immediately fed sugar syrup heavily, then went away from home for several months' stay. On his return he found nearly half the apiary dead with the combs stuffed with syrup. The old bees had worn themselves out in the effort to store the syrup and were too feeble to succeed themselves.

There was no robbing, as the morale of the surviving colonies had been destroyed by the abnormal conditions. When a bee is "queen-right" and normal, he is only too ready to defend his storehouse.

• • •

The best time of year to paint up hives is right now, before the fall rains set in. Hives well painted will last a generation. Covers need painting oftener and bottoms rot out in a few years, even if tarred or painted. I am using a number of hives that were painted 30 years ago, good "three-coat work," white lead and linseed oil, and they are practically as good as new.

Books for Farmers

FARM MORTGAGE FINANCING, by Ivan Wright. McGraw-Hill Book Company, 370 Seventh avenue, New York. $3.00.

This valuable handbook is the work of a recognized authority, in charge of agricultural economics, college of commerce and business administration, University of Illinois.

Among the many topics covered are: The Federal Farm Loan System, State Banks and Farm Mortgages, Legal Aspects of Farm Mortgages, Farm Mortgage Credit and Banking.

THE CO-OPERATIVE MARKETING OF FARM PRODUCTS, by O. B. Jesness, B. S. A. J. B. Lippincott & Co., Chicago. 305 pages, 57 illustrations. $2.50.

This book first takes up the development of co-operative marketing for specific commodities, such as grain, dairy products, livestock, fruits and vegetables, tobacco, cotton, wool and poultry and eggs. Representative organizations for different commodities are described. Co-operative purchasing and general agricultural associations also are discussed. The book then takes up in detail questions of pooling, essentials for success, crop contracts, organization forms, financing, how to organize, incorporation, co-operative laws, relation to anti-trust laws, possibilities of monopolies and future prospects in the co-operative marketing field. The book also has an appendix with a wealth of material relating to co-operative marketing, including, among other things, the contract forms of the California Fruit Growers' Exchange, the Dairymen's League Co-operative Association and the Burley Tobacco Growers' Co-operative Association.

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FALL CHICKS

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Observations of Citrus Growers

High Lights of Recent Farm Bureau Tour Through Southern California Districts

By J. ELIOT COIT
Contributing Editor

WITHIN recent years a very great improvement has been made by the State University in its meth-

DR. J. ELIOT COIT

helping farmers. In the old days a series of bulletins mailed to farmers and an occasional farmers' institute, held in various parts of the country, considered sufficient. But this plan did not get results. Now the university maintains in each county a corps of trained men who demonstrate by actual practice in the field the improved methods which are deemed desirable for general adoption.

A year ago the citrus growers of Los Angeles County formed a department within the Farm Bureau and undertook to carry out a well-planned program of work. Notable results have been obtained and a very encouraging report was made at the first annual field day recently held. The program included visits to a number of demonstration plots where actual results of methods advocated by the experiment station were observed and discussed. About 100 growers, under the able leadership of M. B. Rounds of Azusa, made the trip which started at Lamanda Park and ended at Covina.

At the H. M. Paine ranch near Pasadena the subject was "Rebuilding of Frost-Injured Trees." Here Farm Bureau Extension workers had formed a permanent demonstration plot, where different methods of handling frosted trees are to be observed. Examination of the results led to several important conclusions, which will be of great value to the industry in the event of another freeze. After a damaging cold snell it is best to defer any pruning or similar treatment for several months or until the extent of the damage is fully known, otherwise the work may have to be done over again.

REBUILDING AFTER FROST

It has been found that rebuilding frost-injured trees is more successful with oranges than with lemons, and in most cases results are better in interior districts than near the coast, where there is more trouble with wood decay. When trees are badly killed back, some shoots from the roots should be left for a time to keep the roots in active condition. Heart rot, following frost injury, is often very serious, especially in coastal regions.

There are several types of heart rot, some of which, for years after the injury, continue to spread through the wood of the trunk and reduce the bearing capacity. In deciding between rebuilding or replacement of injured trees, the extent to which heart rot is present [illegible] should influence a final decision.

Overhead systems of irrigation were observed on lemons at C. J. Pegler's place and Charles Brooks' place at Sierra Madre. In both places the system has been highly successful. It is not practicable on all ranches of course, but has distinct value on steep slopes of gravelly soils which wash badly. It is necessary to have at least thirty pounds pressure on the line to get satisfactory results.

Where sufficient water is available, an excellent summer cover-crop may be grown under the overhead system. The special advantages of overhead irrigation were saving of labor, more even distribution of water between and under the trees, prevention of washing, and possible prevention of June drop and frost damage.

SUCCESSFUL INARCHING

Inarching for gopher-injured trees rapidly is coming into general use. Many thousands of trees in Southern California have been inarched this season. On the E. T. Richardson ranch at Duarte we were able to observe the results of this work after a period of two years. The seedlings originally used for inarching had grown to several times their original size and the union seemed to be perfect.

The top of the tree, formerly yellow and dying back, had recovered completely and was dark green in color, with vigorous growth.

The only question about this procedure is the possibility of heart rot working its way upward from the decayed remains of the old gophered top root. It will require several years more before this point can be settled.

TOP-WORKING POINTERS

At the W. A. Jones ranch at Glendora an opportunity was given to examine after two years the results of a top-working demonstration. The trees top-worked were of the bearder or non-bearing type and had been completely changed over into the bearing type.

The chief lesson brought out at this place was that, for best results, safety limbs should be left for a considerable time. The trees which had retained safety limbs for two years were in the best condition.

Perhaps the most interesting item of the day was the visit to the citrus and poultry ranch of Edward Insley at Covina. Insley has solved the fertilizer problem by combining poultry with citrus.

For two years he has kept an average of 382 White Leghorn hens on five acres of oranges. He buys bean straw [illegible] alfalfa for litter and returns all of this, together with the droppings, to the grove. Careful analysis of the materials shows that each tree has received 2.08 pounds of actual nitrogen, aside from considerable humus-forming material.

INSLEY RELATES EXPERIENCES

The citrus trees look well, although, on account of the freeze, they have not shown a profit for this particular two-year period. The poultry, however, has [illegible] of $595.90 per year, not counting labor, which amounted to a little more than an hour per day and was performed by Mr. Insley's young son after school hours.

The general plan is considered a success, but in explaining the details, Mr. Insley pointed out that it was necessary for the grower to have a practical knowledge of poultry keeping, which in itself is a highly developed and complicated business.

Sulphuring Combs an Important Duty

By J. D. BIXBY SR.
Contributing Editor

SULPHUR is a very necessary article in conducting an apiary, for in warm weather the bee-moth is a destructive pest and must be promptly combated.

The adult moth (the "miller") flies from late afternoon to midnight, mainly, and deposits her eggs as near as possible to the brood-combs of the hive.

If it is possible to "sneak" into a weakened colony she will always do so, if not, she leaves the eggs on the alighting board as close to the entrance as possible. If the colony is too populous even for this, the eggs are stuck into the cracks between supers or about the hive. These eggs are glutinous and adhere to the feet of the bees and are thus carried into the hive and packed away with the pollen and propolis as the bees bring it in.

LARVAE HATCH SOON

After a few days of summer warmth, or the normal temperature of the brood-nest, the larva hatches and at once begins its destruction work. September is perhaps the worst month for their ravages and as the larva completes its work and is ready for the pupal stage in about seven days, it is easy to see what happens to a queenless colony when there are no longer bees to defend it.

It is the organic (animal) matter contained in the brood combs rather than the wax itself that the wax-worm is after. This explains why a bright new comb is often left untouched in the hive when all the rest are destroyed.

Keep all empty combs over good strong colonies until cold nights come say in November. If this cannot be done, fumigate the combs with sulphur every month or six weeks. A tight room or closet works well. Use from one-quarter to one-half pound of sulphur for every 128 cubic feet (size of a cord of wood).

SIMPLE METHOD EXPLAINED

Take a five-gallon can with the top cut out; fill this one-quarter full of sand or earth. Inside this set a tin can of about a quart capacity, with a piece of crumpled newspaper in it; pour the sulphur on the paper, light the edges of the paper, and shut the door. See that no combs or hives are directly over the burning sulphur. The longer the combs remain in the fumes the better.

If but few combs are to be treated, set two empty supers on a hive cover, place the can of sulphur therein and stack the supers of combs on top, first lighting your fire, then place a cover on top. Use only a tablespoonful of sulphur and be sure to have at least a foot space between the fire and the first combs; otherwise they may be melted.

Kerosene and Carbon

THAT the use of kerosene is a poor substitute for mechanical work in curing motor carbon troubles is the contention of James Koeber of the Agricultural Engineering Division, University of California.

"Just how much carbon conditions can be remedied by 'flushing' the motor with kerosene is questionable," Koeber insists. "All of the lighter petroleum products like kerosene will dissolve readily the heavier ones, like oil. That is nature's way of keeping them all in solution.

"Whenever too much fuel to burn completely is drawn into a gas engine cylinder, a large amount of carbon is formed and part of the kerosene washes the oil from the pistons and cylinder walls.

"Remember, that in most automobile engines the pistons travel about 1000 feet per minute. Then decide for yourself whether or not you want the parts of your engine that are normally covered with oil and as smooth as glass to rub together for a distance of a few miles with their surfaces cleaner than when they came from the machinist's lathe!

"Would it not be far better to take the engine down and clean it, administering treatment such as a fine piece of machinery and a willing servant is entitled to?"

Persimmon Growers Active

GEORGE W. SHERWOOD of Fullerton was elected chairman of the Executive Committee of the Persimmon Growers' Department of the Southern California Farm Bureaus at a recent meeting, and J. E. Doty of Goleta was elected vice chairman. S. Earl Goodall of Owensmouth and L. R. Manz of La Habra were seated as additional representatives from their counties.

Tentative plans were outlined for a fall meeting and fruit show. A special feature of the day probably will be a field trip through some of the successful persimmon orchards. A committee composed of Knowles Ryerson, Robert W. Hodgson, H. E. Wahlberg and W. S. Rosecrans was appointed as a program committee for the meeting.

Reports were made on the various surveys now being conducted by the Department, including acreage in California and Southern States, varieties, yields, marketing and insect pests. Much data have been gathered together on these points and full reports will be made at the fall meeting.

MAGIC POWER OF POWER

The power of electricity to be generated from now idle sources will result in spreading out the population of America and relieving the congestion of cities, in the opinion of nationally prominent engineers who see as the next great development, establishment of industrial centers in rural districts, where farmers can have ample power for their machinery and at the same time find remunerative employment in local industries, while living on their farms.

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S. C. WHITE LEGHORN baby chicks from 1- and 2-year old stock by pure mates to cockerels from trapnested stock. Ducks, turkeys, guineas now for October and later delivery. FRASER'S HATCHERY, Box 61, R. 1, New Jersey Ave.

HANSON'S Pedigreed S. C. White Leghorns: Over 200 egg pullets average for 6 years. Over 200 egg cockerels average for 3 years. Unexcelled in production and standard contests, winners in two hemispheres. Send for interesting catalog. J. A. HANSON, Los Alamitos.

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WILD BLOODED BREEDING TURKEYS. Toms, according to age and size, $15 and $25 each; hens, $8. Baby turks. ELKINS, The Veteran, R. 3, Box 148, Barstow, Calif.

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FORTY ACRES of as fine irrigated deciduous fruit land as ever laid out of doors, for exchange for Bay Counties income; cottages, flats, apartments. Send full details. Your property first letter. V. C. HOWE, Realtor, Paradise (Orchard homes), Calif.

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Orchard Judging

(Continued from Page 5)

(Use either A or B below.)

A. Non-bearing trees.
1. Size for the age and kind of tree 5
   a. Caliper of trunk 4 inches from ground.
   b. Height.
   c. Influence of pruning on size.
   d. Uniformity of stand.
2. Form 5
   a. Height of head.
   b. Scaffold branches.
      1. Number.
      2. Spacing.
      3. Angle of branching.
   c. Secondary scaffold branches.
      1. Number.
      2. Height.
   d. Waterisprouts or suckers present?
3. Vigor 10
   a. Terminal growth.
   b. Hardiness
   c. Bud development.
4. Health 15
   a. Disease, insect or physiological injury.
   b. Sunburn, cracks, cuts, etc.

B. Bearing trees.
1. Size for the age and kind of tree 2
   a. Height.
   b. Spread.
   c. Balanced wood throughout tree.
   d. Influence of type of pruning on above.
2. Fruitfulness 10
   a. Yield and quality of recent years.
   b. Condition of fruiting wood. Prospects of crop.
   c. Distribution of fruiting wood.
   d. Quantity and development of fruit buds for next season.
   e. Variety—good commercial sort.
3. Vigor 8
   a. Length growth past season.
   b. Condition of new wood.
   c. Premature dropping of leaves.
4. Health 15
   a. Disease, insect or physiological injury.
   b. Sunburn, broken branches, cracks, cuts, etc.

III. Condition of orchard in general. 15
A. Care of Soil 8
1. Cultural treatments.
2. Planting distance.
3. Irrigation.
4. Cover crops.
B. Care of Trees 7
1. Method of pruning.
2. Placing or propping.
3. Tree surgery and repair.
4. Whitewashing.
5. System of spraying.
6. Pest eradication and control.
7. Orchard sanitation.
   a. Burning brush, weeds, rubbish etc.

Total Points 100

HERE'S PRACTICAL APPLICATION

It will be noted from the score card that the principal items involved in judging an orchard are location, condition of trees and the general condition of the orchard. The orchard is judged in its present condition, the same as in judging livestock, and not as to its economic value. Whether or not it is a "good buy" or whether it can be developed into a good orchard is not considered.

With the score card as a basis to start the work, we then set to doing some of the regular laboratory periods to scoring. The meaning and significance of the various items outlined in the score card were explained by the instructor.

For students there were required to score several orchards. A critique was held at the end of each period, in order to make the scoring standard.

Soon we were able to dispense with the actual scoring and to judge orchards by comparison only, the same as is the custom in livestock judging. With the main factors on the score card in mind, students would go over an orchard, take soil borings, and make notes regarding points observed and then, when all were ready, the group moved to the next orchard.

Where all the orchards in the class (medium-aged peach orchards, for example) which the instructor had previously selected were judged, students were required to hand in their placings and each student then was called upon to give oral reasons for his placings. Judging then was continued on the next class—old pear orchards, for example.

A great deal of interest was aroused among the students who requested that more time be given to judging. This was impossible during the regular hours and, therefore, was accomplished after school hours and at week-ends. The students voluntarily gave of their own time and arranged their own transportation, first using private automobiles and later renting a large bus for the trips.

Short trips first were made to the nearby fruit districts visiting and judging leading commercial orchards. Incidentally, the students derived a great deal of benefit from seeing different methods of orcharding in the various districts visited.

Later in the season longer trips were desired by the students. To accomplish these objectives we had to travel Saturdays and Sundays on two occasions. Farm advisers in the counties we wished to visit were requested to cooperate with us in planning our itinerary and in arranging with growers for the judging of their orchards. This they did most heartily and thus provided well planned trips.

Early in the year the suggestion was made to the Oregon Agricultural College and to the Chaffey Junior College at Ontario, California, that orchard judging be taken up by them, with the hope of having teams representing their institution and ours meet in an orchard judging contest.

Our challenge was accepted by Chaffey Junior College and a team of freshmen and sophomores was selected to meet their team at Ontario. This contest was held and won by our team. A silver cup was presented by the Southern California Canners' Purchasing Bureau, to become the possession of the team which wins two successive contests.

Plans now are under way for inaugurating an annual intercollegiate orchard judging contest next year to include teams from Oregon, Washington, Idaho, Utah, Colorado, New Mexico, Arizona and California.

We believe orchard judging is far more valuable to the average student than scoring grades or any other form of fruit judging. Only a very small number of students utilize the training received in fruit judging while a great many would be benefited by orchard judging.

This new work trains students to know and appreciate good orchard management and therefore teaches them how to grow the best fruit which is more important than training them to know perfect fruit specimens.

Dusting to Control Wheat Bunt

Scientists Test and Approve Copper Carbonate Dusting Method—Results of Recent Experiments

After four years of exhaustive tests with copper carbonate dust to control seed borne bunt, or "stinking smut" of wheat, it has been announced by W. W. Mackie and Fred N. Briggs of the Division of Agronomy, University of California, that this method is not only practical, but also highly efficient.

It is recommended, in fact, that all seed be treated every year to prevent recurrence, even when the grain apparently is clean.

It is explained that the bunt spores are carried sometimes hundreds of miles by winds, and the seed is contaminated by contact with machinery, warehouses, elevators and transportation agencies.

The University investigators have been working in co-operation with the Office of Cereal Investigations, U. S. Department of Agriculture, and if their findings are taken seriously to heart by California grain growers, it is believed this costly disease can be practically stamped out in this State.

The principal fault of the wet processes formerly recommended was the cost of labor involved. Expensive and disagreeable tasks are avoided by the use of automatic dusting machinery, and further economy is effected by the saving in seed when the new method is used.

EXPLANATION OF METHOD

The copper carbonate dust process consists of intimately mixing the dust and the wheat seed so that every part of the seed surface which might bear a smut spore will be covered with the dust.

So tenacious is the dust that it remains on the seed even when it is blown from the broadcast seeder. Dusting seed wheat is best accomplished by machines made for this purpose. A number of machines now on the market work rapidly and satisfactorily.

Home made machines may be constructed from plans furnished by the College of Agriculture of the University of California or by mounting a barrel which can be revolved like the barrel churn. Concrete mixers also are serviceable.

The following condensed information includes the salient facts and recommendations brought out in the report.

1. Copper carbonate dust is an amorphous or palpable chemical which sticks to the seed coat of grain as readily as the smut spores.

2. Two ounces of copper carbonate dust is ample to coat one bushel of wheat. Dust in excess of this quantity will not adhere, but excess quantities cause no damage.

3. Copper carbonate dust causes no injury to seed even when placed upon it months in advance of seeding time.

4. When seed is darkened with smut spores, control by the chemical dust may not be complete. Never select seed which is darkened with smut spores.

SOIL FACTOR IMPORTANT.

5. In certain restricted areas of California, the soil, especially summer fallow, may be infected by wind blown smut spores. On these soils attacks of bunt may come from the soil even when all the spores on the seed are destroyed. Even against this attack, copper carbonate is very effective in reducing the bunt.

6. Many farmers and investigators have shown that copper carbonate may stimulate wheat seed causing early germination, with consequent early sprouting. This results in stronger plants and early maturity, with corresponding increases in yield.

7. As copper carbonate does not attract moisture, it permits indefinite storage of treated seed. Treated seed passes through the drill almost as rapidly as untreated seed.

8. As no injury to seed is caused by this chemical dust (far less seed (some investigators state 25 per cent) is required than for grain treated by the standard formaldehyde, bluestone or bluestone-lime methods.

Years of tests show that formaldehyde commonly causes 20 to 30 per cent loss in seed germination, and if the seed is sown (Continued on Page 10)

Grape Growers Raise Livestock

(Continued from Page 2)

Italian Vineyard Company are kept in good condition on a diet of which grape seeds constitute an important part. This material, which is a by-product of the winery, has been found valuable hog feed. The Guasti Berkshires certainly testify to the food value of this material.

The dairy herd at Guasti is made up of purebred Guernseys. Their milk is being sold as a guaranteed product under a State law, which contains certain specifications that must be complied with.

Important requirements of the law are: There must not be over 10,000 bacteria per cubic centimeter and the butterfat test must be at least 4.5 per cent. To obtain a bacterial count of 10,000 or less requires the greatest of care in handling milk.

CLEANLINESS VERY EVIDENT

Cleanliness, an extreme measure of which every dairyman should strive to attain, is very evident when one visits the Guasti dairy barn and milk room, over which Wilson has charge. By extreme care the bacterial count usually is kept far below the maximum number and the analyses which are made by health departments of cities where the milk is used indicate a splendid product. For example: The Pomona Board of Health upon three different occasions submitted analyses of Guasti milk, as follows:

Number of bacteria per c. c., 200, 600, 800; per cent butterfat, 4.6, 4.5, 4.8.

In the city of Pomona, according to Wilson, the Child Welfare League has been supplying undernourished school children with Guasti milk as part of their daily diet. For this purpose the milk is bottled in one-half pint containers, each child being given this amount daily. Most wonderful results are obtained, the pure, rich sweet milk being ideal food for little, undernourished bodies.

The latest venture of this big vineyard company is prospecting for oil. Production from an agricultural standpoint would seem to make unnecessary the effort to bring "black gold" from below, but a progressive policy demands that if oil is present it must be discovered.

Every farmer can learn a lesson from the company about which this article has been written. That lesson is not new, being one of diversification. Specialization may bring success, but safety demands that, "all the the eggs should not be placed in one basket."

Carnation Cow Again Breaks Record

AT 10 years of age, Segis Pietertje Prospect, famous Holstein of the Carnation herd near Seattle (Wash.), has just completed her second yearly record, producing 35,550.4 pounds of milk, and 1133.197 pounds of fat or 1416.5 pounds of butter according to advice received from A. M. Ghormley, Superintendent.

This year's record gives this cow both first and second place for yearly milk production, her nearest contender being Kolrain Finderne Bess with 35,339 pounds. This also gives to Segis Pietertje Prospect the world's milk record for two lactation periods, with the enormous total of 72,931.8 pounds of milk and 2865.2 pounds of butter.

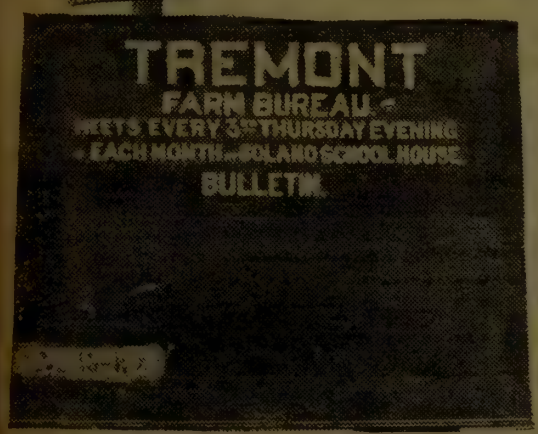
The same characteristics were true of her feeding this year as of her previous test period; that is, the fact that she depends largely on roughages, the one greatest factor in her production being her enormous consumption of hay. She received one pound of grain to each 4½ pounds of milk produced. She averaged daily, throughout the year, 40 pounds of beets, 6 pounds of beet pulp, 1½ pounds of molasses, and 30 pounds of alfalfa hay.

Her grain mixture follows:

6 parts ground oats	1 part soy bean
4 parts bran	4 parts oil meal
2 parts cornmeal	1 part ground flaxseed
5 parts hominy feed	1 lb charcoal to 100
1 part cottonseed meal	lbs grain.

Salt was kept before her at all times.

Gentle Reminder to Farm Bureau Members



THIS big bulletin board, posted at a busy crossroad near Tremont, reminds all good Farm Bureau members of their duty, and gives the delinquent a severe jolt every time he whizzes past.

Timely notices are posted below the lettering and many persons thus are reached who might not respond to notices sent by mail.

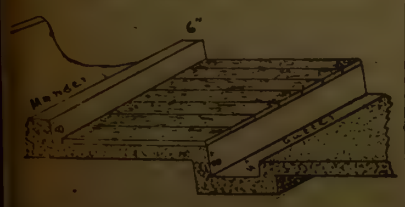
Many other California centers make use of signboards in different ways.

Stable Floor Overlay

AS a compromise between sanitation and "bumblefeet," many dairymen have covered the concrete floors of their milking barns with an overlay of planks. Horse stables, too, may be improved in this way.

The drawing shows one of these wooden floor mats laid as approved by some of our most progressive cow owners.

Because some of the planks are likely to warp and twist out of shape it is



considered best not to fasten the planks down solid but to drive two four-inch or five-inch spikes through the upper or front end of each plank.

It may be necessary to drill small holes into the concrete to hold the spikes. When the spikes are driven through the planks the points will mark where the holes should be drilled.

The lower or outer ends of the planks are left free so they may be taken up easily for cleaning or to be replaced with new ones when necessary.—HERBERT A. SHEARER.

A BEE KEEPERS' OBSERVATIONS

Bees are shy to accept a virgin queen after the second day. She should be introduced within five days at the most. Don't cage a virgin queen unless absolutely necessary. If the colony has not long been queenless, a puff of smoke at the entrance will make it safe to run in the virgin.

A large shipper reports bees frozen and smothered in the same car—frozen crossing the mountains and smothered from heat in the desert.

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES
Contributing Editor

SEPARATE FARM COLLEGE

The great bulk of University of California entering students in agriculture registered at Davis, which is now known as the northern branch of the College of Agriculture. This is the result, of course, of the new policy of the College to push forward the northern branch, where entering students may get close to the soil at the same time they are learning the theory of agriculture.

Thus the farmer people, who once wanted the College of Agriculture separated from the University of California, are getting what they desired without dismembering our great educational institution.

President Harding is said to have believed that many problems would right themselves if given time and Napoleon is reported to have left unanswered most of his correspondence for two weeks, to find at the end of that time that most of the letters had been answered by the course of events. So it has been with the College of Agriculture.

COLLECT CALIFORNIA PLANTS

Backyard farming is one of the royal sports of the California city dweller. Here one can grow plenty of fruit and fresh vegetables in the backyard, or one can plant therein lawn with flowers and shrubs.

The writer has a combination of both at home. We derive the most pleasure from gathering native California plants from all parts of our great State and transferring them to the home garden.

From Imperial we brought an athel tree, which came there from Algiers; from Del Norte and Humboldt, a variety of ferns were transplanted and are doing very well in a shaded place; a loquat tree from San Bernardino; dahlia and gladiola bulbs from the bulb farms of Monterey; a Madrone tree and a tiny sequoia from a canyon of Marin County.

There are other things to hunt in California besides deer and birds. Each auto excursion can be made more profitable and pleasant if it is made a plant-gathering excursion.

Oregon Flax Profitable

A VERY satisfactory arrangement between Oregon officials and farmers of that State has resulted in great stimulation of the flax industry.

The State penitentiary buys the flax at from $20 to $35 a ton and, according to recent reports, farmers have made a net profit of $70 an acre or more. Nearly 100 growers have entered into contract with the prison.

S. F. Southard, who operates a farm west of Dallas (Polk County) raised 50 acres of flax this year on land which a few years ago was considered worn out, and it is said will net more than $3500 from the crop.

The flax is processed by prison labor and the State makes a large profit on the business.

Coming Back to Cow

UP in Central and Eastern Oregon—4000 feet up from the sea—big wheat farmers and range stockmen are coming back to the good old dairy cow. They kick like a bay steer in a cornfield because—as one bronzed Westerner put it—"Wheat and cattlemen would rather take a licking any day than be seen tailing a cow."

Then why are they going into dairying? "No more money in wheat and beef," is the laconic reply. Grain and cattle no longer yield a profit, therefore the dairy cow offers the farmer's only financial salvation.

Cowboys weep and bonanza farmers wipe away furtive tears at the sight of cow corrals, silos, dairy barns and alfalfa fields, which are beginning to break up the monotony of the Eastern Oregon landscape. It is no longer possible to make money there by riding a "bronc" or a tractor. The milking stool must replace the saddle and the cream separator take the place of the grain header, they mourn.

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Your Garden of Flowers

By HELEN TEMPLE

SIMPLE METHODS WITH SWEET PEAS.—While planning our flower garden for our new home, I welcomed every method that promised to eliminate labor. One of the most welcome suggestions came from our good friend, Miss Ella Sifford of Ventura, who is a well-known flower enthusiast.

HELEN TEMPLE

[illegible] plants sweet peas for continuous bloom the year around, and her method of planting eliminates much unnecessary work and worry. After preparing the soil, which must be worked deeply, she makes the trenches, fills them with water and leaves them until the water has disappeared.

Then comes the planting of the seed. She makes holes along the bottom of the trench about six inches apart with her finger, drops a seed in each hole, [illegible] goes along, and pinches the soil together.

The future climbers are provided a trellis at the time of planting. This also is a simple operation. A stake is driven into the ground at each end of the [illegible] tightly from one stake to the other, while another wire of the same length is stretched about six feet from the ground on the house fence, or structure where the vines will climb.

Strings are run from one wire to the other, allowing two strings for each vine. This provides the trellis without danger of breaking the young plants, which are very easily ruined during their infanthood.

Miss Sifford has used this method for several years, and has had great success with her sweet peas. After the planting and provision for future climbing, she forgets all about them until the little plants are above the ground, when she irrigates as necessary, gradually filling the trenches.

When the vines are well established and reaching rapidly for the top wire, she digs a trench about six inches from them and fills it with old manure.

Irrigation at regular intervals drives the plant food from the fertilizer into the soil about the roots of the vines.

Needless to say, Miss Sifford has wonderful success with her sweet peas from season to season.

RE-MAKING THE LAWN. A well-kept, bright, green lawn; in fact, such a lawn as makes an Irish heart glad, is a real joy, but a lawn with ugly brown spots and bunches of salt grass is a disgrace in the finest of gardens.

The sad-looking lawn should be remade this month. Rake up the old lawn until the whole top surface is loose, then rake in a liberal quantity of lawn fertilizer. Sow fresh seed of the best quality and rake it in evenly. Irrigate thoroughly with a light spray, and con- [illegible] day until the new grass is well established. Salt grass and Bermuda grass are the worst pests in our lawns on the Coast. Frequent renovation is necessary if we are to keep the upper hand of these enemies.

SEED GATHERING BEGINS. The gathering of seed begins at this time of year. Large and small gardens offer us seed of their best specimens. It is seldom we find a garden that has nothing of especial interest. If it isn't an aster, it may be a zinnia or perhaps a cosmos that was "especially fine." Save the seed, and mark your packages with care. My finest plants have come from seed raised in my own garden, and the germination is almost 100 per cent if we care for the seed properly.

CUTTINGS TO BE STARTED NOW. These fall days are ideal for taking cuttings from all our bedded plants. Plants at this season are making very little new, soft growth. Geranium, heliotrope, coleus, verbena and alyssum will root readily when started now. Care should be used when making cuttings to avoid "ragging" the old plants.

BULB STORING SEASON As soon as possible before the winter rains begin we shall begin the storing of all bulbs that have ripened off. The bulbs that are to remain under the soil should be cleaned of all litter, and watering discontinued.

Common dahlia bulbs usually are lifted and stored away in burlap sacks unless they are grafted. Grading the bulbs at the time of digging eliminates a great deal of time and worry during the busy planting season.

I do not like sand for storing bulbs, though it is quite commonly used for this purpose. Excelsior or paper will do equally as well and is much easier to handle. Since we boys nearly always do the bulk of the garden work, quite naturally the bulb storing falls to us, so we welcome material which is not as difficult to handle as a heavy box of sand. Prize bulbs are best wrapped in tissue paper and labeled individually.

CONCERNING PERENNIAL BORDERS—We are planning our perennial borders now, and the problem of what to plant and what not to plant seems to arise with each location. Hollyhocks brighten and fill a dull background. Perennial hollyhocks do not bloom until the second year unless they are planted in the early fall, but the most critical gardener can find no fault with the wonderful display of rich double[illegible] that come into bloom after a season of growing. In fact, they are well worth waiting for.

Achillea are hardy plants that thrive in dry, sunny situations where there is little water. The Tomentosa, or woolly Achillea, is a dwarf; its blossoms are bright yellow. While the Eupatorium bears showy, red flowers in great profusion. As a perennial border on the sandy, dry Sierra[illegible] the achillea is very successful.

The delphinium around the northwest corner of the house or against an "uncomfortable" fence provides an excellent tall border and often hides a hideous[illegible] of sins in the form of ugly boards or paint. The perennial delphinium [illegible] and provide repeated color throughout the blooming season if cut as soon as the flowers begin to fade.

Blue, white and pink larkspur often combine their colors, and we find a variety of shades in our border the year following the first planting.

Golden glow has become one of our most popular tall borders of yellow. It grows five or six feet high and produces great masses of bright yellow. Cactus dahlia flowers during late summer and fall.

Other hardy perennial border plants, such as the hardy roots, should go into the ground now. We plant iris borders along a row of foxglove, which also is a hardy perennial. Then we must not forget the popular Shasta daisy along the walks, or a row of Baby's Breath along the north of the house. The purple feather flower is another hardy perennial that grows quite dense, closely resembling a heather in blooms. The flowers are borne on long spikes of delicate pink.

BULBS THIS MONTH In the coast and semi-tropical regions, as well as the valleys, we should set out our [illegible] Easter lilies, freesias and irises as soon as possible [illegible] one of our most interesting pieces of garden work for it seems wonderful to think of old Mother Earth caring for them; then as soon as the sun shines the bulb stores up energy enough to [illegible] out of its hiding place in the early spring.

Commercial fertilizer should be used with discretion when planting bulbs. Losses often have resulted from its indiscriminate use.

Dusting for Control of Wheat Bunt

(Continued From Page 8)

in dry soil or held over 48 hours, nearly all the seed may be destroyed. Bluestone solutions as recommended, destroy from 40 to 50 per cent of the seed.

Bluestone-lime, while far safer than either of these two materials, may cause considerable damage, especially when improperly handled.

TIME OF APPLICATION

9. Copper carbonate dust should be applied when the seed comes from the seed cleaner and grader. By using some of the machines available the dusting process can be conducted automatically without additional labor.

10. Copper carbonate dust when inhaled, may cause workers severe irritation and nausea, although not dangerously poisonous. This irritation may be avoided readily by using the masks which ordinarily are employed in mines or factories. When masks are not available, a wet towel over the mouth and nose is very effective.

11. Seed dusted with copper carbonate is dangerous when eaten by stock, especially poultry.

12. Copper carbonate dust should contain 50 per cent or more of metallic copper, combined in the form of carbonate and hydrate of copper and should be prepared without grinding so as to pass in aqueous suspension through a 100-mesh sieve.

LOCAL CHEMICALS AVAILABLE

13. Three or four factories producing high grade, satisfactory copper carbonate dust are operating near San Francisco, furnishing abundant supplies. Imported copper carbonate without guarantee as to quality should not be used as [illegible] tests show that inferior grades have given poor results.

14. Copper carbonate dust of good quality is priced at 22 to 30 cents per pound depending upon the quantity purchased.

15. Satisfactory control of oat smuts and covered smut of barley has been reported but has not yet been confirmed in California, although no evidence to the contrary is available.

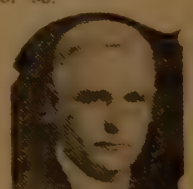
16. The improved seed treatment on California farms has greatly reduced smut, but the availability of the safe, automatic and cheap dust process of universally applied should reduce bunt to the vanishing point.

Agricultural Leaders of the Pacific West

O. M. PLUMMER

General Manager, Pacific International Livestock Exposition

THERE is a man living in Portland, Ore., who has owned animals out of all breeds of purebred livestock. He has owned Shorthorns and Herefords, Holsteins, Jerseys and Guernseys, black pigs, white pigs, red pigs, long-nosed pigs and pigs with turned-up snouts. He has owned draft horses, show horses and Shetland ponies, sheep of eight or ten different breeds and an Angora goat or so.



O. M. PLUMMER

He practices what he preaches, for he is O. M. Plummer, the great apostle of purebreds, general manager of the Pacific International Livestock Exposition. He regards his calling as a high privilege—the dissemination of better livestock; the exposition is a lever for its accomplishment.

At the livestock sales he nearly always buys some [illegible] and finds homes for them. If he breaks even, he is more than satisfied, for he is not trying to make a profit, but to get better stock on the farms of the West.

Plummer is a unique package of simplicity and sophistication, of innocence and guile, of [illegible], of caution and impulse. Mother Nature never rolled up and delivered a more interesting combination of apparent contradictions. He was born in Maine, and his digestive organs seem to have the well-known New England "rock ribbed" quality. His idea of a good time is to attend a banquet a dinner, literally of everything, speak till his voice fades out and then make gestures indicative of the desirability of better livestock.

His personality draws people to him. His real sympathy and willingness to help them has made him a multitude of friends. For him a perfect world would be one in which everybody unselfishly co-operates with everybody else. As he helps others, so he never hesitates to call on others for help for the Pacific International. He generally gets it, too.

When a young man, he began work for the stock yards, and acquired a taste for and knowledge of livestock. He was associated with the organization for many years. He was always interested in civic affairs, and for several terms was an active and efficient member of the school board.

As a toastmaster he is in a class by himself. He has a caustic geniality that melts formality away and then dashes into an incandescent shower of sparks. He can say a mean thing without hurting anybody—and does.

When the Pacific International Livestock Exposition was formed in 1915, he was unanimously elected general manager. The duties of a general manager were to raise the money and do the work. He started out with the good will of the breeders and his own faith. Nobody else thought he could do it, but he has a faculty for convincing people.

He enlisted the means and services of bankers, business men, farmers—everybody. The work on the building began and he made men out. By day he solicited, persuaded, cajoled, coaxed, urged and wore down all opposition. By night he planned for the future. He won, but at the cost of gray hairs and age that came from work and not years.

Mr. Plummer can shift gears as smoothly and noiselessly as any human being. He can be "all things to all men." But his principles are as rock-ribbed as his native State and he would not do anything he considers wrong or improper—no, not even to get more money for the Pacific International.

He is modest and insists that he is only one of many who made the Exposition. Of course, this is true, but he was the mainspring that made the works go, and is yet. He is very clerkly in appearance, and when he looks most guileless you may be sure he is planning to enlist you in spreading the livestock gospel thicker and farther.

He has seen that Pacific International grow under his hand, from nothing at all to one of the largest of its kind in the world—from nothing to an equipment worth three-quarters of a million dollars, to 4000 entries, to 161,000 attendance—from nothing to an enterprise recognized as one of the world's most effectual organizations for improving and advancing the livestock industry.

And what nobler ambition could any man have than to foster an industry which makes the soil more fertile, gives the farmer more money for his labor, helps establish better homes and lays a solid foundation for country, city, State and Nation?

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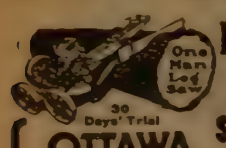

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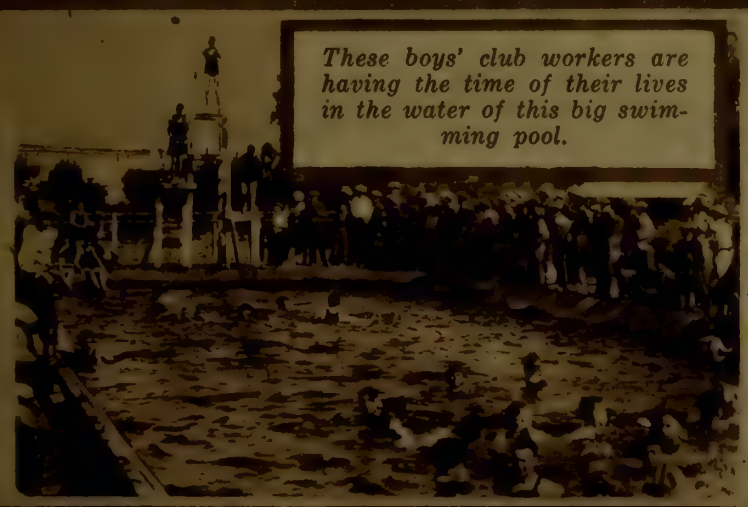
Close-Ups By The Camera Man

"Old Swimmin' Hole" Down to Date

THE outdoor swimming tank is coming to be regarded as a necessary part of the modern irrigation system—skins as well as soil need water! The cement-lined pools are arranged to drain into the irrigation ditches; therefore, no moisture is wasted.

The modern farmer, of course, has his bath tub, but what is a tub compared to a tank? Ask the Twentieth Century farm boy, who doesn't have to visit the "old swimmin' hole," which often was covered with green scum and had a mud bottom.



These boys' club workers are having the time of their lives in the water of this big swimming pool.

Who'll Be First in the Water?

THESE fortunate employees of the Azusa Foothill Orchard Company are making haste to enjoy a plunge in their fine swimming tank.

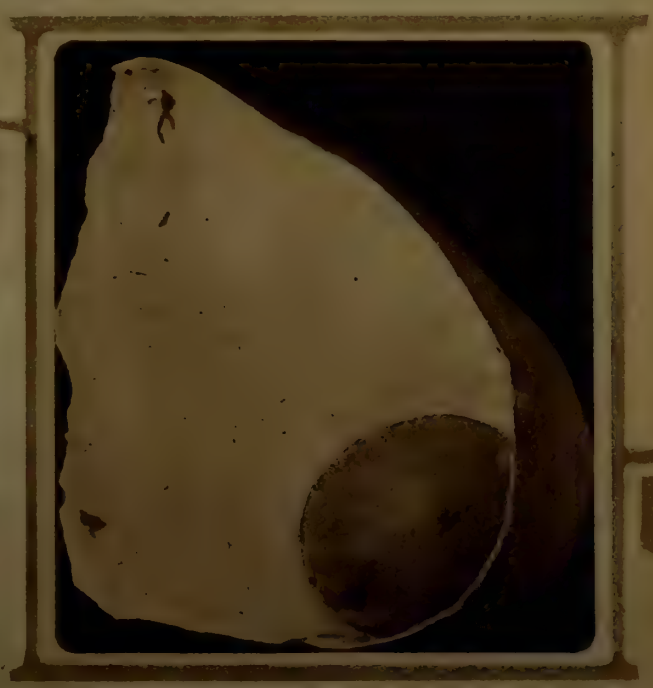
At left—Canoeing in the orchard. The children—and the dog—are grateful to N. P. Cole of Rutherford for this aquatic playground. Not only does the tank drain into the orchard, but by means of an extra drain it can be emptied into the river when the water is not needed for irrigation.

"The Bath Beautiful." Up in Napa County the Doak Villa nestles against sun-drenched hills, with plenty of cool, clear water.—W. H. G.

Hog Shade Left; Freak Egg Below

AT THE Italian Vineyard Company ranch, Guasti, grapevines have been trained over the hog pens to furnish summer shade.

Below—This freak egg-within-an-egg was discovered by Dr. G. L. A. Hamilton of Los Angeles when he opened it at the breakfast table. Dr. Hamilton traced the egg through the neighborhood corner grocery store to one of the White Minorca hens of a Sunland poultryman. The little egg was perfectly formed and had a shell.



Walnut Dehydrator Dries Nuts Quickly

PROGRESSIVE walnut growers are beginning to realize the advantage of speeding up the nut harvest by the use of dehydrators. It is important to get the crop off the trees and into the shipping bags just as quickly as possible. Dehydration shortens the drying time from ten days to two, besides eliminating the work and worry incident to rainy spells.

"If nuts are left on the trees after they mature," points out a prominent grower, "some of them are liable to mold. The earliest nuts usually command the highest prices; therefore, anything which enables us to speed up harvesting and packing is very welcome."

The dehydrator shown at the left belongs to J. C. Pearson, Covina walnut grower, and cost $1050. It has a capacity of 425 sacks—10 tons.

"We are able to dry our nuts in from 24 to 72 hours, depending upon the condition in which they reached the dryer and the degree of heat maintained," reports Mr. Pearson. "I am pleased with our dehydrator and have no doubt artificial drying will supersede the old method."—O. H. B.

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Consider again the million autos in California; of ten million in America. Think of the thousands, perhaps millions, of trained auto men that are needed to keep the wheels of this industry humming. No wonder that NOW there's a shortage of trained mechanics and electricians. No wonder garages, repair shops, vulcanizing shops, service stations, etc., are urgently needed. No wonder the men who do know autos have steady jobs at big pay or are making money running their own business. This is your opportunity now—Mail the coupon for "The Gateway of Golden Opportunity."

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ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

OCTOBER 7, 1923

Artist Chooses Hogs as Medium of Expression

Remarkable Six Year Breeding Experiment Nearly Concluded—Results to Be Demonstrated

ORDERED by his physicians to abandon his profession of architecture, the subject of this article turned to his lifelong hobby—the art of animal breeding. Undoubtedly he realized the truth of the statement made by Publius Syrus nearly 2000 years ago: "It takes a long time to bring excellence to maturity," for he allowed himself six years to demonstrate a new principle in scientific mating. Next year, as announced in 1918, he will submit the results of his labor to the acid test of the show ring.

By JAMES C. KNOLLIN
Editor of ORCHARD and FARM

UNLESS you are a profound student of biology, with considerable knowledge of physiology, etiology, phylogeny and genetics in all branches, don't attempt to argue on the subject of animal breeding with Francis T. Underhill of Santa Barbara. Underhill breeds Hampshire hogs; this is his hobby and he has spent nearly $75,000 to date putting into practice his ideas of scientific mating, selection and feeding.

During the five years Underhill has been working with hogs, more than 3000 animals have been handled on his ranch. Several times he has culled out and discarded practically every animal in the herd. Of several hundred pigs farrowed in different years, he has retained at no time more than twenty head.

Yet so sure was this breeder of his ground, he announced in 1918 before starting his experiments that he would exhibit at the National Swine Show in 1924. Six years, he estimated, would be required to produce his ideal animal.

Just what, then, is he striving for? Let Thomas Dinsmore, ranch manager, answer the question:

"Mr. Underhill is trying to produce a 'farmer's hog'; that is, one which will attain a weight of 200 pounds at six months of age on a cheap ration. He wants to combine this attribute with smoothness, strong constitution, prolificacy and the 'handy' size so much in demand by packers.

"To reach this standard of type Mr. Underhill has culled and reculled his entire herd, year after year, selecting only the superior, fast-growing animal which made one pound a day gain or better, as shown by its monthly weighing card. It also had to have type; good bone; strong feet; smooth, high back; good hams; medium and smooth shoulders; straight deep sides.

U's Top Chief, present herd boar, 1922 Grand Champion, California shows.

O. U. R. Robin, famous Underhill sow, now nearly seven years of age.

Francis T. Underhill, whose portrait is shown at top, is applying his system of breeding also to the Dible Estate Shornhorns. Above is shown Caledonia King Second, Grand Champion bull.

QUICK GAINS DEMANDED

"We want our sows to average ten pigs to the litter, but at present we do not let the sows carry more than seven or eight. One, however, gave birth to seventeen. The pigs must gain a minimum of twenty-seven pounds a month and we want them to gain thirty pounds a month for six months, adding twenty pounds more when hardened off on grain for market."

It is in the method of accomplishing these results that Underhill differs from other breeders. Some there are who criticise him for what they term "inbreeding." But the mere mention of this term is like touching a match to the fires of Underhill's imagination. He can see as clearly as though it were before him in the flesh, the type of animal which he is striving to create; and he has not the least doubt that he is going to accomplish his object—not by "in-breeding" of an incestuous nature, but by the proper blending of certain outstanding blood lines through what may be termed "preparation."

The great mistake of most breeders, according to Underhill, has been in using outstanding related individuals to achieve quick results, without this "preparation" which he deems essential.

He believes it possible to develop an "in-family" of the highest order and by a roundabout process to establish a strain carrying a preponderance of one blood line on both sides. That such animals can then be closely mated without harm is Underhill's contention.

The animals now on hand are a composite of the blood of such famous boars as Lookout, General Tipton, Nehawka Lad, Hawkeye Lad and Bunn's Pattern. Yet type, not pedigree, has been always uppermost in this breeder's mind.

"Each of these well known sires has contributed his quota toward the production of a type of well balanced animals of high class, to be known as Underhill Hampshires," says the owner.

In order to prove that he had developed a superior type, and to answer some of his critics, the Santa Barbara breeder showed in 1921 at the Sacramento Fair and at Riverside, Ventura and Los Angeles County Fairs, winning all championships and grand championships.

Yet, despite his success with Hampshires, Underhill emphasizes the fact that his experiments could have been undertaken with other breeds of hogs or with other animals, for that matter. He chose hogs because of their prolificacy and the Hampshire breed because it was comparatively new and its belting peculiarties added considerable interest to the problems of heredity.

In his quiet study, looking out upon the beautiful lawns, trees and shrubbery of his Santa Barbara estate, I saw evidence of the research work and deep thought which have characterized his preparation for this undertaking.

Patient delving into scientific books and breed records preceded his embarkation upon his great adventure; costly bookkeeping has marked every step forward. We venture the assertion that no breeder in America has maintained more complete or accurate record books than has Underhill. He possesses an extended pedigree for practically every animal that has passed through his hands. In addition to using ear tags and notches, he keeps a complete description of each animal. The names of individuals are arranged with a different letter for each year.

Nor has the utility side of the business been neglected. Interesting conclusions in regard to feeding have been reached by this progressive breeder and his superintendent. Again let Manager Dinsmore tell something about handling methods:

"Minerals (which we regard as absolutely essential) reduce the feeding cost one-fourth. The farmer himself can mix a cheap mineral which will take the place of the higher priced improved minerals. We use the stock powders, besides the cheaper mixtures and find the saving in food alone more than makes up the cost.

"The cheaper mixture comprises charcoal, screenings of hard coal, coarse salt, air slacked lime and sulphur, with a little powdered copperas. Alfalfa is of great value, as it furnishes the vitamines which cannot be secured from any heavy grain feed. If your hogs are kept in a dry pen without green feed, yeast will furnish a great measure of the necessary vitamines at a cost of one cent a day per hog. We also find that feeding once a day a heavy slop made from sour milk is of great value to a growing pig. Never having had a sick hog on the ranch, we attribute this, first, to thorough sanitation; second, to careful feeding, and third, to the minerals which are kept continually before them."

Admitting that the pure-bred hog business has suffered a mighty slump, both Underhill and Dinsmore insist that, for the farmer, there is much money to be made in raising and feeding hogs.

"Do you farmers realize," inquires Dinsmore, "that today our State, one of the greatest in the Union, does not supply by nearly one-half the demand of its people for the necessary hams, bacon and lard, and that with grains, culled raisins, beans and other products going begging on the market, you can help fill the hog shortage of the State and get a double price for your grains by feeding out?

"For comparison, consider the cost of growing a steer to two years old and the price that you will receive for him at that age. If he is brought on properly he will weigh about 1000 pounds and bring $75 or $80. But a carefully-bred sow, producing an average litter of six pigs, should make possible the sale of eighteen pork hogs in two years at a price of not less than $20 each, and by that time have another litter by her side. Those eighteen pigs sold at the age of six months will have brought not less than $360. Compare these figures and see which is the money maker."

PLAN APPLIED TO CATTLE

Mr. Underhill's knowledge of breeding will contribute to the upbuilding also of the famous Dibiee Estate Shorthorns, established in 1863 by Mrs. Underhill's father, Thomas B. Dibiee and recently reinforced by the acquisition of the entire Caledonia herd. The original herd included nearly forty registered bulls, and 1000 cows, of which some 50 were registered. The Caledonia herd, acquired a year ago, included 150 head, all registered.

The cattle have a historic background in the famous San Julian ranch, the deed for which came to Mrs. Underhill's great-grandfather from the Spanish crown. The cattle business is under the management of John Troup. Mr. Underhill will apply to the Shorthorns some of the *(Continued on Page 9)*

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
OCTOBER 7, 1923

All Californians Must Plant and Protect Trees

THERE is a problem which concerns every man, woman and child in California—particularly rural and suburban residents—and which strikes at the very heart of every human institution from industry to the home.

Its solution depends upon co-operative effort on the part of individuals, schools, civic organizations, women's clubs, farm bureaus, municipalities, all branches of government. And there is no time to lose

This great problem is that of denuded watersheds; charred and ruined forests; acres of bleak, forbidding farm lands. It concerns our gullied foothills; our hundreds of miles of unadorned roads; our cities and towns which have not awakened to the value and necessity of trees!

True, we have the mightest monarchs of the forest—the giant Sequoias; we have an estimated stand of 300 billion board feet of timber; and we have many sections in various parts of the State which are famous for their arboreal beauty. But considering California as a whole, nothing is more vitally important than the subject of tree conservation and re-forestation.

Perhaps no man in the State is better qualified to speak upon this subject than Charles H. Shinn, head of the United States Forest Service in California. In a recent letter to the editor of ORCHARD and FARM, Mr. Shinn made the following observations:

FROM A FOREST OFFICIAL

"Our foothills are nearly bare of oak and the better grades of firewood. The cost of firewood per cord in the Sierras, even close to a National Forest, was $2 in 1902; it is now $8 and $9. The cost of good cedar fence posts delivered at a farm in the Sierra foothills was 10 cents apiece in 1902; it now varies from 30 to 50 cents, according to distance.

"All the Sierra and Coast Range country can and should produce fuel for home use. If we had all the slopes unfit for agriculture well planted to hard woods, such as the yellow locust, the cork oak, and the best eucalyptus and acacias wherever the climate is not too severe, it would be a good thing.

"Journeys I have taken in the foothills here and there these 20 years have shown the saddest need of more tree products. Thousands of miles of foothill pastures are fenced with posts of buckeye, manzanita and mountain mahog; any poles not more than two inches through—mere excuses for fences. Men are using brush for firewood, often taken from foothill fire areas and so black and dirty that every housewife hates the sight of it.

MANY MATERIAL BENEFITS

"This is but the 'immediate need.' More tree planting, done with system, means more rainfall; prevention of erosion; the furnishing of timber and fuel for all local uses; the checking of fires in summer. It means more grass and other forage for livestock during a longer season. Above all, more trees mean a more equable climate.

"Trees rightly planted, rightly cared for, always check and ultimately prevent erosion. Sometimes some ditching is necessary to divide and control the water on very steep slopes.

"More extensive tree planting along our highways, as windbreaks, and on farm wood lots, is much needed for profit and for beauty no less than for health and the balance of things. I heartily approve of your campaign."

It is in Southern California, however, that the watershed problem is most acute. The Los Angeles Chamber of Commerce has been conducting a campaign of publicity to awaken citizens to the seriousness of the situation. Quoting from Dr. George P. Clements, head of the Agricultural Department of the Chamber:

LOS ANGELES' GREAT PROBLEM

"We have within Los Angeles County 4115 square miles, or 2,633,600 acres of land of which but 757,986 acres is of any value for agricultural production, leaving 1,875,614 acres in forest, brush and bald hills. Of this area, 875,614 acres lie within the Santa Barbara and Angelus National Forest Reserves, 431,658 acres being within the confines of the Angelus, constituting land and private grants.

"One million acres lie outside these reserves most of which are privately owned property and over which there is but limited county control.

"Metropolitan Los Angeles, outside of the Owens River aqueduct, is dependent upon some 800,000 of these acres for its water supply, while all the agricultural production of the San Gabriel and Los Angeles Valleys is totally dependent upon them.

"In the past three years more than 250,000 of the choicest of these forest acres have been denuded by fire; transformed from an asset to a liability—a menace to cultivated and developed foothill and valley property, costing our citizens millions in loss and protective measures.

"The forester's report shows that during the past year there were 255 forest fires in Los Angeles County, 210 of which originated within the county, only 45 burned in from outside territory.

"The total burned area for the county was 25,665 acres, and the immediate damage to buildings, bridges, fences and lumber, above $250,000. At least two lives were lost.

CRIME OF CARELESSNESS

"The County Forester made 31 arrests, which resulted in 27 convictions. It is safe to state that 90 per cent of these fires were directly due to the senseless, irresponsible spirit of the public.

"The potential loss to Los Angeles is inestimable, and it will take a half century to restore."

More recently disastrous fires have occurred in all parts of the State, bringing home with terrible force the lesson of loss and danger to human life resulting from carelssness. The policy of protection or conservation in the mountains, then, is even more important than planting in the valley and foothill districts.

Millions of dollars loss has resulted from unextinguished camp fires; carelessly-dropped matches and cigarette stubs; willful disobedience of law.

In future articles ORCHARD and FARM will offer specific suggestions on what, when and how to plant. We shall publish more statements and recommendations by public officials and experts. We shall use illustrations which will help to drive home this great lesson.

Truly, Nature offers nothing of greater monetary and aesthetic value to farmer or city resident than "A brotherhood of venerable trees."

Picture this same home place without arboreal adornment! How much the trees add to its actual cash value—not to mention the pleasure and satisfaction they give!

State Nursery Furnishes Trees

THE State of California has a beautiful little nursery near Sacramento where trees are grown for roadside planting. This nursery is the center from which the new, young trees you see along the highways have been distributed. Because of scant funds to maintain it, however, the future of the nursery is in danger.

Here are thousands of trees for roadside planting that they can be had at reasonable prices by public-spirited organizations, school districts, counties and the like, which desire to set out more trees on highways or school grounds. It is not the plan of the State to compete with private nurseries, but rather to provide trees at the lowest possible cost, for planting in public places.

If you are a member of a semi-public or a public organization which has a tree-planting program, get in touch with State Forester M. B. Pratt, State Capitol, Sacramento, and learn from him how surprisingly low are the prices at which the State Nursery will sell stock. Your order will help keep the nursery going in these days of economy.

Terrible forest fires are a National calamity. Every year they destroy timber sufficient to construct more than half a million bungalows. And 75 per cent of these disastrous conflagrations are due to human agencies!

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ORCHARD and FARM

THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of country and suburban editions of the
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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

CASH VALUE OF SHADE TREES

In Arcadia, fast-growing Los Angeles suburb with the romantic name, there are two acre lots equally desirable from a residence standpoint, as far as location is concerned. But one is priced at $500 and the other at $5000. A tree makes the difference. On one lot there is a magnificent live oak. The other lot is bare ground.

Only a tree! Yes, but there are many trees on home grounds valued by their owners at $500 each. Such trees may bear nothing but leaves, but they have a shade value, an esthetic and sentimental worth which scarcely can be measured in dollars and cents. If you don't believe it, ask the owner of some fine old shade tree what he would take to permit its removal.

CASH OR TRADE—TAKE YOUR CHOICE

With farmers and country merchants the cash-or-trade proposition is a bone of contention which no sooner is buried than it is dug up again and fought over, verbally, with redoubled ferocity. The former contends that the merchant is taking an unfair advantage of him in stipulating that pay for produce be taken in trade.

The storekeeper holds that there is no just cause for complaint, since the farmer always is given the choice between cash and trade. The cash price, however, generally is lower than the trading value, which is where the shoe pinches.

Farmers don't object to buying goods of the dealer to whom they sell their produce, but they much prefer "cash money" to store credit. Sometimes a farmer will accept a low cash price for his produce, then spend the money before leaving the store, although he could have obtained more goods by taking them in trade.

DON'T SELL THE HOME PLACE.

"Yes, during the period of war prices I was offered for my 55-acre orchard and home $190,000, which probably is $40,000 more than I could sell for now," relates a Santa Clara Valley pear grower.

"Nevertheless, I don't think I made a mistake in not selling. The crop then on the trees netted me $40,000. If I had sold at that time I should have had to pay a big income tax and another place of equal intrinsic value would have cost as much as I got for mine.

"One of my neighbors who was making good money on a small prune orchard sold his place for $17,000 and bought a bigger grove for $70,000 going deeply in debt. Prunes afterwards dropped from 14 cents to 5 cents and if the holder of the mortgage on the place chose to foreclose he could do so, leaving the owner with nothing.

"It generally pays to sit tight on the home place, resisting the temptation to sell out and speculate."

CO-OPERATIVES CUT PRICES

"The average farmer is too prone to cut prices when he plays the merchandising game," declares a northern California farm adviser, in explaining one of the reasons why a Farm Bureau Exchange failed.

"Members were not content to wait for future profits, but insisted upon reducing the price of everything they bought and raising values on what they sold. Buying a $40 plow for $35, or selling seed for 10 cents were the kind of operations that appealed to them.

"One difficulty of doing business on that basis is the impossibility of estimating in advance just what the cost of operation will be and the consequent danger of giving the member more than he is entitled to.

"The only way to do a safe, conservative co-operative store business is to buy and sell everything at market prices and then at the end of the year pay profits to members in proportion to the business they have transacted with the association."

COST OF ROADSIDE MARKETING

Carping critics who complain of the prices charged for county produce at the farm should consider the cost of roadside marketing. True, there are no high rents to pay and much of the other overhead of city retailing is absent. But it takes a great deal of the farmer's time to wait on and for customers [illegible]

City people regard shopping at a roadside market as something of a lark and take plenty of time to rest and refresh themselves, all of which adds to the expense of their purchases. Where a store or "stand" is maintained, the farmer or some member of his family must be on the [illegible] day and often far into the night to wait on customers. Many autoists do not hesitate to awaken the farmer at unseemly hours, in order to make some trifling purchase.

Even when no market is maintained and signs alone are depended upon to draw customers, the buyers often take a great deal of time looking over the garden and orchard, which adds to [illegible] time and expense.

"What's New?"—Keeping Abreast of Agricultural Progress

Dairyman Receives Heavy Fine

THE first prosecution under the provisions of the revised general dairy law, which became effective August 17, was directed against a dairyman near Lincoln (Placer County), who was convicted of shipping adulterated milk into Roseville and fined $150.

Inspecting Autos for Insects

DURING a single month, July, 11,463 vehicles were inspected for injurious insects at border California towns, according to Lee A. Strong, chief of the Division of Plant Quarantine and Pest Control. Eight hundred sixty-one lots of insects, most of them at Daggett, were discovered and destroyed.

Infested camp equipment is found almost every day. A large number of weevils were discovered in autos coming into the State from Nevada. Fifty-seven live beetles were taken from one machine and 60 from another.

Growers, Packers Pull Together

A NEW departure in marketing farm products recently has been taken by California olive growers. Members of their new association have pledged financial support to the packers' advertising campaign. The purpose of the latter is to find new markets for ripe olives.

Where a growers' co-operative marketing association [illegible] it is not unusual for farmers to advertise their product, but it is something new for them to dig up money to help dispose of a crop after it has been sold to dealers. The result will be watched with interest.

Creameries Are Co-operating

A REPORT received at the office of the California Department of Agriculture from State Dairy Inspector L. E. Nissen, located at Hanford, states that with one exception all creameries in the lower San Joaquin Valley are bringing milk and cream to the plants in individual containers in which it is placed by the dairymen, and that the cans are marked for identification. This makes possible fair treatment of all dairymen who produce good products and saves losses through the condemnation of cream with which poor cream may be mixed.

Accredit Half Million Chicks

SOUTHERN CALIFORNIA hatcheries having a capacity of a half million chicks have signed up for the Farm Bureau accrediting work, thus assuring the success of the project, according to George Masterson, chief inspector.

"The interest in this project has been phenomenal," reports R. W. Hodgson, Los Angeles County farm adviser. "All of the representative poultry breeders and hatcherymen of the seven Southern California counties undoubtedly will grade their chicks according to the classification of this project, which will result in a very marked improvement in the quality of baby chicks."

Losses of Non-Co-operation

SEVEN thousand tons of Oregon loganberries went to waste the past season for want of a market, according to the Oregon Growers' Association, which dried 3,500,000 pounds of the berries. As soon as the Association driers closed, dealers began picking up odd lots of evaporated berries at 20 cents a pound and selling them at 25 cents, which is said to be 5 cents a pound below actual values.

"Such methods only can result in injuring both growers and the Association," declares an official of the latter. "Irreparable damage is being inflicted upon hundreds of small growers who as yet are unorganized."

Wheat Yield Overestimated

ACTUAL reports from leading wheat districts show the wheat yield this year considerably under crop estimates.

The combined crop of Kansas and Nebraska is fifty million bushels below normal.

There is a strong indication that the grain growers, by preventing the annual autumnal dump through farm storage, will avoid further disaster.

There is an appreciably larger per cent of wheat being fed to livestock.

These are the general conclusions drawn from the first hundred and twenty-five wheat counties replying to a Farm Bureau questionnaire.

Farm Bureau Uses Radio

THE American Farm Bureau Federation is broadcasting agricultural information regularly from stations in Chicago and the Middle West. The Radio Corporation of America and the Westinghouse Company are co-operating with President O. E. Bradfute of the farmers' organization in perfecting the new service.

Mr. Bradfute, in announcing this innovation: "The possibilities of radio are almost beyond comprehension. It is our belief that before long the radio receiving set will be as common a fixture in the country home as is the telephone. The American Farm Bureau Federation intends to keep in step with radio developments and to provide a message such as the farm people want to hear in a voice familiar and welcome."

California Holsteins Lead

BASED on milk and butter-fat production records, California Holsteins head the breed in the United States, according to the Holstein Friesian Association of America. The number of points accredited to the leading States is as follows:

California, 1920; Wisconsin, 1528; New York, 1169.

Fred Hartsook, Los Angeles County, is credited with first place in his home State and second place in the Nation, with 275 points. Other breeders won the following number of points:

W. J. Hendon, Tulare, 226; Edgeford Holstein Company, Pasadena, 187; Santa Anita Ranchos, Los Angeles, 168.

California Livestock Menaced

THE normal development of a great animal industry in California is demonded upon restrictive measures to prevent diseased animals from crossing our borders, warns Dr. J. P. Iverson, Chief of the State Department of Animal Industry. "We are menaced by cattle scab in our neighboring States, and that most serious of all known as foot-and-mouth disease may threaten our livestock through Mexico, he points out.

"Confronted with these and other known menaces the California Department of Agriculture asks livestock owners to co-operate to the fullest extent with State and Federal officials in their efforts to prevent the introduction of such diseases into our State."

Circus Competes With Fair

AN interesting, if rather discouraging, situation arose in connection with the San Diego County Fair, which for the second time was threatened this year with serious competition from a circus scheduled to show in the Southern city shortly before the date set for the annual exhibition.

An effort was made by farmers, farm bureau officials and others interested to secure legislative action which would prevent the circus from "marking" San Diego at this time, but the city attorney's office advanced the opinion that the Council could not pass a regulatory measure preventing outside circuses or carnivals from showing in San Diego during the month of September.

The attorneys held that such action would constitute a special privilege extended to the fair.

Potatoes Fed to Livestock

FULLY 500,000 sacks of potatoes were fed to cattle and hogs in the Montrose district of Western Colorado last season. This means that approximately 50,000,000 pounds of a product grown for human consumption was turned into beef and pork in one county.

Growers who had some 15,000 acres in spuds and could not market their product, profitably, learned by this experience that livestock affords a valuable market. Not only may culls be disposed of in this manner, but also first class farm products which because of overproduction or lack of proper distributing methods otherwise would be wasted.

One farmer who fed 146 tons of cooked potatoes to cattle, along with alfalfa hay, reported excellent results. Another farmer fed 100 head of hogs for 112 days on cooked potatoes, corn and alfalfa and reported economical and satisfactory gains. Livestock raisers paid only 10 to 25 cents a hundred for the potatoes, but growers who fed their own product secured much greater returns.

Reveries of a Rhymster

By JASON WELLS

HIS clothes are quite the latest; his manner, debonair.
Cravat? It's up-to-date! And neatly glossed, his hair.
No, mother, he had manners so far above reproach,
He'll discuss intelligently any topic you may broach.
Personality? He has it. But he fills me with dismay.
For my dog resents his presence, and the children draw away!

IN this age of rush and hustle, when the dollar is the thing—
When we have to dig and rustle, and each must have his fling
It's hard to judge the people that we deal with every day.
The moral code's elastic; many stretch it all they may!
But I will boast a fellow and pronounce him a good scout,
If the dogs and kiddies like him—and follow him about.

HIS clothing may need brushing; his chin demand a shave;
He may be dubbed a failure in the marts where traders slave.
Perhaps he finds it difficult to put his thoughts in words,
He may know less of manners than of trees and flowers and birds.
But I'll trust him with my money and back him, sink or swim,
If he loves dogs and children—and they make up to him.

This Orchardist Uses Tractors; Loves Horses

Ventura County Fruit Grower Who Likes and Advocates Livestock Derives Pleasure and Profit by Practicing What He Preaches

HORSES and hogs have a prominent place on the ranch of Fred Noble, Ventura County walnut, apricot and citrus grower.

He is an exception to the general rule that orchardists do not care for livestock. Some fruit-producers, to be sure, keep stock in order to maintain fertility, but Noble just naturally likes to have animals around especially horses. Incidentally, of course, his groves and fields yield with increasing abundance.

Fred Noble is a member of the old school, but with the latest ideas in cultural practices, marketing and living. He averaged last year a ton to the acre of walnuts; he is prepared to dry his entire apricot crop if desirable; he gets part of his entertainment by radio.

Of his 124 acres, 35 are devoted to Placentia walnuts and 80 acres to apricots, half interset with walnuts. Ten acres have been set to Valencia oranges, and alfalfa occupies 35 acres.

"We need work animals anyway for handling the alfalfa," explains the owner, "and since we prefer mules for the farm work, I keep a few horses for my own satisfaction."

Two of the horses are pensioners which, as Noble explains, have "earned the right to a happy old age."

PRINCE IS WISE HORSE

But the pride of the ranch is "Prince," Mr. Noble's saddle horse, considered one of the best-trained cow ponies in California. He has refused $700 for this animal, a fine, intelligent gelding, wise in the ways of the range, and perfectly trained for roping, herding and "cutting." Carrying his owner's beautiful silver-mounted saddle "Prince" is a delight to the eye of the horse lover. That he is a "wise" cow-horse is further shown by his happy choice of an owner!

It should be understood, however, that Noble has not overlooked the value of the tractor. In fact, he has two of them. But his contention is that on a diversified ranch the ideal power combination includes both engines and animals.

The horse versus tractor argument has so many different angles, he contends, that there is no solution applicable to all conditions. "It depends upon the man, the ranch, the products and other factors," Noble points out. "We got to the point in cultivating where we had either to trim our trees higher or use a small tractor, as the horses could not be handled satisfactorily close to the rows. But we still have plenty of use for work animals.

"In the matter of depreciation, mules or horses may have the better of the tractor. At six years of age, well-cared for animals will have depreciated 15 per cent or even less, whereas the tractor, likely, will be about worn out. Then, too, a team will produce in this period of time at least eight tons of fertilizer—including the bedding and waste hay—a valuable item from the viewpoint of the fruit grower.

PREFERS A COMPROMISE

"On the other hand, there is always danger of disease, injury and death among farm animals; a factor which, perhaps, is not entirely offset by possibilities of breakage of machinery. Yes, it's an endless argument and I think the best answer is a compromise, such as we have worked out. I should hate to carry on our farming operations without either the mules or the tractors!"

In addition to his work stock, Noble has some Duroc Jersey hogs in which he takes great pride. His boar, "The Chief," is an outstanding individual of great size but smooth body. The sows represent such well-known blood as Defender, Orion, Cherry King, Buddy, King of Colonels and Defender. But instead of selling breeding stock, Noble has given away no less than 15 animals to neighbors and friends whom he wanted to interest in the breeding business.

"I realize," he explains, "that permanent agricultural prosperity must be based upon diversified farming and that our fruit districts must have more livestock, not only for direct profit, but also for maintaining the fertility of the soil. By establishing a breeding center here, I hope to increase the general prosperity, and this, of course, will be reflected in higher land values and better living conditions for all of us."

This public-spirited and far-sighted attitude is characteristic of the man, who is applying to his present business some of the principles which brought him success as a former official of a big sugar refining corporation.

"The corporations," Noble admits, "have been the subject of much criticism, some of which is justified, but farmers and fruit growers as a class are inclined to overlook the value of corporation methods, as they can be applied to their own industry.

Fred Noble riding his favorite mount, "Prince," a famous cow pony.

"The big co-operative marketing organizations are to the farmers what the corporations are to the commercial world, and every producer should support them."

SUPPPORTS CO-OPERATIVES

Noble is a member of both the California Walnut Growers' Association and the Prune and Apricot Association, and when his citrus fruits are in bearing, no doubt will handle his product through the Exchange.

"True, some of the associations have got into trouble recently," he admits, "particularly the prune and apricot organization. But it is the fault of the members. They should take more active part in the management. Whenever local meetings are held, all resident members should attend, and every one should make it a point to know what is going on at the main office. As a matter of fact, most of us are inclined to leave all problems to the management. The spirit of 'Let George do it' is what brings catastrophy upon the heads of our co-operatives."

Not only orderly marketing, but good business practice also is exemplified in the manage- (Continued on Page 10)

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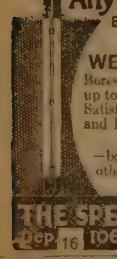

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Producing $200 Mohair Fleece

Big Prices Paid for Product of Long-Haired Strain of Angoras—Profitable Industry Being Developed

By O. H. BARNHILL

THE average stockman shears a goat or sheep once or twice a year and sells the fleece for $3 to $5; Mrs. F. A. Pierce, Humboldt breeder, waits two years longer and gets $200 for the crop of mohair from one animal.

As the darkey would say, it's "mo' hair," all right, weighing twenty pounds or more per fleece and measuring two to three feet in length. Such hair brings $2 to $20 a pound, and is used largely for making switches.

"Mercy!" exclaims milady, who is losing her natural head covering and is looking for a substitute. "Think of wearing goat hair!"

"Yes, and think of wearing a Chinaman's queue," returns Mrs. Pierce. "Me for the goat, every time. Lots of women are wearing mohair and don't know it. No wonder—it's so fine and wavy, with a beautiful silk luster."

No, this isn't a hot air fairy tale from far western forests, but an honest-to-goodness story of the possibilities of the long-haired goat industry. All goats won't grow long hair, not even all Angoras; just as all persons haven't the tendency to produce lengthy beards or tresses.

ALL GOATS DON'T SHED

Most goats, if not shorn, will shed their hair once a year, usually in the spring, after they begin to eat grass and other green feed. There are certain strains, however, that retain their coat from year to year. Of course when the hair gets unusually long it must be cared for carefully, else much of it will be worn out and pulled off.

Very long mohair is braided and the ends of the braids tied together over the animal's back, to prevent their dragging on the ground. Yes, the owner of the hair gets pretty hot in the summer (some women with long, heavy hair can imagine how it feels)—but, as Mrs. Pierce points out, goats don't suffer from the heat as much as fat hogs, which sometimes die from overheating while being shown at fairs.

"No, we didn't exhibit our stock at the State Fair this year," replied Mrs. Pierce, in answer to an inquiry.

"You see, it was this way," she explained, tying up two magnificent braids over the back of a big buck. "The milk goat breeders asked to have bucks omitted from the premium list, because the disagreeable odor of these animals gives visitors a bad impression. The fair management thought it wouldn't look right to admit Angora bucks, even if they lack the unpleasant smell, while excluding milk goat bucks.

"And yet," continued Mrs. Pierce, "the milk goat breeders were offered more than $1000 in premiums and the Angora people only $50, although there are probably ten times as many mohair goats in California as there are of the milk breeds. Instead of getting ten times as much prize money, Angoras were offered only one-twentieth as much. Is that justice?"

WOMEN LIKE GOAT WORK

The Pierces keep twenty-two pure-bred Angoras on their "ranchette" at Freshwater, six miles from Eureka. Mr. Pierce and his son-in-law, J. R. Taylor, work in the city, while Mrs. Pierce and daughter, Emily, take care of the goats, thoroughly enjoying the work.

A yardstick was necessary to measure Lebou's mohair, the longest of which is twenty-nine inches in length. "Will it get any longer? Land's sake, yes," affirmed the goat lady. "Mohair grows an inch a month, on an average. At the Panama-Pacific Exposition we showed a goat, "Dodo," with the longest mohair ever grown—forty-one inches. It was about forty-three inches long when we cut it off.

"That fleece sold for $372, so you see $200 is by no means the top price for a mohair clip. Counting prizes and other things, Dodo earned us $800.

"We sell all our long hair to L. Leoussove, a New York dealer. Ordinary mohair is shipped by our association from Portland to mills in New England, where it is made into fine suitings, plush and upholstering."

Mrs. Pierce has dozens of fine samples of mohair products, sent her by the firm which buys her Angora fleeces. Good mohair brings 50 cents to $1 a pound, the latter being the price of fine kid hair. Poor stock sells down to 30 cents.

COAST GOATS YIELD WELL

Two and one-half to three pounds is the average weight of Angora fleeces in Texas, the greatest goat State in the Union, but blooded stock in Humboldt County shears six pounds. One 2-year-old fleece weighed 19 pounds, the hair being two feet long.

"Climate and good breeding make the difference," Mrs. Pierce explains. "We believe the California coast counties constitute the finest goat country in the world. There are more Angoras in this State than in Oregon, where we were in business for several years in the Umpqua Valley."

Mrs. Pierce and "Lebou," whose fleece measures 29 inches and is still growing at the rate of an inch a month.

The Pierces have 120 goats at Shower's Pass, 75 miles from the coast. These animals are cared for by G. W. Jordan for half the increase. Their range is kept in first class condition by burning out the underbrush, which not only gives the grass a better chance to grow, but also makes it easier to protect the animals from coyotes, their greatest enemy.

CONTROLLING GOAT ENEMIES

Since Government hunters have been making war on California coyotes, this menace to the sheep and goat industry is much less serious than formerly. Lice are controlled with sulphur dip. Where Angoras are kept in an orchard, the trunks of the trees are protected by painting them with a solution which tastes bad to the goats, but does not injure the trees.

Mrs. Pierce is a great booster for Angoras and all their products, including "chevon," the new name for goat meat. The latter often is sold for mutton, which it greatly resembles, but has a gamier flavor.

"Along with calf clubs, why not have goat clubs?" Mrs. Pierce suggests. "Angoras are more profitable than calves, make better pets and are easier to keep. In fact, they are such good rustlers and are so healthy and hardy that they often are underfed and neglected in other ways. While a goat will stand a lot of abuse, no animal will more richly reward good treatment."

Humboldt Heads Cleanup

I. T. SMITH, Humboldt County dairyman, has the largest accredited tubercular-free herd of Jersey cows (50) in the State, according to Dr. A. G. Boyd, State veterinarian, who recently made the annual test of Smith's animals.

J. W. Coppini, a neighbor of Smith's and another Jersey breeder, was the first California dairyman to submit his cows to the Federal test and has the first accredtied herd in the State.

TREE DOCTORS TO BE LICENSED

In order to check the activities of uninformed, itinerant "tree doctors," and also to protect legitimate tree surgeons, plant pathologists and others who treat tree diseases, Los Angeles County has drawn up plans for examining and licensing such operators through the office of County Horticultural Commissioner Ryan.

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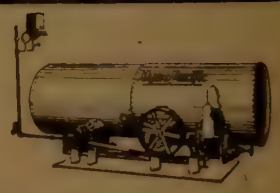

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HOME FARM HAPPENINGS

By ONE OF US

THE BIG HORSE WINS.

John is very happy. The big horse won first in the class for four-year-old draft geldings at the State Fair. Now John knows he is a good horse.

What we should have is some more big mares with which to do most of our farm work, and to raise good colts every year.

In a ten-year period the money these colts would bring would make a very considerable sum and pay a lot of wages—or some interest, perhaps.

PHILLIP WINS WITH LAMBS.

George Phillip, University Farm shepherd, won the Hardy Packing Company cup for the best pen of fat sheep—also champion pen of all breeds or crosses.

Prof. Frank Kleinheinz of the University of Wisconsin, who bred the ram that sired these lambs, and who said it was the best he had ever produced, will be claiming some of the credit for this triumph when he hears of it.

Frank has never been able to sell his book on sheep raising to George Phillip and some of the other Scotch shepherds who win regularly at the shows, and he wonders how they can fit sheep so well without reading that book.

RICE RIPENING FAST.

The rice crop is ripening fast in the Sacramento Valley.

The weather during the early part of the season was cold—and the rice growers were considerably alarmed but later weather conditions were more favorable.

Tom DeGarmo had his crop all cut and some of it ready to thresh by the middle of September.

The Japenese disaster has strengthened the rice market: is cleaning up all rice in the warehouses, in fact; and the price offered for the new crop is around $2.75 to $3 per hundred, according to reports. This is adding considerably to the good feeling of farmers, merchants and every one in this part of the country, although they would have preferred to have the market strengthened by some other means than the terrible Oriental disaster.

PRUNE SEASON EARLY.

Prunes ripened a month early this year. Whether this—with the competition of other fruit harvests at the same time—made the labor situation unusually bad, is a question.

At any rate all of us in this section of the Sacramento Valley had at least as much trouble as usual—most of us more—getting the fruit picked fast enough.

It took regular excursions from the Sacramento employment agencies to keep anywhere enough pickers on the job.

Makes one think the best thing to do is to turn these good orchards over to Japanese on some "evade the law," labor-share proposition. For the Japanese can get labor—plenty of it—when they need it, and when they are financially interested in the crop.

It makes one wonder what is to become of that part of the white race in California who pretend to work for a living.

CHARLIE PAINE AND THE BABIES.—"I want some man who knows a lot about children to come with me for a minute, and you are that man," said Charlie Paine to me one day at the State Fair.

Now as every one knows, Charlie is just about the busiest person on earth during fair time—as well as being one of the best fair secretaries in the world.

"You know a lot of women with small children like to come to the fair, but when they have to look after the youngsters all day, they are so tired out they simply stay away," he said as we walked over to the woman's building.

"So we figured that we should have some place where the babies and little children could be cared for, so as to give the mothers a chance to see the races and enjoy the exhibits."

And Paine certainly accomplished this object to perfection.

It was one of the good hot days of the fair, yet in a comfortable part of the building were dozens of babies—almost all of them perfectly nude but all happy and well cared for.

Next to this building was a big playground for children a little older—all in charge of a competent nurses and just as well or better off than they would have been at home.

Proud as he is of every other part of the fair, I should say this section was Charlie's particular "pet division."

Can Johnson Grass Be Killed?

Arizona Agricultural Official Discusses Wide Experience in Fighting This Pestiferous Enemy

By H. C. HEARD

County Agricultural Agent, Phoenix

IN discussing weed problems, a recent visitor from South America remarked with feeling, in badly broken English: "And we have another weed in my country. It is bad, ah! very, very bad. I do not know what you call him in English, but we call him Sorghum Halypense."

Evidently, therefore, Johnson grass is respected in Peru sufficiently to be called by its scientific name. When asked as to Peruvian methods of control, our informant said they plowed Johnson grass dry for three years. Fortunately the Johnson grass of the Southwest is not so tenacious of life, although its vigor is well respected.

Great wealth has been wasted in efforts to rid farms of this weed; primarily because of failure to understand the nature of the plant. After all, Johnson grass is quite easily eradicated, although at the expense of a great deal of vigilance and probably about as much money.

The rootstocks of Johnson grass are responsible for the remarkable persistence of the plant. These rootstocks are the storage places of elaborated food, and are capable of sending up new growth whenever anything disturbs the equilibrium of the plant.

"FOOD HABITS" EXPLAINED

This new growth does not come from any ability on the part of the rootstocks to assimilate food matter from the soil, but is built wholly on food matter already taken in by the fibrous roots and digested in the leaves. It must be the sole support of the plant which has had the top cut off until new leaves can be established.

The food matter in the root stocks thus is borrowed for the time being, and anyone acquainted with the plant will testify that the rootstocks demand immediate repayment with good interest; hence, new leaves are put out quickly and soon begin to restore the borrowed food matter from the rootstocks. Therefore, the prime factor in ridding land of Johnson grass by cultivation consists in cutting off the tops of the plants so frequently that there is not sufficient time allowed for the restoration of elaborated plant food in the rootstocks.

The application of this principle permits of several different schemes of eradication. Possibly the quickest and most effective method is overgrazing with sheep. Enough stock must be put on the land to keep the weeds eaten down to the surface of the ground. Consequently, not much feed is produced and supplementary feeds must be added to keep the sheep alive.

Therefore, this method is not as economical as it would seem at first thought, but it is effective, and the farmer eradicating Johnson grass via the sheep route need have no concern over a labor shortage. Heavy pasturing with cattle or horses also may weaken the Johnson grass rootstocks to a point where the weed is eradicated easily by cultivation.

COTTON AS AN ALLY

Johnson grass eradication fits in very well with an early spring-planted crop, such as cotton, which may be seeded at such a time that it germinates and begins growth as soon as does the Johnson grass.

When this scheme is to be used the land should be plowed in late fall or early winter and worked thoroughly with a disc, spring-tooth harrow, or alfalfa renovator.

In this manner many rootstocks will be killed by exposure to freezing weather at the surface of the ground in sections visited by killing frosts or will be broken up into smaller pieces, each of which may be exhausted quite readily by later cultivation.

If Johnson grass rootstocks are to be broken up into smaller pieces, the necessity for complete and rapid extermination methods is more obvious. As soon as possible after the crop is planted, cultivation should begin, and cultivators should be equipped with narrow, sharp shovels which should be run at the greatest depth possible.

Later, sweeps may be used at the bottom of the mulch thus formed, while the weeds in rows should be hoed deeply. The important factor in this method of eradication is deep cultivation, so frequently applied that the Johnson grass does not have an opportunity to establish enough leaf surface to replenish the rootstocks with elaborated food.

The length of time it takes to rid a field of Johnson grass by this method, thoroughly applied, depends, of course, upon the vigor of the rootstock, but in any event eradication may be accomplished in a season.

Another scheme which oftentimes is responsible for practical eradication of Johnson grass consists in keeping land moist during the late summer months when the weed grows most luxuriantly and plowing three or four times at a depth which will expose as many rootstocks as possible. While this method does not always entirely eradicate Johnson grass, it renders subsequent treatment much easier.

Waste in futile attempts to eradicate Johnson grass has been due primarily to shallow cultivation, infrequently applied. Oftentimes the operator of a large acreage of infested land, goes a long way toward eradication and suddenly finds himself faced with an inadequate supply of labor. As a result the weed is allowed to grow to a considerable height, by which time it has replenished much of the matter taken out of the rootstocks at great cost.

It is better, therefore, in many instances for the operator to plan Johnson grass eradication on a small acreage, while the weed on the rest of the farm merely is kept under control.

When land is once cleared of Johnson grass it may easily be kept from becoming foul again. Rootstocks are not developed on the seedling plants until about the time they are in the boot stage, or practically knee high. Prior to this time a Johnson grass plant is as easily killed as any other fibrous-rooted plant; hence, a little diligence and understanding of the nature of the grass will prevent its becoming a nuisance on land which is cropped annually.

Cost of Orange Production

THE cost of growing oranges on a San Bernardino County ranch, as reported by Farm Adviser H. J. Wilder, was as follows:

COST PER ACRE—1922 CROP

Fertilizer	$106.00
Irrigation water	19.35
Pruning	19.35
Team work	29.22
Irrigating labor	10.84
Hauling prunings	1.00
Hoeing under trees	1.12
Fumigation	19.35
Picking	32.91
Hauling fruit	12.58
Interest and taxes	201.58
Total	$453.30

Field boxes per acre, 501.93

Cost per box, 90 cents, or 2 cents a pound.

Reclaiming Salt Marsh

A LARGE body of marsh land near the mouth of Eel River is being reclaimed by a Humboldt multimillionaire. Dykes have been constructed to keep out the tides and ditches dug to carry off surplus. The age-long accumulation of ocean salt is being washed out by winter rains, which are sufficient in one season to cover the ground with water three to four feet deep.

An extensive acreage of similar land near the mouth of Mad River has been reclaimed by similar methods and is now used for intensive dairying.

TOO MUCH SPREAD IN PRICES

At a Senate hearing in Washington, when wheat was high, it was shown the farmer received $8.37 for the wheat in a barrel of flour, which the miller sold for $12.50, the baker for $58.50 and an Eastern hotel keeper as bread, for $587.

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PROFITABLE POULTRY and COMMERCIAL EGG PRODUCTION HATCHERY EGGS [illegible] Off every week. Also [illegible] Eggs [illegible] Ancona [illegible] Rock Reds Minorcas White Leghorns [illegible] Ducks

Soil Augur in Alfalfa

IT IS not unusual to find in established alfalfa fields areas where the stand seems to be perfect, yet where the plants do not make satisfactory growth.

Believing that such a condition existing on my ranch indicated the necessity for subsoiling, I made borings with a soil augur here and there in the dry spots just before the last cutting of hay.

Several of these small augur holes now are surrounded by circles of vigorous, dark green alfalfa. It will be interesting to observe whether these small holes, by permitting penetration of the water, will have any permanent effect and how far from each hole the plants will be benefited.

It seems evident that subsoiling is needed in this field. But experience has shown that alfalfa on "tight" soils often improves greatly in time as the roots spread and loosen the soil.

If alkali is present, drainage may solve the problem by permitting the water to wash out the injurious salts—or an application of gypsum or other chemical may prove beneficial.—TULARE FARMER.

Hoboes Blame Automobiles

HOBOES are complaining that since autos became cheap and plentiful it is hard for an honest tramp to get the right kind of farm work.

"We see our finish," declared a 'knight of the road' recently. "It used to be in the busy season that before we could walk to town some farmer would hold us up and take us home with him, where we would be given a place to eat and sleep, as well as good wages, in return for whatever work we could to do.

"Now even farm-hands own autos and live in town. Each morning a bunch of them will load up a machine and drive out to a ranch, where they will work all day and then drive back to town in the evening, boarding and 'sleeping' themselves.

"It's fine for the farmer and especially for farm women—but what's a poor hobo going to do?"—D. J. WHITNEY.

Army Explosives Available

A WASHINGTON, D. C., news dispatch states 18,000,000 pounds of sodatol, a war-time explosive, made by mixing TNT and nitrate of soda, will be distributed by the United States Government for road building and land clearing purposes.

It is said this material can be used in all open-air blasting operations and will not stain the hands or cause headache, while it is comparatively safe if handled with ordinary caution.

Distribution will begin in Wisconsin about October first. Later shipments will be made from western points, including Louviers (Colo.) and Du Pont (Wash.) Information may be obtained from the U. S. Department of Agriculture, Washington, D. C.

Artist Chooses Hogs

(Continued From Page 2)

breeding principles he has developed in connection with the hogs.

While the Shorthorn herd is on established business basis, the question of an immediate financial return from the hogs has not been considered. Mr. Underhill has used his hogs in order to prove that by the application of certain methods the whole problem of industrial animal breeding may be clarified and simplified.

To quote from an experienced breeder and biologist, Dr. H. K. Stockwell of Monroe, Washington: "It is quite impossible to estimate the enormous advantages that would follow the general adoption of the methods that Mr. Underhill has used. It is not too much to say, I think, that he has made it possible to revolutionize the breeding of domestic animals; to eliminate the guesswork of animal breeding and to substitute a proven method which will operate with almost mathematical precision."

Underhill says frankly that while he deeply appreciate, Dr. Stockwell's tribute, he is not prepared to make a positive statement at present, as he considers it will require at least two more generations to furnish positive proof. In the meantime he will be glad to discuss the subject personally with any breeders who may be interested.

Any one less imbued with enthusiasm and determination might have been discouraged by the expense of the Underhill project. To reduce his foundation stock to three or four animals as he has done twice, and to discard animals bought at very high prices, was a procedure certainly dictated by something more than purely selfish motives.

And no matter what the outcome, those interested in the development of purebred livestock should feel a debt of gratitude to this man who has devoted his learning and his means to the advancement of scientific breeding.

Facts About Farm Hay Racks

A MOST convenient and useful hay-rack is made in two parts, the bottom constructed in wagon-box fashion,

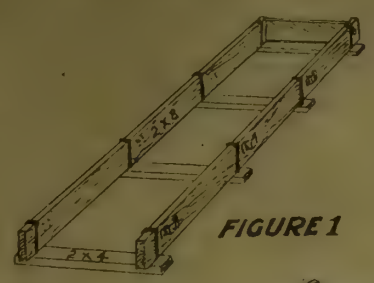

FIGURE 1

FIGURE 2

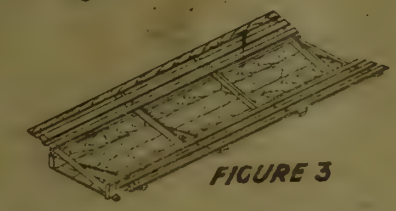

FIGURE 3

and the wing sides capable of supporting a wide load of hay.

is used for hauling loose of grain and all sorts of heavy farm freight the year around, while the wing sides hang under the shed until hay or straw-hauling time.

The illustrations show two ways of making the bed—the wrong way and the right way.

Figure 1 shows a rack bed that will ruin the felloes of the front wheels of the wagon when cramping the wagon in turning. I am showing it as a horrible example because many racks are made with just such a projecting cross-piece. The irons also are wrong because they are placed square across the bed stringers, and the bolt holes, being in line, often split the cross-pieces.

Figure 2 has the iron supporting stirrups placed at an angle so the bolt holes are dodged. They are fastened in pairs, as shown, so the twisting strain is adjusted to prevent one side of the rack from crawling ahead of the other side.

The front end of the rack bed is held together by the front end piece with two cross rods at the extreme front. The bottom boards are supported by ¼-inch rods, headed at the upper end and riveted against a strip of band iron placed crosswise of the rack under the floor boards.

The band iron may be heated and bent up on the inside of the stringers, as shown in the drawing, but this is hardly necessary unless the rack bottom is to be used for hauling stone.

The object of making the front end of the rack bed in this way is to facilitate turning without injuring the front wheels of the farm wagon.

The tailboard may be hinged or put on with cross rods or cleats.

A hay rack should be 16 feet long and 8 feet wide. The lumber should be tough and straight grained. The rack should be painted in the rough. Dressed inch boards are not strong enough for the hay rack. The bed pieces should be full two inches in thickness.—HERBERT A. SHEARER.

ALMOND MARKET IMPROVING

Bullish effects are anticipated as a result of damage to the Spanish almond crop and the revolution in that country, according to the California Almond Growers' Exchange, which advises non-members not to sacrifice their tonnage but to take advantage of any advances which may result in stronger domestic demand.

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32x4	3.00	1.40	36x4½	4.25	1.65
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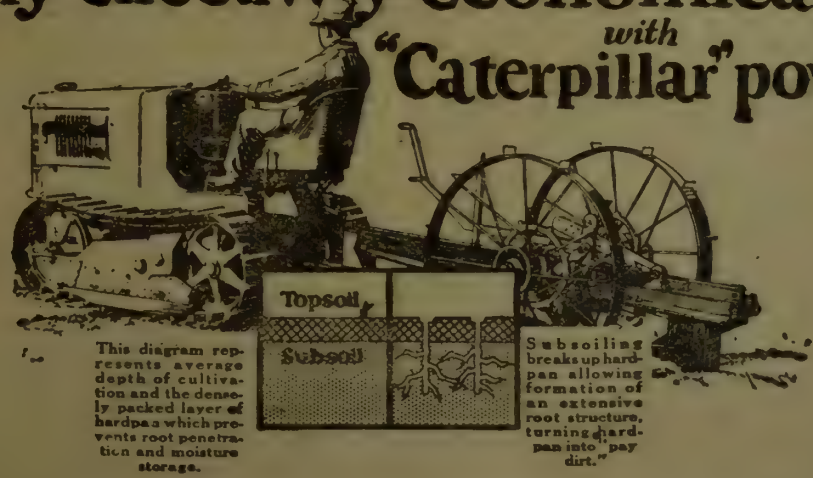

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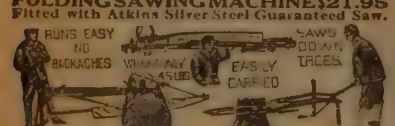

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Dairyman Solves Labor Problem

Tulare County Milk Producer Makes Substantial Gains by Using Modern Machinery

THAT dairying is drudgery only to those who make it so, is indicated by the experience of Robert T. Curtis and son on their river ranch a dozen miles east of Visalia (Tulare County).

Those who are willing to do their own work, and who get pleasure out of doing it properly usually make a safe, substantial and comfortable living from the business of milk production.

Why is it, then, that with butterfat bringing good prices and the market for most fruits and other farm products sluggish, good dairy cows may be bought at such comparatively low prices? One answer is that many persons will not enter the dairy business because of the long hours and tedious work involved; a big factor is the help problem, which in some cases eats all the profits.

Unsatisfactory hired help, likewise, increases the difficulties experienced in operating labor saving machinery, such as milking machines. But where the owner and his family do the work and handle the machines, results as a rule are very satisfactory.

MILKING MACHINES SPEED WORK

By using machines, the Curtises milk 25 head or more in 45 minutes, at the same time feeding the calves and hogs. A fair day's work in the fields, therefore, may be done between milkings.

All feed is raised on the ranch, comprising 50 acres of bottom land, and a total of more than 60 head of Holsteins, young and old, are kept.

The animals are in fine condition and the entire farm reflects prosperity and contentment. No hired help is required for either dairy or farm.

During the three years that milking machines have been used, not one quarter has been lost on a cow.

Here is the method followed on the Curtis farm: The cows are driven in from their pasture, put in the stanchions and fed. An engine is started which runs both separator and milking machine, and the work begins. Mr. Curtis looks after the milk, separates it and feeds the calves, while Curtis junior runs the milking machines.

A few minutes after milking is completed the milk is all separated and both the machines and separator are cleaned and ready for the next period.

At the present time 20 cows are giving 80 gallons a day and an average of a pound of fat per cow. What skim milk the calves do not use is fed to pigs, which bring in on an average of $40 a month, although, of course, they get other feed besides milk.

ALFALFA IS STAPLE CROP

Most of the ranch is in alfalfa, used mainly for pasture, although about 40 tons of hay was put up last year. When cool weather comes in the fall and alfalfa stops growing the fields are cultivated lightly and barley is sown in the alfalfa, so that before long the cows have good barley pasture; in fact, they have green feed in the fields practically all year.

Otherwise the big thing is corn, fed both green and as silage. When the soil is right this river bottom land produces great corn—14 to 16 feet tall. It is planted thick for silage and fodder purposes. This year 16 acres was planted, and Curtis started to cut it to feed green on June 20. He will have enough to keep on feeding until frost kills it, besides filling a 150-ton silo.

The two men cut the corn and fill the silo alone, putting in about 8 tons a day, in addition to doing the milking and other chores.

What follows has nothing special to do with dairy methods, but relates to some interesting observations on breeding in the Curtis herd.

Whether sex in calves is a matter of luck or the nature of the parents is often discussed. Much is to be said on both sides, but experience on this dairy indicates that the sire is very largely responsible for sex.

EXPERIENCES IN BREEDING

Several years ago when grade cows were kept, a purebred bull was purchased and out of 20 calves that he sired, 19 were heifers. They were not very good heifers, however, so he was sent to the butcher and another purebred bull purchased.

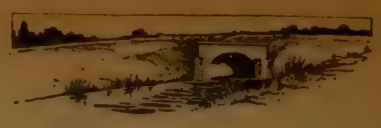
About this time the firm was getting rid of the grades as fast as convenient and buying purebreds, so many of the calves dropped in the dairy were sired by outside animals, but out of the 70 calves coming while this bull was being used, only 15 were heifers and quite a few of those came from purchased cows which had been bred elsewhere.

The stock was good, but there is no money in a purebred dairy where no heifers to speak of come along, so this bull also had to go. He was replaced by King Prilly Mead, son of Betsy Lamb Prilly, a Morris cow widely known both as a producer and as a show animal.

Almost without exception his offspring have been daughters and top notch animals, too. Purebred dairying pays in a combination like that. The cows, if worthy of their pedigrees, produce heavily and the daughters at three or four months old sell for more than a first class mature grade dairy cow.

An interesting thing about King Prilly Mead in this connection is that his mother never gave birth to anything but sons and at least one of his brothers, herd bull of Frank Helm, is said to be like his brother in getting daughters every time.

It is often said that sons resemble their mothers, and daughters, their fathers. If this is so, the prepotency of Betsy Lamb Prilly seems to have gone into at least two of her sons and in turn to have been passed along to their daughters.—TULARE FARMER.



Drainage Important

By GEORGE R. McLEOD

Agricultural Dept., Sperry Flour Co.

PROPER drainage of the soil is one of the most important factors in the yield and quality of crops, and one not generally appreciated in California.

The question is often asked why the yield and quality of wheat vary so from year to year. Small crops of poor quality generally are attributed to worn-out land, deterioration of seed or climatic conditions of the season. But many who have studied these problems carefully believe that in most cases the popular and everready theories are incorrect and that poor quality and small yields are due largely to poor drainage. Of course, the best seed obtainable always should be planted.

Actual experiments on heavy clay lands have proved that by proper drainage yields can be doubled in seasons when rainfalls are excessive.

A yield of sixteen bags per acre was harvested on that portion of a farm that was properly drained before planting, while the yield was only eight bags where the land was not drained.

Natural creeks and waterways that carried off the excess rain water from grain land in the past have been scraped in and plowed over so that heavy farm machinery could pass over them easily.

Grading for highways and railroads, as a rule, retards natural drainage. And last, but not least, many fields have been plowed in such a manner that well defined levees have been formed which do not allow excessive rain water to drain off properly.

In many cases a study of the levels of land has shown that by the expenditure of a few dollars a tremendous improvement in drainage conditions can be effected. Drainage should be arranged for before planting. The result should be larger crops of better quality and a profit even at present prices.

Co-operative Marketing Book

A 365-PAGE book, "Co-operative Marketing," describing and analyzing more than 100 farm organizations, has been published by the American Farm Bureau Federation, 58 East Washington street, Chicago, and may be obtained from the Department of Information for one dollar, post paid. The author devotes several chapters to a discussion of the California co-operatives and their methods.

ALMOND MONEY BIG FACTOR

In the first year of operation of the California Almond Growers' Exchange, the total tonnage handled by the co-operative was valued at something like $300,000. The value of the 1923 crop will amount to approximately $3,000,000. The Exchange has more than 3200 grower members and will market close to 50 per cent of the almonds of the State this year.

Noble Loves Horses

(Continued From Page 5)

ment of the ranch. Noble knows how to buy as well as sell. One example of money saving was the purchase at $40 a set of U. S. Army harness, which would have cost at least $120 if acquired through the regular retail channels. The buildings are not "fancy," but are designed with a view to economy and efficiency.

For the horses and mules, their harness, saddles, grain and hay, Noble designed a barn which has many practical and interesting features, as indicated in the accompanying diagram.

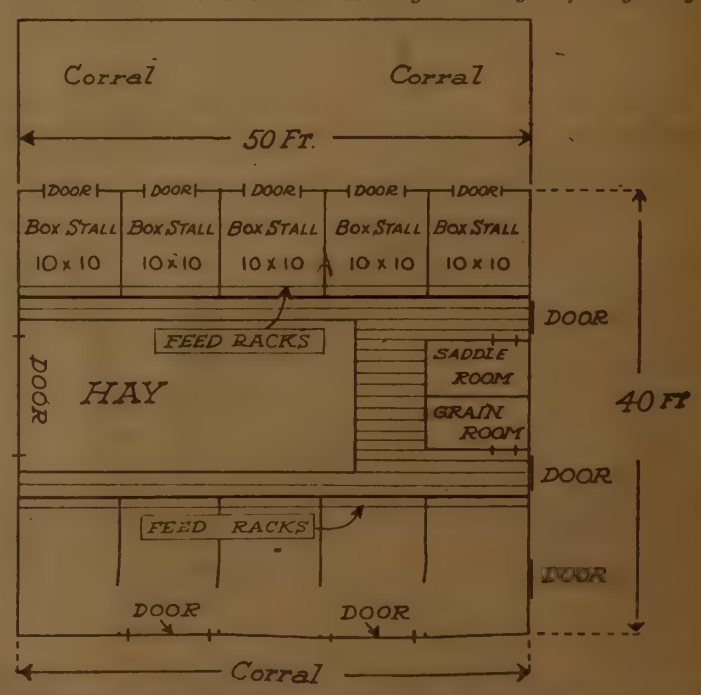
Mr. Noble has seen many interesting changes in rural California since his boyhood days near Corona, then a frontier town, scene of frequent Indian outrages. He recalls the first sale of farm land at $100 an acre, when the buyer was called a fool for paying such a price. That same land now is worth $1000 or more.

The present Noble ranch, of course, produces good interest on a valuation much in excess of that figure, and its development, one might say, has only begun. But we do not expect ever to find it a "show place," devoted to unnecessary frills and furbelows. Fred Noble is first of all a business man—but he has the big heart of the big West knows how to get the most out of life, and, we are sure, will always find a place on his farm for good livestock.

GOOD SIRES INCREASE YIELD

Since the first pure bred bull association was organized in Douglas County, Minnesota, fourteen years ago, the dairy products of the county have more than doubled in value and many cows now are producing 200 pounds butter fat per year more than their grand dams.

Below is floor plan of Fred Noble's barn. In an area of 40x50 feet, space is provided at one side for five work teams and at the other for five animals in box stalls. A large tonnage of hay may be



stacked in the center. A rat-proof grain room adjoins the harness and saddle room at front. Mangers and grain boxes are conveniently reached from the inside, facilitating the work of feeding.

PETUNIAS, PRUNES AND PETS

Acres of Petunias—New Prune Picker—Goats Are Pets

ONE of the most beautiful sights in this State, in fact, one which calls flower lovers from all parts of the globe, is a great field of beautiful petunias grown by the Shepherd-Francis company in Ventura County.

Mrs. Francis, who discovered the finest and most perfect seed-producing double petunia in the world, works with the petunia constantly, always seeking to improve. Last year she pollenized to produce a more upright plant. The result was a finer, more erect flower.

Each year she produces a new specimen, perhaps several, with new shades or even new colors. Sometimes she develops a new "twist" in the bloom; again the improvement is in the plant itself. She deals with the petunia as patiently as a mother with a child, striving always to improve, yet she is a delicate little woman, often working on will power rather than strength.

Although the Shepherd-Francis company employs several men to care for the fields and perform the harvesting, hand-cleaning and field pollenizing, Mrs. Francis personally attends to all the stock pollenizing. She feels that she must know the work is properly done and spares neither time nor effort.—HELEN TEMPLE.

This efficient prune picker is the invention of Herman Lent of San Jose. The fruit is speared by the barbs on the drum. A brush sweeps the prunes from the spikes and into the belt, which carries them upward and drops them into a removable box. Note clean space behind the machine.—A. R. BOONE.

The petunia, formerly regarded as one of our lowliest flowers, now is one of the most popular. The beautiful double blossoms illustrated above are from the gardens of Mrs. Francis, famous California petunia specialist.

Most milk goat raisers make pets of the friendly little animals. They like to climb and these were easily persuaded to pose.

Two views above show hand-cleaning of petunia seed and pollenizing in the field at Shepherd-Francis farm.

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We believe it takes both standard quality *and low price* to make a bargain. And every bargain we offer is a reliable, serviceable article that will give you entire satisfaction.

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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

OCTOBER 14, 1923

Climbing the "Milky Way" From Bottom to Top

By O. H. BARNHILL
Assistant Editor ORCHARD and FARM

Pontoni Is Still Going Up

IN THE days when so much complaint is heard about the difficulty of getting a start in farming—or any other business—it is encouraging to consider the example of Martin Pontoni, Humboldt dairyman, who came to this country without a dollar and now owns one of the best butter farms in the State—every acre and cow honestly earned. —*The Editor.*

WHILE America has forged far ahead of Europe in many ways, it must be admitted that immigrants from the Old Country can teach us many valuable lessons. Take, for example, Martin Pontoni, Humboldt dairyman, a fine example of thrift, industry and progressive farming.

Although but a boy of 15 when he left Switzerland, Martin had become familiar with the methods of successful European dairymen. He hadn't had time to get much education, agricultural or otherwise, but had kept both eyes and ears open and learned to do by doing.

The lessons learned in the home land were practical in the country of his adoption, together with many new methods and improved practices. This, in brief, accounts for his splendid success.

While young men of today are dissatisfied with $3 a day and board, Martin uncomplainingly went to work on a dairy ranch at 50 cents a day and "found." His wages were later raised to $30 and $40 a month, but dairy help now receives $75 to $120 a month. Living conditions, moreover, are much better now than they were then, 30 years ago; when autos, moving pictures and phonographs were unknown.

EARNING A DAIRY "STAKE"

After eleven years of laboring for others, Martin had saved $3500, a record of long continued effort and careful saving seldom equaled by American ranch hands. Instead of complaining about lack of capital, this industrious Swiss went to work and earned it.

After playing the renting game for ten years, Pontoni decided the cards were stacked against him, or at least that he wasn't permitted to play a free hand.

"It takes a year after you move onto a new place to get fixed so you can make money," he explained. "A long-term lease of three or even five years doesn't give time enough to make back the cost of the improvement work which most rented places need.

"After putting in tile drains, clearing out brush and fixing up fences, I found I would have to pay more rent for my next lease; the owner said the place was worth more!

"I then decided I was still working for somebody else, even if I did own my cows and farming implements. Therefore I bought 40 acres of good land, paying $250 an acre. Later purchases increased the size of my farm to 80 acres. Part of the land cost $500 an acre. Land here is held too high, considering the market for farm produce. I've got money to buy more land, but will not do so at present prices."

MILKING ON MAD RIVER

Pontoni keeps 45 good Jersey cows on his fine farm near the mouth of Mad River. The name of the latter suggests the mental state of many California dairymen, caused by falling butterfat prices and rising labor costs. Farmers get discouraged at such times and some quit the business in disgust.

This is a mistake, Pontoni believes, because—as he points out—those who stay in the game will be in a position to make good money when conditions change for the better, as he believes they will.

The Humboldt dairyman's system of farming is simplicity itself, made possible by rich, level land and a mild, moist climate. Most of the ground is seeded to clover and Italian rye grass, which yields both hay and pastureage. Instead of silage, he feeds root crops, which yield prodigiously and are dug and fed as needed. Concentrates are fed in small amounts.

"We use a 'mud sled' for hauling roots in from the field, feeding them tops and all," Pontoni explained. "Yes, it's wet, nasty work and the sled puddles the soil, but that's better than bothering with a silo. Roots are cheaper than silage and yield more per acre, which is an important point where land costs as much as it does here.

ROOT CROPS YIELD WELL

"No, I won't tell you how many tons of beets or carrots we pull from an acre of ground, because you wouldn't believe me. We don't have to thin or hand-weed carrots—just sow the seed and let 'em grow, cultivating the ground occasionally and pulling out a few big weeds. Carrots make an immense amount of good, succulent feed, when the pastures dry up or take a rest in winter."

The oxheart is the most popular carrot, but is more apt to split open and rot during the rainy season on low ground than the half-long. For this reason the oxheart is fed first, then the half-long, followed by mangel wurzels, or stock beets, which stick up out of the ground so far there is little danger of their rotting.

The Gate Post is probably the most widely planted beet. Red, yellow and Danish beets also are grown extensively. Beets must be thinned in order to grow them to good size. The mangel's aerial habit of growth not only makes them easy to pull, but keeps most of the root clean.

CLOVERS ARE POPULAR

Three kinds of clovers are planted—red, white and alsike—the seed often being mixed. Common red is the most widely grown, but white is best for pasture and alsike is preferred for poorly-drained soil. A little orchard grass helps the hay, as does timothy.

Harding grass makes a very rank growth, a specimen being shown at the fair this year seven feet high. This was the second crop and although the ground was so dry it had cracked open, there was a new growth 10 inches high. Some dairymen grow oats and vetch together, while a few raise alfalfa.

Pontoni plants seven acres to roots, using them as a rotation with hay and pasture crops. Old sod makes the best winter pasture, but some cultivate the ground every third year to keep it clean and obtain maximum production.

"One thing I like especially about dairying is the way it keeps up the fertility of the soil," declares Pontoni. "Another is that it provides a steady cash income every month in the year."

FINDS TESTING NECESSARY

After Pontoni had solved cropping and feeding problems, he felt there still was a good deal of room for improvement.

"I noticed that one of my neighbors was making a good deal more money than I was getting out of my cows," he relates. "I knew he wasn't taking any better care of his stock, therefore it must be that his animals were heavier producers than mine, I decided.

"I knew some of my cows were giving big pailsful of rich milk, but I had doubts about the productivity of others. I decided (Continued on Page 9)

Martin Pontoni's sons are learning to be good farmers and dairymen. They like farm work and farm life.

By testing, Pontoni has doubled the yield of his 45 Jersey cows, a few of which are shown above.

This comfortable home houses the Pontoni family. The cows paid for it, as well as other buildings and equipment.

Root crops are cheaper to grow and handle than silage, Pontoni believes. Here he is shown in a field of beets which yielded tremendous tonnage of succulent feed.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
OCTOBER 14, 1923

Keeping Germs From Ten Square Miles of Milk

World's Dairy Congress, Recently Held at Washington, Focuses Attention of Nation on Magnitude of Milk Business—Facts Interesting to Producers

By HOWARD E. GREENE

TEN square miles of milk, deep enough at every spot to cover the head of the average male citizen, was produced on the dairy farms of the United States in 1922. This flood of milk weighed 102,562,121,000 pounds and would load a freight train long enough to encircle the earth twice. Its farm value was $2,090,000,000.

These and other facts set forth in this important article are of unusual interest to California producers. This State contributed the leader who heads the most comprehensive dairy organization ever formed—H. E. Van Norman, professor of dairy management, University Farm School Davis, now president of the World's Dairy Congress and central figure in the remarkable convention held in Washington last week.

Nearly forty nations participated in the Dairy Congress, and of the 200 men and women who addressed the conferences, nearly half were foreigners. The United States Government has appropriated $30,000 for the publication and dissemination of the facts brought out. The delegates spent part of their time in Philadelphia studying the work of the National Dairy Council and part at Syracuse, N. Y., attending the National Dairy Exposition. A number of men prominent in California dairy circles were present.

IMPOSING DAIRY STATISTICS

The last census takers found that 71 per cent of the farms of this country maintained dairy cattle. These farms numbered about four and one-half million and contained about seven hundred million acres. Their value, apart from their cattle, was $48,000,000,000. On these farms lived nearly a quarter of all the people in the United States.

They found the number of dairy cattle to be about 33,000,000, with a value of more than $2,000,000,000. Nobody ever has estimated how many people are interested as employers or employees in the tremendous task of manufacturing, handling and distributing milk and milk products on the way from the farms to the consumers. It is estimated that the cost of milk and milk products to the consumers is just about double the farm value of the milk and that one dollar out of every five spent by Americans for food is paid for the products of the dairy.

Americans not only require plenty of milk, but they have plenty. In addition, they have the best inspected milk supply in the world. Last year, the United States Department of Agriculture reports, the amount of whole milk used in the homes of this country was enough to give every individual fifty gallons. Besides, the amount of milk manufactured into butter, cheese, concentrated milk (condensed, evaporated, powdered and sterilized) and ice cream, and consumed in the United States, was enough to give every individual fifty-two gallons more.

Health authorities insist that every growing child should have at least a pint of milk a day—better, a quart. Enough whole milk and dairy products were consumed to give every child a quart a day, but Government investigations in more than half of the States of the Union show that, in the sections studied, from 15 to 25 per cent of the children were not receiving milk regularly. *The most flagrant cases of neglect were found in the country.*

CONSUMPTION INCREASES

Americans, however, are constantly increasing their use of milk, and every year more and more children who formerly did not get sufficient milk are becoming regular users. The National Dairy Council, which carries on campaigns throughout the country constantly, has prepared the following table which shows the increase in the use of whole milk in the homes:

Years.	Ave. No. of gallons consumed.
1890	22
1899	23
1917	42.4
1920	43
1921	49
1922	50

This table shows a growth in the appreciation of milk of nearly 150 per cent in a third of a century, or within the lifetime of most of the men and women now rearing children.

The milk used for manufactured dairy products always has been a little more from year to year than the whole milk consumed in the homes. But manufactured dairy products must not always be considered exactly the equivalent of the milk used in their manufacture. While there is no loss in the case of concentrated milks and ice cream, every hundred pounds of buttermilk, skimmed milk or cheese whey contains a pound of the very best kind of albumen. Some of these by-products are used in the home; more are fed to chickens and livestock and find their way ultimately to the dining room table by an extremely circuitous route. A large quantity is manufactured into casein, after which it is used in making buttons, combs, print paper and even aeroplane wings.

The United States generally is conceded to be the greatest dairy country in the world. Other countries are ahead of us in certain respects and we have learned a lot from them and are learning more all the time. We got our fundamentals from the old dairy countries when we went into the business, just as we got from them our breeds of dairy cattle—Jerseys, Guernseys, Brown-Swiss, Ayrshires, Holstein-Friesians and others.

Whatever we took, we made the most of, and we have developed in addition many labor-saving utensils and machines and great organizations for the handling and distribution of milk. Americans have a way of getting together for the interchange of ideas. This system has been carried out farther here than in any other country in the world.

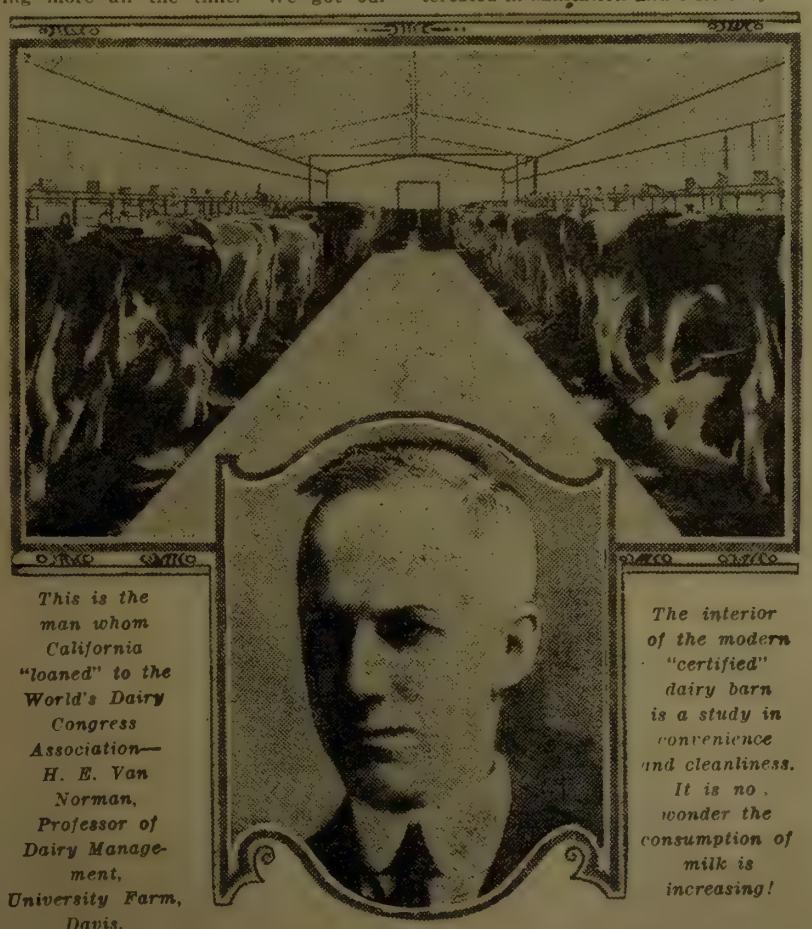
ALL BRANCHES ORGANIZED

Practically every one of the twenty-three national divisions of the dairy industry—such as dairy farming, cattle breeding, butter making, cheese making, equipment manufacture, scientific research—are represented in three great mutual benefit organizations. One of these is the National Dairy Council, which exists for the purpose of promoting a wiser use of milk.

Another is the National Dairy Association, which holds an annual national exposition, to which dairymen of every description turn their steps yearly for renewed inspiration.

The third organization is the World's Dairy Congress Association, headed by Mr. Van Norman. This is of a temporary character and was brought into being in the fall of 1921 to call together members of the industry from all parts of the world for a heart-to-heart talk. The "get-together" habit has been of vast importance in spreading new ideas. At the meetings, the leaders of thought tell one another about the new things they have discovered, and then everybody goes home and tries out the new suggestions. *The Congress is a meeting of this sort on an international scale.*

But what has all this to do with keeping the germs away from the ten square miles of milk produced in the United States annually? A great deal. America is a great dairy country because it produces good milk and keeps it in good condition until consumed. Success in the effort to maintain a high national milk standard is attained only through the men who are producing, handling and manufacturing milk becoming interested in sanitation and efficiency.



This is the man whom California "loaned" to the World's Dairy Congress Association—H. E. Van Norman, Professor of Dairy Management, University Farm, Davis.

The interior of the modern "certified" dairy barn is a study in convenience and cleanliness. It is no wonder the consumption of milk is increasing!

The American dairyman's freedom from traditions and his instinctive kindliness toward new ideas have been factors of immense importance in making possible America's climb to the first place in the dairy world.

One of the results of maintaining a good milk supply is that Americans like their milk and dairy products so well that dairymen do not have to look for markets abroad. Last year the production of milk and its domestic consumption in one form or another were practically equal. We exported some butter, cheese and condensed milk and imported a little.

But when these exports and imports were compared, the Government found that the balance on the export side represented a trifle less than 81,500,000 pounds of raw whole milk, a very small part of the billions of pounds which we produced. It is also the smallest export balance we have had in years.

The export balance in the five years before the war averaged in terms of raw milk 340,096,000 pounds. In 1919 it went up to 2,644,900,000 pounds. That was when we were shipping quantities of condensed milk abroad to the starving people of Europe and Asia. Now that relief work practically has ceased, it looks as though this year will end with a slight balance on the import side. *In dairying we have a two-million-dollar industry carried on, to all intents and purposes, inside our own fences.*

In considering the effort to keep our milk healthful, it is interesting to note what the United States Department of Agriculture considers clean milk. Its definition is: "Milk of good flavor from healthy cows that is free from dirt and contains only a small number of bacteria, none of which is harmful." According to the same authority, "Bacteria are tiny, single-celled plants, invisible to the naked eye. Bacteria dangerous to human health may come from unhealthy cows and milkers, contaminated water supplies, flies or filth. Prompt cooling to low temperature prevents bacterial growth and aids in producing milk which will keep longer and make finer dairy products. Clean, well-constructed stables aid in producing clean milk, as does a separate milk room, in which the milk is handled on the farm."

Several national movements are on foot which continually are helping to keep our milk supply clean and healthful. One of these is the pasteurization movement. This had its inception on a commercial scale about the first of the century. It was found by unfortunate experience that a dairyman might do anything humanly possible to keep his milk supply in a cleanly manner and still it might not be free from disease germs.

ADVANTAGE OF PASTEURIZATION

For instance, it has been charged that epidemics have been traced to diseased employees, or "disease carriers." By pasteurization of milk, all harmful bacteria are destroyed. While some persons claim they can taste the difference between raw and pasteurized milk, the difference in flavor is slight and more than compensated for by the additional safety with which the food is surrounded.

Officially, pasteurization means heating milk to 145 degrees and holding it at that temperature for half an hour. This form of pasteurization is not universally required by law, and inferior practices still prevail in some cities.

While the health authorities of most large centers require some form of pasteurization, except for certified milk, some do not. Washington, D. C., has not yet been protected by compulsory pasteurization, but public opinion has compelled the milk dealers to pasteurize their milk. The widespread demand for pasteurization is now extending to cream used in the manufacture of butter and soft cheeses.

It has been proved that products made from pasteurized sweet cream have better flavors and better keeping qualities than others. A few manufacturers now are experimenting with pasteurizing hard cheese, which, it is said, gives it unusual keeping qualities in warm climates, such as are found in the South or the Panama Canal Zone.

Another movement is for the elimination of cows infected with tuberculosis. This has already disposed of a vast number of diseased animals, and many cities are now requiring that the herds from which their milk is derived be tuberculin tested.

A third movement is for the counting of the bacteria occurring in milk offered for sale. Even sweet, clean milk contains several thousand bacteria to each drop. They are harmless and lead only to fermentation. But when milk is carelessly handled and is not cooled promptly and kept at a low temperature, the bacteria multiply with inconceivable rapidity. The milk inspectors of the cities thus are enabled to detect milk which has become unfit for human consumption. Bacteriologists have devised a practical means of ascertaining the bacteria count, and milk samples can be quickly examined.

Many milk distributors allow farmers a monetary consideration for bringing their milk to the collecting stations with low bacteria counts. Some even go so far as to post the names of the farmers who have made the best weekly records. This practice has led the farmers in many cases to take a great pride in their cleanly methods. The technical man of one of the larger milk distributors of the national capital reports that his com- *(Continued on Page 10)*

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ORCHARD and FARM

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

FARM AND CITY CO-OPERATE

As evidence of the direct connection and close co-operation between agricultural and urban interests in California, the Merced County Farm Bureau is participating in the organization of the new Business Men's Association of Merced. Many Merced business men own or operate farms, while the neighboring farmers realize their interests are identical in many respects with those of the townspeople. The town folks, on the other hand, know their prosperity depends to a great extent upon the welfare of the farmers. It's a fifty-fifty proposition. The wonder is that it has taken so many years for people to realize this fact!

NATIONAL WOOL POOL IS URGED

The success of various State and local wool pools, such as, for example, the Ohio pool of 7,000,000 pounds, leads many observers to believe the time is ripe for reorganization of sheepmen on a National scale.

Such a movement, in fact, was inaugurated at a recent Chicago conference between officials of the National Wool Warehouse and Storage Company, the American Farm Bureau Federation, and Intermediate Credit Banks. The former is a grower-owned and managed concern, sponsored originally by the National Wool Growers' Association.

CAN WEST AND EAST PULL TOGETHER?

It is hoped at last to align both Eastern and range producers in one great movement to do away forever with the "dumping" method of selling wool, which has been so disastrous to producers.

Growers recognize, of course, that the wool market is regulated by world conditions and that they cannot hope to set prices, any more than the wheat farmer can set prices, but they do hope to sell the wool on its merits through banding together and securing adequate financial assistance.

M. L. Corey, member of the Federal Loan Board, has declared that ample intermediate credit to finance the American wool crop will be available as soon as the growers organize themselves into "honest-to-goodness" co-operatives.

ELECTRIFIED FARMING IS BIG TOPIC

That America scarcely has scratched the surface of potential electrical development is recognized by agricultural leaders. To be sure, California is far ahead of other States in this respect, but many foreign countries have gone farther than America as a whole in bringing to the farm all the advantages of cheap electric power.

Recognizing the great importance of this question, President Bradfute of the American Farm Bureau Federation has formed a committee consisting of farmers, engineers and representatives of the various electrical organizations. A salaried director has been employed to devote his entire time to the work of electrical development.

SMALL PERCENTAGE OF FARMS HAVE POWER—Reports show that only 400,000 American farms, or less than seven per cent of the farms of the Nation, now have electrical service. The committee realizes, however, that in order to bring the comforts and conveniences of electricity to even a small percentage of the remaining farms many great economic and engineering problems must be solved.

Hence the formation of the new "Committee on the Relation of Electricity to Agriculture," which marks the first time that the American farmer through his own representatives has participated actively in solving problems incident to large-scale power development.

SALES TENT AT FAIR

Farmers and others will observe with interest the results of a plan launched by the Sales Committee of the Riverside County Farm Bureau to improve the financial condition of the producers, and to encourage agricultural development.

"Here's the situation," says Lester Bamberger, chairman of the committee: "Riverside County should be profiting by the withdrawal from agricultural use of thousands of acres adjacent to cities. That we are not doing so is due to the inadequate returns secured by many of our producers.

"In order to offer temporary and immediate relief, we have decided to have a sales tent at the fair, where Riverside County farm products will be sold at a price midway between that charged by retailer and that received by the producer. This should aid both farmer and consumer, and we hope no farmer will come, and no visitor leave, with an empty car."

The Riverside experiment is significant. Producers of many commodities have the choice of two steps: They must either take the marketing problem into their own hands or close up "shop" and move to the city!

"What's New?"—Keeping Abreast of Agricultural Progress

San Joaquin Farmers Consolidate

THE San Joaquin County Farm Bureau and the Federation of American Farmers have perfected a consolidation of the two organization under the name of "San Joaquin Farm Bureau Federation." This organization now embraces the membership of both of the previous organizations; they are to retain their County Center units and also to remain affiliated with the State and National Federations.

Bank Finances Club Boys

THE Olympia National Bank recently financed a deal by which Lionel Graves of the Yelm (Thurston County, Wash.) Calf Club became the owner of Lady Nadine de Kol Palouse, a purebred Holstein heifer from the herd of F. C. Baker of Olympia, who made Lionel a special price for the animal. The club member will have one year's time on the note at six per cent interest. Five purebred Holstein heifers with 600 to 710 pounds of butterfat back of them were purchased recently by members of the Boys' Calf Club of Skagit County, Wash.

Are Pears Picked Too Ripe?

SALES reports from Eastern markets indicate a large portion of this year's pear crop, particularly that of Nevada County, arrived at destination in overripe condition.

County Agent Graser has constructed a maturity tester, after the Oregon plan of applying pressure which registers the texture of the flesh. By the end of another year, Graser hopes to have compiled records which will make it possible to judge maturity of the fruit by noting of the pressure at which the flesh breaks down.

How to Increase Grape Tonnage

THE tonnage of muscat grapes can be increased 50 per cent if the grapes are picked with a 26 per cent sugar content instead of 18 per cent, according to Prof. F. T. Bioletti of the California College of Agriculture. Size and quality of the raisin are dependent largely upon sugar content, he reminds the growers. Proper curing is the other important factor in deciding the difference between profit and loss.

If Thompson grapes have been properly cared for, they should not shatter before attaining 25 per cent sugar content, it is pointed out.

Bulk Grain Handling Increases

EACH year finds an increasing quantity of California grain being handled in bulk. Indications are the amount handled through the Farm Bureau Elevator Corporation will be double that of 1922. The Patterson elevator in Stanislaus County is believed to have made the best record, having handled in one day more than half a million pounds of barley, nearly 12,000 bushels. Part of this was cleaned and made ready to load on board a vessel in bulk for transport to Europe. The elevator operator and a helper, whose combined wages amounted to $9.33 a day, did all the work, while the day's earnings were $211. Contrast this with the cost of handling the same amount of grain in bags.

Billions of "Bugs" in Cans

RECENT experiments by the United States Department of Agriculture emphasize the necessity for regular sterilization of milk cans. Two such utensils were washed and rinsed, and bacteria counts were made on them both before and after sterilization and on similar cans which were held for 24 and 72 hours.

In one unsterilized can, soon after washing, 47,000,000 bacteria were found while the count for a similar can after sterilization was only 3600 bacteria. Another unsterilized can was held for 24 hours under conditions similar to those encountered in shipment and hauling, and it then yielded 16,000,000,000 bacteria at the first rinsing.

A can which had been sterilized and dried and held for the same length of time contained only 76,800. The unsterilized can held [illegible] tained enough bacteria to contaminate 16 gallons of milk with 400,000 organisms for each cubic centimeter.

Tree Crickets Attack Peaches

AN instance recently was reported where the ordinarily harmless tree cricket has appeared in such numbers as to materially damage a fine crop of fruit.

T. D. Urbans and D. G. Milbraith of the State Department of Agriculture made an investigation of a large orchard to determine the cause of damage to Phillips Cling peaches.

It was found that tree crickets *(Oecanthus nivens)* had appeared in abundance, eating small holes into the ripe fruit. Following closely on the damage caused by the crickets, spores of a brown rot fungus began to develop, with the result that the fruit quickly showed evidences of decay. About 100 tons of peaches were lost in this single orchard.

After careful examination of the situation, the authorities of the State Department of Agriculture recommended as a precaution against an infestation next year that all diseased and damaged peaches be pulled from the trees and that the fruit on the ground be thoroughly dusted with a mixture of paris green and wheat flour in the proportion of one to six. This poisonous dust will kill the adult crickets before they have an opportunity to lay their eggs. In order to kill the spores of the fungus which might take the crop in succeeding years, the trees should be sprayed thoroughly during the winter with a solution of Bordeaux or lime sulphur.

Fall Spraying for Blister Mite

EXPERIMENTS in fall spraying in Nevada County have resulted in practically complete control, even when the work was done as late as November 29. Liquid lime sulphur, 1-10 was used. The same system is said to have been adopted generally in El Dorado County.

Smut Control in Yuba County

A YIELD of 428 sacks of high quality Federation wheat, weighing 135 pounds per sack was harvested from about 60 acres on the L. J. Fallon ranch. The seed was supplied by the University Farm and was treated with copper carbonate dust. A portion of this field was treated with nitrate of soda and this portion apparently gave much higher yield than the untreated portion. It was impossible to harvest the two plots separately, however, consequently no exact comparative results can be given.

Vegetable Growers Plan Publicity

SOME 100,000 vegetable growers have adopted as their slogan, "Eat Vegetables for Vitamines" and with the aid of a $1,000,000 advertising campaign are planning to make this slogan a household phrase according to J. W. Norwood, managing editor of the Market Growers' Journal.

The plan, which proposes to increase the consumption of vegetables by a nation-wide campaign that will reach also into Canada, is to be staged by the organized market gardeners and truck growers of America.

Hubam Clover Looks Good

RAYNOR Matthews, of Cottonwood Farm Center (San Benito County) planted a small portion of Hubam clover seed, secured by the farm adviser, last spring. One plot was planted about January 10; another about the middle of April. Growth was noted on August 15th.

The average height of the early clover was 7 feet. One plant was 9 feet tall. The plants were in full bloom and it was interesting to note the bees at work. Apparently Hubam provides good bee pasture.

Ordinarily it is recommended that the clover be cut twice for hay, and then allowed to go to seed. The plant is an annual, making seed each year.

Molasses Increases Cattle Thirst

AN important attribute of molasses as a cattle feed is pointed out by G. J. Stern, of Fort Worth, Tex., in a communication to Nelson Crow, Editor of Farm and Ranch Market Journal. "Molasses," states the Texas authority, "not only has great feeding value, but also tends to produce thirst, causing the animal to drink a great deal more water than it would ordinarily.

"Since fat is built up largely through consumption of water, much quicker gains are made when molasses is included in the ration."

Stern recommends the following formula for fattening cattle: 20 per cent finely ground alfalfa meal, 35 per cent molasses; 15 per cent cotton seed meal or cake; 30 per cent finely ground barley.

Ben Gonnadoit Says

SEEMS like, even if they was a chance fer a feller t' rest in this world, th' wimmin folks 'd conspire t' hold 'im down. Jest when I think I've got some money ahead, my wife gits some fool notion in in order t' keep peace in th' family I have t' buy somethin' else we kaint afford.

This time it was a new washboard. She claimed after usin' th' old one only six years she had wore off all th' ridges so it was smooth and wouldn't clean th' clothes. I told her I bin intendin' t' fix it up for some time in' prob'ly 'd get around to it soon, but no, nothin' would do but she must spend 90 cents for a new one, claimin' it couldn't be fixed no more.

Now I suppose since Mrs. Jones has got a washin' machine my wife won't even be contented with th' new board, but will be wantin' to let electricity do her work. These here Home Extension gals th' farm bureau sends around is responsible fer a lot of our troubles. Why, they'll have all our wummin so discontented they won't want t' do any work before long. I'm a great b'liever in exercise fer wummin' such as washin', carrying' water, choppin' wood and so on. Hardly any woman gets enough exercise.

As fer me, I take my exercise reg'lar ev'ry day. Even if I don't feel able t' pitch hay, hoe th' garden, or mend fence, I allus force myself t' walk a little, if it's only t' hunt rabbits or go down to th' pool hall.

Well, I gotta get busy an' plan my fall work. Here it is October an' I ain't even finished my program I laid out fer th' summer months. That's th' trouble with a active brain like mine—always plannin' more things than my cute, feeble body is able t' carry out! Sometimes I think brains is more of a curse than a blessin'. Ho-hum, it's a hard world!

Here's Poultry Co-operation on a Large Scale

Rio Linda Colonists, Near Sacramento, Pull Together in Buying, Selling, Community Management and General Finance

By W. J. DRYDEN

Contributing Editor

CO-OPERATION in buying, marketing, financing, hatching and service is the keynote of the plan of operation of the Rio Linda Poultry Colony near Sacramento. While the work by no means has been completed, sufficient progress has been made to show that such methods are within the bounds of sound business judgment.

To be sure, co-operation in poultry production is not original with Rio Linda; other sections of California, as well as producers in the States, have applied the principle in different ways.

Complete Co-operation

Above is shown first unit of warehouse built by Rio Linda poultrymen. When completed it will have atotal capacity of more than 400 tons.

P. R. Lydig, who drafted and carried out the details of the "Rio Linda plan" is shown at left with one of his prize Leghorns.

But the greater part of the poultrymen who settled at Rio Linda were from Eastern States, where conditions are entirely different from ours. Many of them, in fact, had spent years working behind counters or over desks and had saved enough money to start a small place. While most of the settlers had business ability, few had the technical knowledge of poultry keeping that would assure their financial success.

The officials of the district, realizing this lack, secured the services of P. R. Lyding, one of the organizers of the Poultry Producers, former president of that organization and a practical commercial poultryman.

The action in securing this poultry expert was the first step in giving service to the settlers of that district. With few, if any, exceptions, the poultrymen of Rio Linda now are following what is known as the Lyding system of feeding, housing, breeding and management.

Lyding makes regular visits to each farmer and maps out schedules of feeding and in other ways aids in the development of a successful industry.

ASSOCIATION IS FORMED

The next step in the co-operative plan of the organization was the formation of the Rio Linda Poultry Producers' Association, a local branch of the Poultry Producers' Association of Central California. The association erected a warehouse 44 by 84 feet, and in the near future will double this capacity. In this warehouse the handling of poultry supplies, the manufacture of feeds and the handling of eggs is undertaken.

The warehouse association has been doing a business of more than a quarter of a million dollars annually in feeds alone. Only members of the district are taken into the organization, but feed also is sold to a large number of other poultrymen in the North Sacramento section.

The co-operative marketing work has been confined to the selling of eggs through the Poultry Producers' Association. The warehouse at Rio Linda is merely a receiving agent for the State association and a convenient point to which the members may deliver eggs when they get their feed.

One of the features of financing in a co-operative way is that a fund is provided to be used to tide over any of the farmers during hard times or to permit expansion by them. These loans are made entirely upon the character of the individual, and not upon the value of his land.

With the erection of a large, modern school building in the center of the poultry colony, the social life of the poultrymen is being provided for. The building includes a large assembly hall which seats more than 600 people.

A new hatchery, with a capacity of 175,000 chicks, has been started. Tancred, O. A. C., Hanson, Hollywood and Tom Barron stock is being introduced and the general stock of the community is being built up for high egg-production.

The laying house, used almost entirely in the Rio Linda district, is built facing east to avoid extreme weather conditions. It is in sections 16 feet wide and if it is made longer than 300 feet, the feed and egg room usually is placed in the center.

GLASS IS PREFERRED

The sections of the house are 16 feet long. Glass windows are used, as it is held by Lyding that muslin or other cloth, when damp and dirty, will not permit the circulation of air and sun.

Among the features of the house is the Lyding carrier and conveyor for feeding the chickens, gathering the eggs and cleaning the house. The nest cabinets are placed on the front wall and can be removed with little trouble for cleaning.

Ventilation is secured in summer by a ten-inch six-feet ventilator under the front plate. In the winter this is closed, and the three-inch space between the plate and shingles supplies all of the fresh air.

CONSTRUCTION OF HOUSE

The house has a plain shed roof, except that it has an unusually high front, which provides plenty of shade for the chickens during hot weather. The Rio Linda district as a whole is supplied with little shade and until the new trees have grown, the houses must be the entire agent for this purpose.

It is not every district that could carry on the co-operative plan in poultry marketing, selling, buying and financing as it is conducted at Rio Linda. It is doubtful, in fact, if any of the older districts, with poultrymen who have been in the game a long time, would care to join a complete co-operative organization such as exists at Rio Linda. But the co-operative plan in Rio Linda has been a success, inasmuch as it has accomplished what it set out to do.

The members buy their mill feeds and mix their mashes and other feeds at a reasonable cost. They buy their poultry supplies through their association, making a nice saving; their method of marketing eggs insures considerably better prices than are secured by those who sell locally, and they co-operate in the financing and management of their farms.

The Rio Linda colonists are expanding each of their present co-operative organizations and expect to organize several fruit and other co-operative units—which is proof at least that the farmers of the Rio Linda district are well satisfied with the general idea of pulling together.

And this is what the secretary of the Sacramento Chamber of Commerce has to say of the project:

"The poultry industry has made its greatest development in the Sacramento Valley in the Rio Linda district, a short distance north of Sacramento city. The open climate, abundant water supply and green feed the year round; the co-operative advantages, making possible the economical purchase of feeds and stabilizing the market for eggs, all are factors in the success of the poultry industry in Sacramento County.

"The Rio Linda district alone produced a quarter of a million dollars' worth of eggs in 1922. The gross return from White Leghorn hens ranges from $4 to $6.50 per bird, per year. The cash outlay for feed, etc., runs approximately 50 per cent of the gross return. A net minimum of $2 per bird a year is a conservative figure. A flock of 3000 hens is a one man plant."

Whitewash Formulas

A NEW whitewash formula, containing lime, calcium caseinate and soda ash, produced the best results, and an old formula of lime and mutton tallow came out second best in whitewash tests carried out in Butte County on young trees.

The purpose of these tests was to find out which whitewash formula would last through the rainy season without washing off. An exposure of two and one-half months gave the following results:

Formula of plain lime, lime sulphur and salt; "government" whitewash; and a commercial formula did not stick at all and were practically all washed off on the side exposed to driving rain.

The two formulas proving most effective were these:

(1) Thirty-eight pounds lime, 3 pounds sodium phospate (or soda ash), 5 pounds calcium caseinate. Caution—In making this whitewash do not add calcium caseinate to the hot lime solution. Mix sodium phosphate and calcium caseinate together dry and add water, making a paste; add this to cold lime solution.

(2) Lime, 10 pounds; mutton tallow, 1½ pounds. The mutton tallow should be mixed with the slacking lime to make most effective mixture.

Preparing to store coming rains

THE heavy "subber" pictured above is breaking up the hard top crust and the underlying impervious strata. The coming rains may then soak in and be stored for the thirsty roots of next year's crops.

A tracklayer tractor is well suited for "subbing the soil" deep in such hard ground. Great power is needed, and Best Tractors have proved that they have it. Write for a list of owners and ask them what their experience has been.

Write also for a 1923 catalog and copy of "Subbing the Soil," a booklet which presents in unbiased fashion the opinions of many authorities on the subject.

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Seed Success in Potter Valley

Mendocino Melon Seeds Prove Money Maker—Dealers Pay Premium for Potter Product

IT IS sometimes necessary to depart from the main highways in order to find the finest farm land. This is the case with Potter Valley, favored section of Mendocino County, 16 miles northeast of Ukiah.

General farming is the rule, but pears, prunes and melon seeds are proving so profitable they are displacing grain and hay. Los Angeles seedmen pay premium prices for Potter melon seeds, because of their high germination test and the superior flavor of the melons they produce.

While seeds from the big commercial melon districts of the State show a germination test of only 60 per cent, and sell for 25 cents a pound, Potter seeds test 98 per cent and bring 35 cents, according to James J. Thornton, one of the leading seed growers of the county. The finer varieties command even higher prices, 85 cents being paid for Klondike watermelon seed.

"The Klondike undoubtedly is the best and sweetest melon grown," declares Thornton. "The rind is too thin and brittle for long shipping, however. Kleckley Sweet is another splendid melon. We also grow the Chilian, Angeleno, Florida Favorite and Georgia Rattlesnake. This year I grew 18 acres of Angelenos, our best shipping melon.

"White Winter is a new Christmas melon, which can be kept all winter under favorable conditions. We grow both the white and black-seeded strains of several varieties, but for some reason the latter do not sell as well as the former."

MELONS MUST BE ROTATED

Watermelons do not do well when grown on land oftener than every third year. Another peculiarity of this plant is that when home-grown seed is used for many years in one locality, varieties tend to "hark back" to original strains. To avoid this, Potter Valley growers contemplate exchanging seed with Butte County melon men.

Thornton grows melons as a nurse crop in his young pear orchard. Watermelons are followed by muskmelons. Rocky Ford cantaloupes and Santa Claus casabas are the principal varieties produced. The Armenian is considered one of the best muskmelons, being a large, green variety.

The Persian is fine quality, but a poor keeper. The White Hybrid, a sport of the casaba developed by Aggeler and Musser, prominent buyers of Potter seeds, is an excellent new variety.

"Harvesting watermelon seeds is a difficult operation," Thornton points out. "The seeds cannot be separated from the pulp easily until the latter begins to decay. If fermentation is permitted to proceed too far or the seeds are not properly and thoroughly dried, the crop will be injured materially, if not entirely destroyed."

The method developed by Mendocino growers is to let the melons lie where grown one day after the stem is cut. Then they are piled in rows 12 feet apart. Pitchforks are used, the holes made by the tines starting fermentation of the pulp. The melons are allowed to lie two days longer before "threshing."

Potter seed growers have perfected a melon thresher which is said to be a great improvement on simjlar machines used in other districts. A cylinder taken from an old grain separator is used to grind up the melons. Most of the teeth are removed, only about two dozen being left. A slow speed, 150 revolutions per minute, is maintained.

The thresher is run by a gas engine and is pulled between two windrows of melons, which are pitchforked into the machine from both sides. The pulp and seeds pass over a coarse screen, through which the seeds and a portion of the pulp drop, after which they are shoveled into barrels and hauled to the dry yard.

The rinds and the rest of the pulp are left in the field. When grain is grown on the land next year, the crop is much larger and thrifter on the strips where the melon refuse was deposited.

Threshing melons may seem like a slow job, but Thornton ground up seven acres of Angelenos in four hours. Pulp barrel capacity is a limiting factor in the harvesting operations, as it takes 45 barrels to hold the pulp of one acre of good melons.

The seed pulp is allowed to stand in the barrels three days, being stirred two or three times a day. Fermentation proceeds, rendering it easy to wash out the seeds like panning placer gold. Good seeds sink to the bottom, the lighter ones being floated off with the pulp. The few remaining bad seeds are picked out by hand after drying. Five cents a pound premium is paid for hand-picked stock.

IMPROVE DRYING TRAYS

It was formerly the practice to dry melon seeds in wooden trays, the bottoms of which were covered with burlap. Finding the dried seeds stuck to the cloth, from which it was a tedious job to separate them, Thornton evolved the plan of covering the bottoms of the boxes with wire screening, from which the seeds may be shaken easily. The drying trays are six feet long and half as wide.

The seeds dry in a day and a half of good weather, after which they are sorted and sacked for shipment to seed houses. A local contractor inspects and ships the stock.

Angeleno watermelons will yield 350 pounds of seed per acre, while 150 pounds is considered a fair crop of Klondike seed. C. A. Carner raised 25 acres of Klondikes this year. The total seed crop of Potter Valley sells for about $18,000 a year. Considerable sunflower seed is grown, the heads frequently attaining a diameter of 12 inches.

Thornton has more than half of his 40-acre farm in three-year-old pears. There also is a 3-acre prune orchard and small vineyard. Last year he built an $8000 residence.

High hopes of future pear profits are entertained. Although Lake County pears are considered the standard quality, the product of Mendocino orchards took first premium at the State Fair this year, both pears and apples.

Since Thornton came to the Potter Valley 10 years ago and began farming rented land, he has been a constant and effective worker for the good of the community, being especially active in Farm Bureau work. This year he helped make a very fine district exhibit at the State Fair. He brought the first tractor into Potter Valley.

"Jim got his start in business when he was 13 years old," related Thornton's father. "I landed in Seattle the year before, with a wife and four small children. We hadn't a dollar; therefore all hands began working. In the carpenter shop where I was employed a wood turner was needed. Jim grabbed the job, and made $26 the first month. Soon he was earning $4 a day. Then we moved to the Okanagan country and I went into the cattle business.

"Yes, Jim might have gone forward faster if he had had a college education, but he's done pretty well without one—you can't keep a good man down."

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Conserving Fertility on a Big Ranch

SOIL fertility is deemed of paramount importance by the Irvine Ranch Company, owners of 100,000 acres of land, with headquarters in Orange County (Cal.). About 40,000 acres is cropped to grain, beans, beets and other field crops, while more than 3000 acres is devoted to citrus, walnuts and other orchard crops.

Of the 125 tenants on Irvine property, nearly all keep some livestock, if only work teams, poultry and a family cow. The sum total in manure thus made available for the land is considerable. Another feature of the tenant system which has prevented deterioration and increased efficiency, is the rule requiring subsoiling by each renter.

The operating company keeps about 125 head of work animals, and raises hogs as well—another branch of the ranch business which aids the fertility program.

Great quantities of bean straw are produced and used on the ranch, while cover crops, rotation and summer fallowing contribute to the system. Commercial fertilizer also is used.

The company is in the range cattle business, and the stubble, tops and other field growth and refuse furnish great deal of pasturage. Incidentally this grazing program results in the distribution of much valuable manure.

Morning glory and other weeds are controlled by frequent and thorough cultivation, while some experiments have been made in chemical treatment.

The company buys considerable manure from neighbors who (as an observer has remarked) "don't know enough to use it themselves."

These, then, are the practices which have earned for the Irvine Ranch its reputation as "one of the most intelligently farmed large ranches in Southern California."

Fertility, instead of being depleted, actually has increased after years of intensive production, according to those who are familiar with the history of the property. And that, as everyone will agree, is "saying something" for a ranch farmed largely by tenants. W. G. Mitchell is manager of the property.

Vetch Growers Cut Production

Interesting Experiment in Regulating Crop Acreage to Suit Prevailing Market Demands

ONE of the admitted weaknesses of the farming industry, as at present conducted, is the lack of co-operative effort for regulating production to meet market needs. The customary method is to decide crop acreages by guess, regardless of what others are planting. Over-and-under production often follows—with undesirable price fluctuations.

Humboldt vetch seed growers are striving to avoid this mistake. Last year's crop was unusually heavy, 1000 tons. This was about twice what the market would absorb at profitable prices.

Fortunately, both growers and consumers of vetch seed were organized, making it possible to work together for the benefit of both buyer and seller. The Fruit Growers' Supply Company, a subsidiary concern of the California Fruit Exchange, agreed to maintain the standard price, 15 cents, provided the Humboldt Vetch Growers' Association did not glut the market with an over supply of seed.

The 1922 crop surplus, between 400 and 500 tons, was stored by the Supply company, and will be sold this season as needed. Meanwhile, the vetch growers, who number about 100, met and agreed to reduce their 1923 acreage materially. The number of acres planted by each member was a certain per cent of the amount usually planted.

Fortunately—or unfortunately—weather conditions helped carry out the vetch growers' program of contraction. While the 1922 crop was unusually large, this season's yield was poor, amounting to only about 200 tons.

Not satisfied with the restricted market offered by the citrus growers of Southern California, who use vetch for a cover crop, Humboldt seed producers are making a systematic effort to induce deciduous growers in other parts of the State to plant vetch in their groves. "Fruit growers everywhere are waking up to the fact that their orchards need more humus and nitrogen, which vetch supplies in abundant quantities," points out W. H. Perrott, prominent Humboldt vetch seed grower.

The only drawback to vetch, from a cover cropper's standpoint, is the high cost of seed. The per pound price is not excessive, but the seeds are so large and heavy that the expense of planting an acre is considerable. In this respect melilotus indica has a great advantage over vetch, which is one reason why the former has supplanted the latter with many citrus orchardists.

It may be that vetch seed growers have carried too far their program of holding up prices. In a good year, like 1922, they thresh 1000 to 1500 pounds per acre, although 300 to 400 pounds is an average crop. The straw makes excellent sheep feed and is fine to spread on wornout soils and plow under.—O. H. BARNHILL

Vetch in Sonoma County.

H. A. WEINLAND, Sonoma County Farm Adviser, has stated that anyone traveling through the farm and dairy section of Sonoma County last spring could not help but notice the increased acreage given over to vetch in combination with oats.

Five years ago only occasional growers here and there were using this combination. Last year the demand for seed was so great that the supply was sold out very early in the season and some who wished to plant were left out. The prospect this year is for a fair supply of seed at a reasonable cost and growers are advised to place their orders before other districts of the State get ahead of them.

Dairymen who have been using vetch to feed their cows have realized by actual experience the value of this feed and need no recommendation for its use. The most common and probably the best combination is to plant the vetch with black oats, inasmuch as the oats hold up the vetch and in combination they make a very palatable and well balanced roughage.

Some farmers who have tried growing vetch have become discouraged because the crop of vetch the first year they tried it was rather poor. The cause of failure may be sometimes the method of seeding and sometimes merely the fact that the land is poor and practically devoid of nitrogen-gathering bacteria. Unless the soil is fertilized or these bacteria encouraged by continued planting, the vetch cannot do well.

Experts say the best plan is to plant the combination every year on a certain piece of land until at least a satisfactory stand of vetch is secured. This may take as much as three years.—K. R.

Spray Soon to Control Citrus Blast

By J. ELIOT COIT
Contributing Editor.

RECENT experimental tests made by Dr. H. S. Fawcett and other experiment station workers have shown that in the Northern California citrus districts where citrus blast is most severe on orange trees very satisfactory control may be secured by spraying with bordeaux once in early November and again about the middle of December. Best results are secured by using a casein spreader and doing very thorough work

DR. J. ELIOT COIT

This disease is caused by a bacterium which first was discovered and described as causing black pit of lemon fruits in Southern California.

Later on it was found that the citrus blast disease of oranges in Northern California also was caused by a bacterium which was given another name.

SAME "BUG" IS GUILTY

Still later Dr. Fawcett discovered that the bacterium causing these two apparently distinct diseases was identical.

The reason why citrus blast occurs only rarely on orange trees in Southern California is because of the light rainfall in early autumn. Early rain and wind storms are responsible for the spread of this trouble in the north. Occasionally a light outbreak is observed in high foothill groves between Pasadena and Upland.

ALSO FOUND ON OAKS

Very recently Dr. Fawcett has made still another interesting discovery to the effect that the organism causing citrus blast is found also, probably native, on the interior live oak, *Quercus Wislezzenii*, on which it produces cankers similar to those produced on orange trees.

The citrus blast and lemon black pit disease now is known to be natural to one species of live oak, and to have adapted itself to citrus trees after they began to be planted in the vicinity of these oaks.

With a continuous supply of infective material from the oak trees it is useless to think of eradication. The only course is to control the disease by spraying with bordeaux wherever the severity of the attack warrants.

Tulare Fights Coyotes

THE crafty coyote is ranked as the most serious menace to the poultry raiser in the foothill districts of Tulare county this season.

Depredations are reported to be on the increase, especially during the fall season when the young are demanding increasing food supplies.

Almost every poultry raiser has been compelled to purchase a hound, as a fleet runner may overtake the coyote and annihilate him, and in any case, the dog is an important factor in frightening the intruder away. Since this bold offender does not hesitate to jump a fence or corral at night and invade the yards, many poultry raisers are successfully meeting this method of attack by hanging lighted lanterns inside of various enclosures. At times, the coyote ventures quite close to outbuildings during the daytime, calling for unceasing vigilance.

Turkeys, the most valuable asset of local poultry raisers as the holidays approach, have excellent wild forage grounds in these parts, and could be maintained at slight expense until they reach the topping-off stage, but even the large, mature birds are caught by the coyote, and it has grown disastrous to turn loose a flock of such birds without a herder.—S. W. W.

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Do You Intend to Plant Trees?

It Is Not Too Early to Consider Preparation of Land for Coming Season—Practical Suggestions

WITH the tree-planting season not far ahead, the following observations by the horticultural department of the Merced County Farm Bureau are of timely interest and practical value. Acknowledgment is made to J. L. Quail, extension agent:

Some of our foremost fruit men have stated the first year is the most important in the history of the orchard. Land preparation, however, may be equally as important a factor. Many orchards would possess double the earning capacity they now have if the land had been properly prepared before planting.

SURVEY OF AREA

A thorough survey first should be made. This does not necessarily mean that an engineer should be employed. It means that the planter should consider carefully every rod of the property.

Systematic borings should be made to ascertain subsoil conditions. Is there a water table? Is there a tight clay subsoil? Are there any sandy pockets or gravel strata? And, lastly, is there any hardpan or are there hard soil layers? Findings should be charted for future reference.

If the prospective orchardist is not familiar with adaptability of fruits and root stocks, it is then time to ask aid of one who is competent to offer information.

No hard and fast lines can be drawn stating exactly what soils certain fruits will or will not thrive. Preferences, however, do exist, and these are reflected in tonnage, quality, time of maturity and consequently profit.

The law of a small profit margin dependent on large tonnage of high quality is at hand.

In the survey of the area the irrigation methods can be considered. Often it is necessary to enlist the services of an engineer.

Location of head ditches, determination of slopes, length of run, type of irrigation and many other facts should be clearly settled before planting is started. The furrow method is the cheapest and in many cases the most satisfactory of the several systems.

LEVELING THE LAND

Money expended for leveling is one of the most profitable investments in orchardist equipment. No leveling can be satisfactorily done after trees have become established.

In order to produce profitable tonnage of fruit, an orchard must be in such a shape that irrigation water can be applied uniformly and at low cost. It must be possible to maintain proper moisture for each tree.

Obviously this work must be done well in advance of the winter before planting.

CULTIVATION NECESSARY

One of the first essentials in preparing the land is deep tillage. This is especially desirable in soils which have been farmed to grain or grain hay crops, since years of shallow cultivation generally have left their mark in the form of a few inches of compacted soil just below the plowing depth.

It is difficult to irrigate such lands later. The moisture will not penetrate and the trees will be stunted for lack of proper root development.

SUBSOILING BENEFICIAL

Subsoiling is an excellent method of breaking into and loosening the soil. Shallow hardpan, if not too thick, also can be broken to advantage with subsoil implements. The ground in question always should be subsoiled while dry, and this necessitates fall operations.

A subsoiler will shatter the soil and break it up for considerable distance back, but in a wet soil it will score out a groove in the ground and may do more harm than good.

The tree rows should be marked out and the subsoil implement taken down the rows. In future years it may be desirable to subsoil between the trees, thus working up the whole area.

Subsoiling seldom can take the place of blasting where it is indicated. Any hard layers in the soil to a depth of at least five feet should be broken up with powder. This not only is to open up lower soil for root feeding, but also to remove all hindrance to water passage in order that the top soil will remain sweet.

In many cases the soil reached below hardpan layers is of little value to roots, since it is often lacking in fertility. But if the impervious layer is not disturbed, the irrigation moisture of winter rain may cause oversaturation of the soil above and the roots thus are limited in their activity. Many root stocks, such as almond, are particularly susceptible to injury if such a condition exists.

BLASTING SUGGESTIONS

A low strength of powder is used for soil blasting, generally 20 per cent or less. This gives a heavier charge and breaks back a considerable distance. A stronger charge has a tendency to shoot out or form a pocket.

The charge should be placed in the center, or slightly below the center, of the hard strata to be broken to get best results. In order to do this, it is necessary to drill through the layer to ascertain its thickness, then tamp the soil back so that the charge is properly placed.

A churn drill, a little water and a soil auger to bring out the dirt are needed to make the holes.

Many claim results from blasting regardless of the presence of hard layers. But although good results have been observed as a result of blasting sandy soil, it is doubtful if the expense is justified.

All Cow Paths Lead to the Dairy Show

By ROBERT E. JONES

Manager Pacific Slope Dairy Show, Contributing Editor ORCHARD and FARM

"FOLLOW the Cow Path" is the slogan which has been adopted for the Pacific Slope Dairy Show, to be held in the Oakland Civic Auditorium, October 29 to November 3, this year.

That slogan has more than a superficial meaning. Civilization has followed the cow paths around the world, and now promises to reach its greatest development here on the Pacific Coast.

ROB JONES

All cow paths of the Pacific Slope lead to the Civic Auditorium in Oakland, which is the home of the Dairy Show. This beautiful building on the shore of the world-famous Lake Merritt, facing the Piedmont Hills, is in the midst of a population of a million people, and convenient of access for farmers from all parts of the Pacific Slope.

The show organization is now on a stable foundation, with the Pacific Slope Dairy Show Association in charge. The association has a directorate comprising leading dairy people from every State west of the Rocky Mountains. Two years of trial have shown that there is a very definite need for an annual meeting place of the dairy industry. Sentiment for a permanent, ever-growing show has crystallized to such an extent that the whole movement has passed well beyond the pioneer stages.

CATTLE EXHIBIT ADDED

With a realization of stable growth behind, the show organization has taken this year the next step forward, namely, the adding of a dairy cattle feature to the show. The Dairy Cattle Show this year will be under the supervision of Professor William Regan of the University of California, and will comprise an exhibit herd representing each of the four leading breeds here in the West, viz., Holsteins, Guernseys, Jerseys and Ayrshires.

Plans also include the usual dairy products competition features, with scoring of butter, cheese, ice cream, milk and cream by eminent judges. Gold, silver and bronze medals will be offered for the best quality products, as has been the case in the past.

There will be also a very elaborate display of the most modern dairying equipment, of special interest to dairy farmers and dairy products manufacturers.

This year the show is designed to give just as much interest to the general public as to those within the industry. City people love fine animals. They will come to see the dairy cattle. Entertainment features are planned, also, to catch their attention and draw them into the show building. One of the most important of these entertainment features will be a contest between school boy bands from various sections of the State.

COUNTY DISPLAYS ELABORATE

A county display department, under the supervision of W. B. Hopkins, recently manager of the Sonoma County Fair, has been placed on a much more elaborate scale than ever before. The Oakland Chamber of Commerce has offered over $1000 in prizes for the display which most effectively portrays the county's opportunities for dairymen. So that the greatest benefit may be derived from this assembly of county displays, Californians, Inc., which is busy advertising California's opportunities to the Easterner, has invited some 2000 dairy farmers in the East to come to the show and see what California has to offer them.

Various civic and semi-public organizations, as well as Californians, Inc., are lending their enthusiastic co-operation to the show movement. The Oakland Chamber of Commerce has taken more than a lively interest, and would like to see the show established in Oakland for all time. The women's clubs of Alameda, Berkeley, Piedmont and Hayward, as well as Oakland, have organized a complete program of entertainment for women who come to the Dairy Show.

Many conventions of organizations in the dairy industry will be held in the Civic Auditorium during the week.

It is customary, in speaking of the California State Fair, to say that the next Fair will be "bigger and better." We can say this, also, with reference to the Pacific Slope Dairy Show, except that the adjectives hardly express the remarkable growth of this show. It will be fully three times as big as last year, and the attendance is expected to be increased by at least one hundred per cent.

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES
Contributing Editor

SLAUGHTERING TREES.

We Americans are ruthless toward our trees. It seems that only the pressure of necessity will stop the slaughter. European people are always shocked when coming here to learn of our attitude toward trees—it is so careless and wasteful. Our California forests would be more valuable a few generations from now as playgrounds for the people than they are today for the making of shingles, grape stakes and siding. Yet we'll keep cutting them down until the stark hillsides shout their ugliness at us. Then, perhaps, we'll realize the beauty we have lost; we'll sense that there is something worth while in life besides that which brings in money. No pile of lumber can compensate for the joy of a day in an unspoiled forest.

EUROPEANS CAN'T UNDERSTAND

But let's be practical about it. There are economic reasons why ruthless forestry must go. And there are ways to cut and conserve timber at the same time. The United States Forest Service has found a way in National Forests. But unfortunately, much of our fine timber is in private hands.

I tried to apologize and explain recently, when I had the pleasure of lunching with Professor Robert Burri, director of the Government Agricultural Experiment Station at Berne, Switzerland. "But isn't there any way of controlling forest practice on private lands?" he asked repeatedly. I told him of the usual police regulations. But he couldn't seem to realize that we are unable to tell the private land owner what tree he may cut and what tree he may not cut, so as to maintain the forest, while taking a crop of timber from it.

There is a way and they follow it in Europe. Some day we'll have such a practice; when there are enough stark hillsides to rouse us to action. Professor Burri said he liked Americans; liked our "go" and our "home town" pride, but he couldn't reconcile this with our careless forestry methods. They revere trees over there; some day we, too, shall learn to love them.

SAVING THE VALLEYS.

Trees have a real value other than for lumber. They protect the watershed, which means that they hold back the rain water and let it down to valley streams slowly. China has learned of this value; her rich valleys suffer famine conditions today because the trees were slaughtered. If Southern California mountains had more trees, there would be no flood control problem—the Santa Ana and San Fernando washes would be tamed.

Just to make a comparison within the State: If the same amount of water as falls annually in the watershed of the Sacramento River dropped onto the hills and mountains of South ern California, the City of Los Angeles might be washed into the sea. But the Sacramento Valley remains intact—with a slight flood now and then—because the mountains of that watershed are heavily timbered. The Sacramento River is a "live" stream the year around and navigable for more than 200 miles above its mouth, all because there are trees on the watershed. Take those trees away and the Sacramento River would become a bed of cobblestones in a season.

PINCHOT AND THE GULLIES.

You have seen a hillside cut by gullies, a direct result of timber slaughter. Men who know what this means are struck with horror by the sight. Years ago I interviewed Gifford Pinchot, then United States Forester and now Governor of Pennsylvania. Pinchot is one of the foremost American tree lovers, one of our pioneer conservationists, whose efforts to preserve trees will be remembered long after coal strikes and coal are forgotten. Although the interview took place 6 years ago, I have never forgotten the expression on Pinchot's face when he looked at a photograph showing a gullied hillside. The ugly scars on the slope that had once been green and fresh with timber seemed to jar his sensibilities. I suppose he saw vividly what such desolation, if continued, would mean. Perhaps he visioned China, with its barren slopes, wasted valleys and famine.

HOW THE AUTO HELPS.

An aroused public will save our trees. Education and enlightenment must precede legislation in these democracies. The auto is helping, for it gets people into the open where they see. Somehow the eye can be convinced when the ear merely hears. Every auto camper who goes into the Humboldt redwoods becomes an ardent convert to the "Save the Redwoods" movement. One cannot see those majestic trees, freshly cut and prone by the roadside, without becoming fighting mad. Some of the giants were aged when Columbus reached America; yet they are being cut today and made into shingles and grape stakes. A sympathetic public is saving some of the finest groves. Many are being purchased by individuals and given to the State for posterity, preserved as memorials.

TAMING FIRE FEEDING WIND.

It is hopeful, too, that California has undertaken a definite tree planting policy. Trees for our great valley (the Sacramento-San Joaquin), will shade the highways and slow down the raging north wind. I've often thought what a marvelous transformation could be wrought by planting windbreaks every ten miles across the Sacramento and San Joaquin Valleys. Might not these tree strips temper the north wind which each year brings so much destruction?

It causes millions of loss in shattered wheat and barley, blasted beans and fruit blown from the trees, not to mention the fire fiend which this year destroyed pasture and timber, towns and the heart of Berkeley's residence district.

There are those in authority who believe that such windbreak strips in the valley would help check this menace. If there is the merest chance of it, let us try the plan. I'll pass the idea on to someone who can work it out.

NEW TREE BOOK.

"Shade and Ornamental Trees of California," is the title of a new book by State Forester Pratt, quite the most elaborate thing the State of California ever has published. As a printing job, it is a work of art, with full-page plates of many of California's best native and ornamental trees. In compiling his material Pratt has combined the knowledge of a scientist with a rare human touch. His descriptions are heightened by historical, mythical and poetic illusions. He tells the practical story of the tree with its history, nature, its place in literature and folk lore all in a paragraph. His book has charm as well as utility. Anyone who likes to plant and care for trees, or who is interested in them, will find it a rare possession.

Climbing Milky Way from Bottom to Top

(Continued from Page 2)

that testing was the only way I could improve my herd intelligently.

"After a year's membership in the testing association, I found my cows averaged only 220 pounds of butterfat. That was 10 years ago. Since then I have weeded out my poor producers and improved my herd with purebred Jersey sires until now my cows average 432 pounds of butterfat—nearly double the yield I was getting when I started testing. Then I just 'got by'; now I am making good money. My best cows yield over 500 pounds.

"Testing not only makes herd improvement possible, but enables a dairyman to feed each cow what she needs in the way of high-priced concentrates, which should be in proportion to her production."

COWS LIKE MOLASSES

As Pontoni talked he threw a shovelful of ground barley and shorts in front of each stanchion, regulating the quantity according to the individual needs of each cow. Afterwards smaller amounts of molasses meal were added to each pile.

"Just what do you suppose 'cereal waste, 20 per cent,' means?" he asked, referring to the label on the meal sack. "Why don't they tell us exactly what goes into these prepared feeds?"

Cocoanut meal is very popular with most Humboldt dairymen, but Pontoni discarded it in favor of molasses, because the latter gives better results, he says.

A pretty little house, two large barns—one of which contains 120 tons of hay—and other buildings cost $7000. A manure spreader has been used nine years without any repairs whatever.

Pontoni is a good co-operator, taking an active part in Farm Bureau work and other progressive agricultural enterprises. His two sons belong to a calf club and their father is delighted with the interest they are taking in the work. Two younger boys—both live wires—are "coming on."

Unlike many "real dirt farmers," this enterprising Swiss dairyman is ever ready to listen to "book farmers" from Berkeley and white-collared scientists sent out by the U. S. Department of Agriculture, for from them he has learned many valuable lessons in his chosen profession. His herd and his farm are getting better every year, a program of improvement which is expected to continue indefinitely.

Sulphur for Alfalfa

THAT top dressing with sulphur is an effective means of increasing alfalfa yields on light soils, such as, for example, those of the Delhi district, is the conclusion reached by experimenters in Merced County.

A sharp decline in production, however, was noted the second year after top-dressing one field which had been stimulated by the application of 110 pounds of sulphur per acre. The stand was thick, but the plants grew slowly and the leaves took on a yellowish tinge.

Since no disease was present, the conclusion was that the heavy yields of the previous year had so depleted the soil that plant food was lacking. It is believed much better results will be obtained by top-dressing also with manure. The addition of ammonium sulphate was beneficial in one case.

The theory now is that in addition to taking nitrogen from the air, alfalfa takes a certain amount from the soil through the root hairs, just as is the case with non-leguminous plants. The length of time during which beneficial results may be obtained from a single application of sulphur, depends largely upon the nitrogen content of the soil, in the opinion of many observers.

Grape Mildew Problem

GROWERS who shipped mildewed grapes as "sub-standard" for manufacturing purposes are said to have been almost uniformly disappointed in the returns, as it is well known that grapes which are even slightly affected by this fungus do not carry well.

Some fruit of this kind, of varieties in demand for juice purposes, fared very well, but on the whole heavy losses were suffered because of the heavy infestation of mildew this year. Some vineyards sulphured five to seven times were seriously affected.

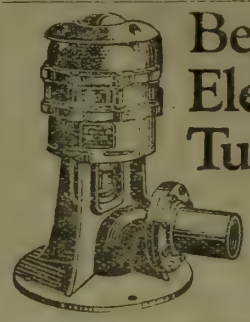
The condition was practically Statewide and more severe than ever before experienced, according to horticultural officials. This winter many producers will use a dormant spray and then sulphur very early next year to head off the spores.

ORCHARDISTS USE SUPERPHOSPHATE

A carload of superphosphate will be used this year by Paradise (Butte County) orchardists to fertilize cover crops. Cover crops were planted and fertilizer applied during September in most instances. Orchardists who were unable to secure hairy vetch seed were advised to plant melilotus indica.

CREAMERY HAS NEW PLANT

The Petaluma Co-Operative Creamery has a force of men at work installing a milk drying plant of the Peebles type, which will be one of the finest in the State. The plant is being installed by the inventor. A cold storage plant recently was completed at the creamery.—K. R.



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Send the coupon.

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Conditions the Cow—Increases the Milk Flow

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Housewives Urged to Use Dates

Fresh California Product Now Available—Preserving Secret and Recipes of Local Growers

WITH the ripening of the dates in the Coachella and Imperial Valleys, housewives and some of the packers are giving their attention to the problem of marketing this delicious California fruit during the winter at a reasonable price.

Particularly does this apply to the earlier varieties of dates, which are delicious, yet soft and difficult to keep and ship. The palatability of these sorter dates insures their popularity if the problem of keeping them through the winter months can be solved. The dry dates, of course, will "take care of themselves."

All housewives who would like to get dates at lower prices for table use and put up the fruit themselves will be interested in a sterilizing process used in the valley resembling the so-called "cold pack" method, which is applied to juicy fruits.

Glass jars are packed with fresh dates, care being taken to have the inside of the jar and its contents thoroughly dry, and are subjected to heat in a regulation steam canner or pressure cooker for about 20 minutes. Sealed tightly, dates so prepared should keep indefinitely, and when opened should be as delicious as when taken fresh from the tree.

MANY DATE RECIPES

Desert housewives have developed, also, many recipes for preparing dates. Among confections few preparations are more popular than dates stuffed with nuts, fondant, marshmallow, unsalted butter (after the practice of the Orientals), or bits of American cheese.

Date bread and dates in fruit salad, to begin with the practical, may be followed by dates in fruit cocktail with other fruits that blend with their flavor. In sandwiches of nut or whole wheat bread dates are delicious. They may be used on cereal that is eaten with milk or cream; mixed raw in boiled rice to be eaten with hard sauce; or combined with sweet pickles. An excellent vinegar also is made from cull dates.

Dates alone, especially the soft varieties, that almost drip juice when first picked, seeded and served in halves with cream, are as delectable for a dessert or breakfast dainty as our ideal American dish, peaches and cream.

Desert housewives have developed ways of using dates in mince pie, ice cream cake and fillings, in numerous puddings, Americanized Arab dishes, and in many confections.

HIGH SUGAR CONTENT

Aside from the palatability of the several varieties of California dates, their food value is unquestioned. Called "nature's candy," dates are the sweetest fruit that grows, rich in sugar.

A bulletin issued by the University of Arizona which gives the sugar content of samples of a number of varieties of dates, shows the following percentage, for example, of some varieties that thrive in Coachella Valley, and one, the Havany, well adapted to climatic conditions of Arizona:

Variety	Pct. Cane Sugar	Pct. Invert Sugar
Deglet Noor, Tempe	41.51	16.51
Deglet Noor, Tempe	38.84	19.18
Deglet Noor, California	40.55	20.93
Havany, fresh, ripe	41.61	27.82
Saidy, fresh, ripe	2.67	49.38
Rhars, fresh, ripe	1.96	54.33
Rhars, cured	.47	61.03

Authorities on food values show that three or four dates make a 100-calorie portion, consisting of two parts of protein, seven of fat and ninety-one of carbohydrates. One cup of stoned dates, or 6 1-5 ounces, is given as 608 calories. Seemingly dates would be an ideal food to meet the sugar needs of children.

HOW TO GET FRUIT

ORCHARD and FARM readers who wish to secure a supply of fresh dates and who desire more information concerning date culture and date recipes, should get in touch with the secretaries of the Chambers of Commerce at Indio and Coachella. To increase local consumption of this wonderful California product will do much towards encouraging the growers who have given so much of their time and money and braved so many dangers and discomforts in order to establish the industry in the desert valleys of the Southwest.—MARY E. WALTER.

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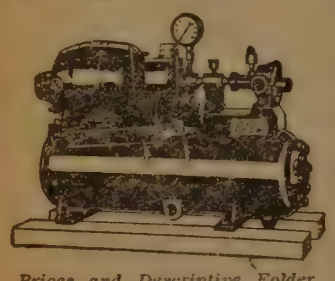

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Holsteins Extolled

AN attractive two-color poster recently issued by the California Holstein Association is illustrated with photographs of King Korndyke Pontiac 20th 188174, owned by Sargent Bros., of Tulare and Adirondac Wietske Dairy Maid 204072, of the Bridgeford herd, Patterson, Cal.

The former is called "the leading bull of the year in the United States and Canada"; the latter is described as "the only cow in the world with three records above 1000 pounds butterfat in 365 days."

The following additional facts concerning California Holsteins are cited:

"Over 15 per cent of the cows to make over 1000 pounds of butterfat in one year have been developed in California.

"Approximately 40 per cent of the cows to make over 30,000 pounds of milk in one year have been developed in California.

"Over 10 per cent of the cows to make over 800 pounds of butterfat in one year have been developed in California.

"Over 7 per cent of the cows to make over 24 pounds of butterfat in 7 days have been developed in California.

"Eleven head of California Holsteins sold for a total of $124,950, an average of $11,359 per head in the St. Paul National Sale, winning the $500 prize for high State average.

"Three hundred and thirty-seven dollars per head is the average price at which registered Holsteins have sold in California for the past 7 years, at public auction, 6216 head of all ages having sold for a total of $2,096,338.

"Registered Holstein cows have made more than 95 per cent of the records above 800 pounds of butterfat in one year that have been made by cows of all the dairy breeds in California."

Protecting Ten Square Miles of Milk

(Continued From Page 3)

pany gave up this method of securing carefully handled milk several years ago and that the farmers still are retaining their own system of controlling the bacteria count. He reports that several other similar cases have come to his personal attention.

However well the farmers of the country may be striving to provide clean milk, their efforts were largely instigated and are still being kept alive by the regulations established by the health authorities or technical men employed by their customers—whether those customers are manufacturing plants, milk distributors or individual consumers. Milk inspection has proved itself so practical and so useful that it has won the respect of both producers and consumers. The dairy farmers who once protested against inspection have learned from experience that inspection makes consumers much more ready to drink milk and hence better customers.

It is the boast of American health and dairy inspection officials that the milk supply of this country is cleaner and better than that of any other country in the world, and that it is getting better all the time. Furthermore, they maintain that there is very little adulteration of milk in this country nowadays. The milk inspectors of a medium sized city recently reported to the dairy division, United States Department of Agriculture, that their work in eliminating the watering of milk was saving the citizens who employ them $58,000 a year in food values. This sort of work, of course, reacts to the benefit of the conscientious dairymen, who would be injured by the unlawful practices of less scrupulous producers.

The dairy industry is more completely in the limelight today than it has ever been before and the indications are that the limelight will grow stronger constantly. This is due to the universal recognition among doctors, teachers, social workers and parents that milk is vital to the normal growth and mental development of children and an extremely useful addition to the diet of adults.

EVIDENCE OF MALNUTRITION

At the time of the World War, when millions of our young men were undergoing physical examination, it was found that an astounding number of them were suffering from defects due to the wrong feeding methods to which they were subjected in childhood. It was about the same time that students of nutrition began to work out the modern science of human feeding. The mass feeding experiments carried on in the famine districts brought many revelations.

The studies of McCollum, Mendel, Sherman, Bloch, Emerson and other American and foreign scientists brought to public attention the vital importance of milk and dairy products in the human diet and demonstrated their ability to overcome many physical difficulties typical of childhood—such as soft bones and teeth, malnutrition, lack of physical development, mental dullness and poor eyesight.—through the use of milk and dairy products.

LOS ANGELES' EXPERIENCE

The California Dairy Council proved to the taxpayers of Los Angeles that their school children who used milk regularly, taken grade by grade between their fourth and fifteenth years, averaged a quarter of a year younger than the non-milk-using children.

It also proved that, at graduation, four non-milk users were over age to one milk user. At the end of their investigation, the statistics indicated that the 22,700 non-milk-using children in the city's public schools were losing 1218 school years per annum through backwardness, a condition which milk, used in sufficient quantity, might totally overcome.

As it costs Los Angeles $75 to keep a child in school for one year, the investigators calculated that the increased use of milk among the non-milk users might save taxpayers $91,350 a year. Los Angeles and numbers of other cities throughout the Nation now are encouraging their school children to drink milk by permitting dealers to serve them at recess time. Some schools have special lunch rooms. The milk is served in half-pint bottles, with stoppers so made as to permit the insertion of straws.

REASONS FOR HIGH STANDARD

In discussing the reasons for the high standard of America's milk supply, Ernest Kelly, the expert in charge of milk investigations, dairy division, United States Department of Agriculture, said recently:

"The healthful state of our milk supply is due, in the first place, to the rapid spread of proper pasteurization. A second factor is the intelligent grasp by dairy farmers of the principles of sanitation. Our transportation facilities, such as refrigerating cars and tank trucks, are responsible for getting our milk from the country to the city in excellent shape.

"Bottling, which is carried on without the touch of hands and which places the milk in sterile containers for distribution, is a most important element in the system of providing good milk to consumers. Bottling now is in vogue in all parts of the United States. Another reason for good milk is that distributors have developed means of keeping milk properly cooled during the process of distribution.

"Returning to the farmers, accredited herds, which have the approval of the Government inspectors as free from disease, are a source of good milk. The Government is carrying on tests in all parts of the country to discover cows infected with tuberculosis, and thousands of these animals have been removed as sources of danger to our milk drinkers.

"This country originated certified milk. By certified milk is meant milk produced under extraordinary medical supervision. On many dairy farms and in many dairy plants the employees are now examined physically at frequent intervals to see that they are free from infectious diseases. Added to this, a large number of important milk distributing organizations constantly employ highly expert technical men to oversee the purchase of milk and cream for the sole purpose of maintaining their products in the first grade." Is it any wonder America leads the world in dairying?

L. A. County Fair

ALL is in readiness for the opening of the Los Angeles County Fair at Pomona next Tuesday.

The livestock show will feature pure bred beef cattle and draft horses, two classes of stock seldom seen in large numbers in Southern California. Many of the State Fair champions will compete with Southern California animals which remained at home, and since this is the last fair of the season, the decisions of the judges will carry much weight.

The milk goat show, with more than 500 entries, promises to eclipse all previous events of this kind, while the poultry show will have 50 per cent greater space than last year's record breaker. Entries from the Northwest, the South, the Middle West and even the Atlantic Coast will compete with local birds. William C. Tallant, Edmond, Okla., will be the principal judge in this division.

A Prominent Exhibitor

The construction of a Women's and Art Building will permit the removal of these departments from the big tent. The latter, said to be the largest ever erected on the Pacific Coast, will house automobile and industrial exhibits as well as the agricultural and horticultural entries.

Economical Dairy Production

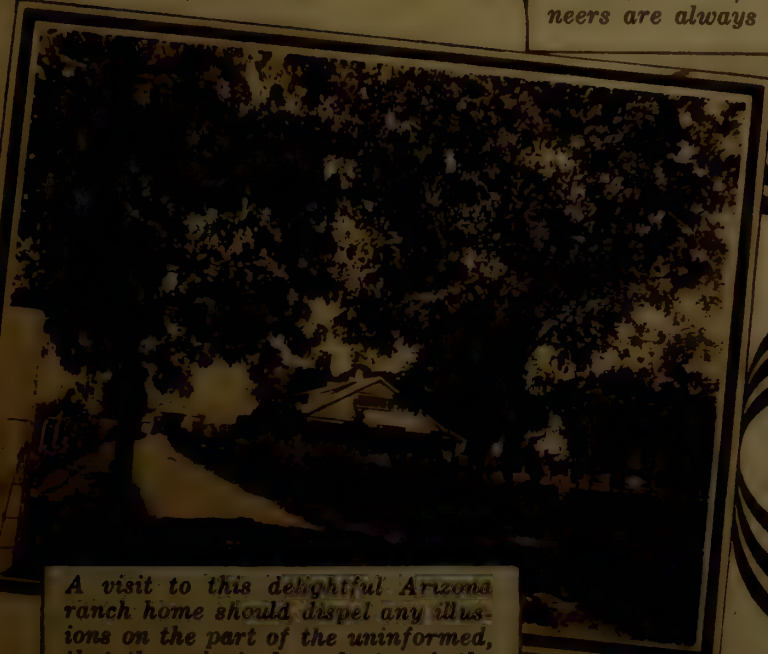
A RECENT survey on the cost of butterfat and milk production made by a commission authorized by the Legislature two years ago, headed by Prof. R. L. Adams, showed that the Sonoma-Marin district produced fat cheaper by a small margin than any other section in California which had been studied. This is said to be due to the favorable pasture conditions existing in the coast areas, and the relative value of the land used for this purpose.—K. R.

PICTORIALLY SPEAKING

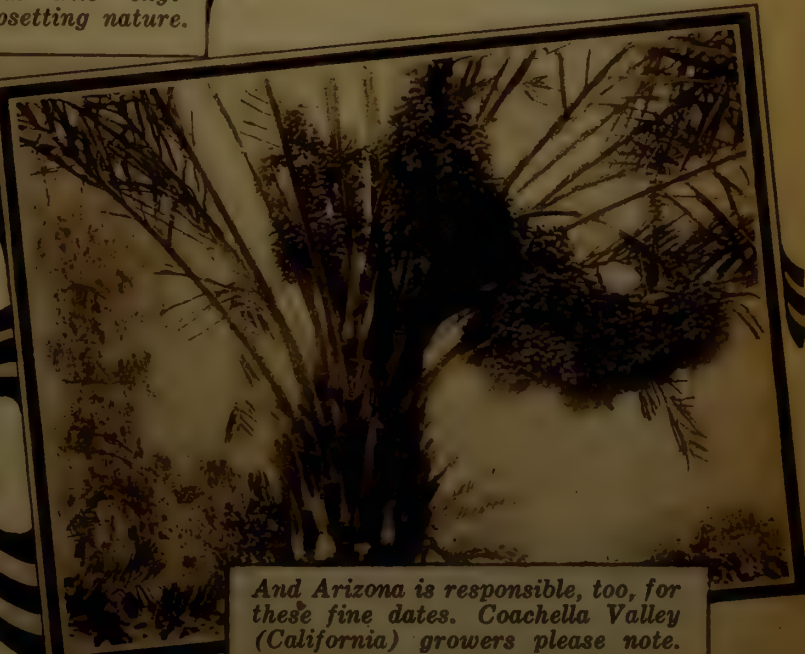
The fine building shown above is the Sacramento home of the California Almond Growers' Exchange, the great co-operative marketing agency which maintains executive offices in San Francisco.

Tokay grapes approach perfection in the Sacramento Valley. The attractive scene above was photographed near Fairoaks. Note the olive grove in the distance.

Lake Hemet Dam, source of irrigation water for the Hemet Valley, in Southern California. The engineers are always upsetting nature.



A visit to this delightful Arizona ranch home should dispel any illusions on the part of the uninformed, that the principal products of the Southwest are cacti and snakes!



And Arizona is responsible, too, for these fine dates. Coachella Valley (California) growers please note. You're not the only ones who grow bunches of money!

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September 19, 1922.

Dear Mr. Rosenkranz:

At the beginning of my third year with this company, I want to thank you for the big part the school has played in helping me to a success in automobile work.

I am now Assistant Sales Manager and will make $4000.00 this year, which is more than I would have made in three years at my former work as an accountant.

I consider your training was worth five years' ordinary shop experience to me in quick advancement.

Please give my best regards to all the instructors. Yours very truly,

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P. S.: My home address is 1285 Atlantic St., Portland.

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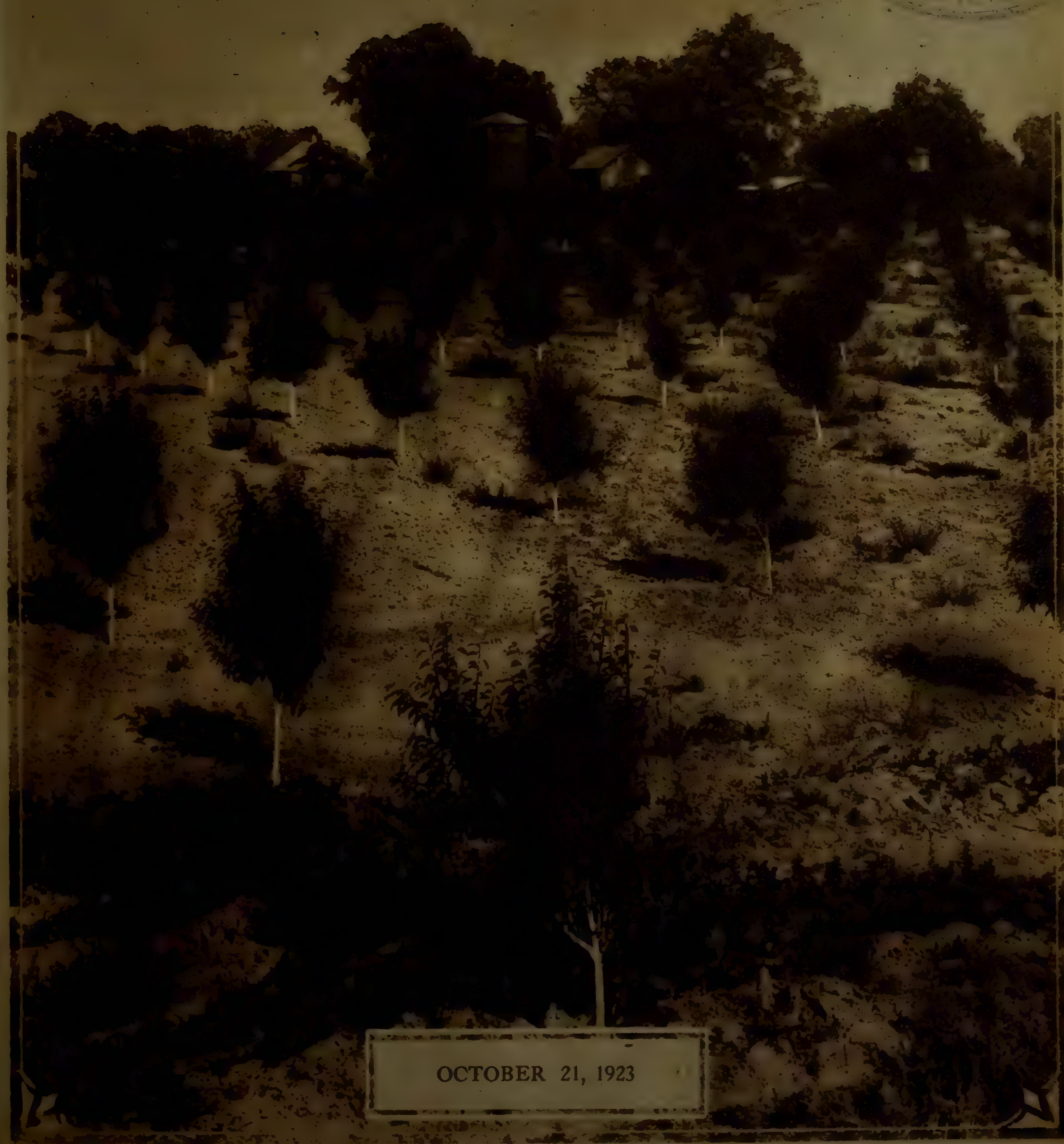
ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER



OCTOBER 21, 1923

Pulling Down Profits With Santa Clara Pears

By O. H. BARNHILL
Assistant Editor ORCHARD and FARM

These Fruit Growers Have a "Cinch"

NEITHER Jack Frost nor blight bacilli, the two arch enemies of the pear, bother San Jose producers of this fine fruit. Without these foes to fight, orchardists probably have as near a "sure thing" as there is in the farming game. Nevertheless, there are certain conditions that must be met before pear growers can pull down big profits, even in this favored land, as is shown in the accompanying article. —*The Editor.*

WHEN "Peter Piper picked a peck of prickly pears" he furnished a tongue twister that has tickled thousands, but when V. T. McCurdy, Santa Clara orchardist, raised many carloads of prize pears and sold them at fancy prices he showed how to make $500 land worth $2000, which affords the hard-working farmer much more genuine pleasure than any alliterative combination of words.

McCurdy did not start out to achieve anything unusual in the line of fruit farming. In fact, when he bought his present place 11 years ago he intended to derive his chief revenue from chickens. Accordingly, he put 2000 hens to work, expecting them to shell out eggs as they do at Petaluma, from whence he had come. Soon he became convinced that Santa Clara soil wasn't suited to growing big egg crops, being of the consistency of black wax when wet, the result being that the biddies got all balled up when they went out doors.

Attention next was directed to the fruit trees which covered most of the place. There were a great many young trees, too young to bear, and some old ones, which had never been particularly profitable.

"All conditions seemed to be favorable for growing big crops of fine fruit," relates McCurdy, "therefore I started an investigation to see what was lacking. The first thing I found was that the trees weren't getting enough water. A thirsty tree is a poor worker.

IMPROVING WATER SUPPLY

"The water supply was inadequate and so was the method of distribution. A good 250-foot well was put down and a pump and motor capable of lifting 24 barrels of water per minute installed. Seven thousand feet of 12-inch concrete pipe was laid underground, to conduct the water quickly, easily and without waste to where it was needed."

Many of those who were "sorry for the sucker who paid, or agreed to pay, $50,000 for a 55-acre farm," saw certain ruin ahead when the newcomer put in such an expensive irrigation plant. "Just throwing good money after bad," they declared.

"My practice always has been to give a crop or an animal whatever it needs, regardless of expense," explains McCurdy. "When this is done the profits will take care of themselves, I find."

There is considerable slope to the ground, over which it had been the practice to run the water rapidly. Often the ground was wet down only a foot or so, leaving the lower tree roots dry and forcing the feeder rootlets to the surface, where frequent irrigations were needed to keep them supplied with moisture.

FIFTY BARRELS TO THE TREE

Ridges were thrown up around the trees and into each of these reservoirs 50 barrels of water were run at each irrigation. The ground was so thoroughly saturated that a shovel could be pushed into it handle-deep. Subsoiling was unnecessary to break up the plow sole, because the soil contains sufficient gravel to enable the water to percolate into the subsoil.

The underground pipes were laid 400 to 600 feet apart, the former length of stream being found the most desirable. Very small streams are used, in order to give the water plenty of time to soak down deep into the soil.

"We irrigate only twice a year," states McCurdy. "Once in May and again in July. After each watering we plow deep with a heavy tractor and then keep the ground well cultivated. Our surface water makes connections with the moisture deep down in the subsoil, which rises as needed, but is prevented from escaping by a dust mulch.

"You see," kicking the dry top dirt aside, "the ground is moist within a few inches of the surface, although it has been nearly two months since we irrigated. This method makes the trees deep-rooted and largely independent of surface moisture. Fruit which ripens under these conditions is not watery and possesses unusual keeping qualities."

Remarkable improvement in growing and bearing habits was noticed immediately after the above described system of irrigation was put into practice. But the trees seemed to need something else besides water. McCurdy decided they had been short of food as well as drink.

According he bought $2000 worth of horse manure from the Government remount station at Palo Alto, paying $4 a load for 500 loads. This material was applied at the rate of 25 loads per acre.

Again the neighbors stood aghast at what seemed to them wanton extravagance. "One hundred dollars an acre for manure!" exclaimed a newly-arrived grain farmer. "Why, that's more than lots of good land is worth."

"The trees bore four or five big crops after that big fertilizer feed," relates McCurdy. "Now they are falling off in production and the fruit in some places is beginning to drop badly before ripe. I believe the trouble is lack of fertilizer. I'm going to give them another big manure feed, regardless of cost."

SPRAYS EARLY AND OFTEN

The trees having been properly fed and watered, keeping them healthy next was given attention. "Let us spray!" devoutly exclaimed McCurdy, covering the trees with various chemicals so early and often that once more his conservative neighbors were appalled at the seeming extravagance.

The beautiful McCurdy farm home stands in the center of a lovely private park. Fruitful pear orchards stretch away in all directions.

V. T. McCurdy and some of his heavily-laden 45-year-old Winter Nelis pear trees.

This six-speed Ford truck pulls two-tons of fruit out of the orchard and when empty runs 35 miles per hour on the highway. McCurdy packs and sells all his fruit.

"'An ounce of prevention is worth a pound of cure' is my spray motto," explains McCurdy. "Other orchardists say they don't see how I can afford to spend so much time and money in spraying, but I don't see how I can afford to let bugs and fungi get a foothold in my orchard. It's easier to keep such things out than to fight them after they are once established.

"Half the fruit grown by one of my neighbors is wormy. Insects devour all his profits. It pays to spray thoroughly to save even a 10 per cent loss of fruit. In one of my young orchards not a single worm ever has been found. Only a small fraction of one per cent of the fruit from the older trees is infested. When we have to throw out one per cent we get scared and spray more thoroughly."

HANDLING NEIGHBOR'S FRUIT

As McCurdy talked he disgustedly assisted in sorting some pears which a neighbor had sent over for him to pack and sell. Although the neighbor had agreed to send nothing but sound, marketable fruit, many wormy, bruised and misshapen specimens were found. Furthermore, two varieties were mixed together.

"Here!" McCurdy called to a helper. "Take this fruit back home right away. I want to get rid of it before any of the worms crawl out," he explained. "This is my first experience in handling fruit for neighbors—and it'll be the last."

Lime sulphur spray is applied to the trees in the fall and again in the spring, to kill scab and other fungus diseases. The stock solution at first was prepared by boiling in two large iron kettles set in masonry. So much difficulty was encountered in training helpers properly to prepare the solution and the commercial article became so cheap that the latter now is used.

FIGHTING CODLING MOTH

Arsenate of lead solution is sprayed onto the trees four to six times each season, depending upon the variety, the late sorts being sprayed oftenest. This large number of applications is made necessary by the climate, which is such that codling moth are hatching continually all summer, rendering it necessary to keep the fruit covered with poison.

Scale, mealy bugs and other insects are controlled by miscible oil spray, which is applied once every three years, or oftener. It appears to have a beneficial effect upon the trees.

The trees are close-planted and short-pruned, some blocks containing 175 trees to the acre, set 16 feet apart each way. Trees 45 *(Continued on Page 9)*

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
OCTOBER 21, 1923

Peach Growers Are Benefited by Bud Selection

Experiments Conducted Since 1919 Emphasize Necessity for Care in Selecting Parent Stock—Important Conclusions Summarized—Some Practical Suggestions

By GEORGE P. WELDON
Pomologist, Chaffey Junior College of Agriculture. Contributing Editor of ORCHARD and FARM

ALTHOUGH much has been written in recent years concerning bud selection, and every one with even a meager knowledge of horticulture recognizes something of the value of this factor in successful fruit growing, there are many problems involved which are not understood by the average layman.

It is not enough that a nurseryman or grower, who is propagating fruit trees, should be familiar with the trees from which he cuts the buds or seems to know positively they are true to the variety desired.

PROFESSOR WELDON

Of course this much must be known before dependable trees can be placed on sale, and any nurseryman today, who grows trees without an accurate knowledge regarding the variety from which he propagates, is a back number and more than this is a menace to the fruit industry, when he should be a benefactor.

But in addition to knowing that trees from which bud-wood is to be taken, are of the variety desired, the propagator also should know about their production and growth and about the type of fruit they produce.

OTHER FACTORS

The present interest in bud selection no doubt has been aroused principally by Shamel's work with citrus. His very important findings, which have pointed out the great number of strains of the navel orange, and his proof of the value of bud selection in increasing the production of citrus fruits, have aroused speculation as to the possible value of similar work with deciduous fruits to aid in eliminating undesirable strains and in bringing about greater production.

So much has been said about the value of and selection with citrus fruits, as it relates to increased production, that some phases of the problem that are possibly of more importance to the industry than those which have a bearing on the mere increase of production, may have been overlooked.

In the fall of 1919 the writer began some work in the Chaffey Union School District, San Bernardino County, with the idea of learning more about the value of bud selection with peaches and apricots.

Accordingly some orchards were selected and, beginning the same year and continuing each year since that time, production records of the individual trees in the orchards have been kept.

These records may be of little value as yet, as far as pointing to exceptionally heavy bearing trees is concerned, but they have revealed many interesting and valuable facts regarding the two fruits mentioned.

Judging from the work done thus far, there is anything but stability to be found in apricot and peach varieties. That is to say, there are few trees to be found where all of the fruit possesses the most desirable characteristics of the variety.

MANY DIFFERENT CAUSES

Of course there are a great many factors which are instrumental in the production of good or bad fruit, as the case may be, and there are many things which may be responsible for inferior fruit, but which are not inherent and may be wholly under the control of the orchardist.

On the other hand, there are certain things that cannot be accounted for except on the ground of heredity and one cannot make a close study of either peaches or apricots of any variety without learning there are a number of strains of these fruits that have easily recognized characteristics, which, apparently, are not due to soil or climatic conditions. It must be concluded, therefore, that these characteristics have come about as a result of inherent tendencies toward variation.

There is, for example, in the case of the Royal apricot, a strain which is characterized by fruit that is flattened and another strain which is characterized by fruit which is round. There is also a strain that ripens very early and a strain that ripens very late.

In making observations of the Ontario variety of peach, a nectarine strain has been found frequently. A few peaches of this strain may be found in every orchard and on almost every tree, and two trees, bearing only this kind of fruit have been located.

Enough has been said to emphasize the importance of bud selection from the standpoint of attaining a better knowledge of varieties and of locating different strains which may exist.

Two exceedingly interesting peach mutations or bud sports already have come to light in connection with the work at Chaffey. These furnish very striking examples of the dangers attendant upon careless cutting of buds.

One of these mutations occurs in the J. R. Merrill orchard east of Ontario. In a block of trees of the Ontario variety there is a tree which is different from the others. At first glance this fact would not be apparent. Only after the fruit has been seen, could one suspect that there was anything about the tree which is different from the average run of trees in the orchard.

MUST OBSERVE FRUIT

On one side of the tree there is a large branch which has grown out from the trunk, about eighteen inches from the ground. This branch bears leaves typical of those from the Ontario variety. There is nothing at all in the growth to excite suspicion that it might be something else, yet the fruit of this branch constitutes an entirely new variety, while the fruit on the rest of the tree is normal.

In the first place, the time of ripening of the mutant is three weeks or more later than the time of ripening of the Ontario. In the second place, a beautiful red stripe develops in the suture, while the fruit is green. After the fruit colors, this stripe becomes very dark and no matter how red the peach becomes, the stripe remains much darker, standing out in striking contrast.

Two years ago buds were taken from this branch, and this year four fruits from these buds produced the first second generation fruit, which came absolutely true to type. Thus a new variety, the Merrill, has arisen through mutation. It may not possess much merit and perhaps it will not knowingly be propagated further, but it furnishes a splendid example of the reason why some trees do not come true to name when an orchard comes into bearing.

In another orchard, also of the Ontario variety, there is a tree which has a large *(Continued on Page 10)*

Must Eliminate Guesswork

INTENSIVE study of individual trees is necessary if the planter is to have protection against inferior stock.

Nurserymen who have not recognized all the dangers of hap-hazard methods must not be criticised too severely, but in future public sentiment will demand more care in bud selection.

If disappointment and condemnation are to be avoided, the nurseryman must put forth every effort to become familiar with each individual tree from which he propagates.—G. P. W.

Fig Producer Sees Rocks Ahead; Suggests Navigating Chart

By TULARE FARMER

AMONG all the fruits grown in California, figs now stand close to the top, as far as public favor is concerned and in profit to the grower. This fact renders important the great change that is taking place with regard to two of the most popular varieties—Kadotas and Calimyrnas.

Calimyrna figs were planted with the intention of drying the fruit. The future for Calmyrna dried figs, however, is unpromising, while the canned product promises to make big money for the grower.

Kadota figs have been highly boosted and widely planted as a preserving fig. Nevertheless, there is little prospect of any real money for the producers of Kadota figs unless they decide to "bug" (caprify) their fruit and dry it, using only that which they cannot caprify, for preserving. There is far more money in dried, caprified Kadotas than in dried Calimyrnas, while the surplus, or standard Kadota of today, should continue to be used for preserving.

Calimyrna figs this year were grown and delivered to the cannery of the California Peach and Fig Growers at Dinuba until the management refused to take any more, after which they were sold to the next largest fig canning concern in the State, the Kings County Packing Company, which operates a nearby plant at Reedley.

CALIMYRNA STRIKES SNAG

Except for the period when prices were very high during war time, few producers have made much money growing Calimyrna figs for drying. First, there is trouble "bugging," in order to make the fruit "set." Many fruit split and sour. If, to prevent this, the grower does not irrigate during the summer, his fruit is sunburned. Other difficulties which need not be enumerated, are encountered. Suffice to say that when the grower culls out his sour, split, sunburned and bird-pecked fruit he has few first-class figs left.

Much can be done to produce good figs in large quantities, but as a rule it is hard to grow a good crop of Calimyrna figs suitable for drying without having a very large proportion of low grade fruit and culls.

If we should forget about preserving the Kadota and consider it for drying, we would see just the opposite situation. The Kadota has been grown strictly for preserving and when caprified had to be sold cheap. The producer therefore avoided them. There are, consequently, few dried, caprified Kadotas on the market. The dried uncaprified Kadota is a very inferior article. Yet the dried caprified Kadota is excellent, although it does not equal the best Calimyrnas.

WHY DRY KADOTA FIGS?

What the Kadota grower who dries his fruit will avoid is splits, sours, sunburns and—far more than the Calimyrna grower—bird pecks. Instead of getting a few high-grade specimens and much low-grade fruit, he will obtain a large quantity of fine figs and few culls. Furthermore, the market for preserved figs will readily absorb his uncaprified Kadotas.

As for the Calimyrna change from drying to canning, prices explain this. The Peach and Fig Growers paid six cents a pound for first class fresh figs; three cents for second grades, with prospects of profit sharing. The Kings County company paid seven, five and three cents, according to grade, without prospects of a dividend.

The advance on dried fruit was only four cents and the cost of handling, pound for pound, about the same with no chance for future payments, making the total proceeds equal the fresh fruit returns. The producer of Calimyrnas, therefore, has nothing to gain by drying if he can sell his fruit fresh. The Kadota has the Calimyrna beaten a mile in net profits when the fruit is dried.

Although souring, splitting, birdpecks and sunburns may take all the profit out of some Calimyrna orchards, even for canning, it is hard to find anything in the fruit line that is more profitable and has a better future than a good, well-cared for Calimyrna grove.

FIGS MAKE HIT

It is only in the past two years that figs have been canned commercially and in this form they have made a big hit. A member of a prominent club said to his wife, in the writer's hearing, "Polly, the next time you get any canned fruit at the store, buy some canned figs. We often have them at the club and they certainly are delicious, the finest canned fruit I ever ate." It will not take much boosting like that to make the whole country want canned figs.

The Dinuba Cannery of the Peach and Figs Growers handled a million pounds of fresh Calimyrnas this year. The Turlock plant put up an equal quantity and the Figarden factory about 600,000 pounds. Independent canneries are preserving as much as possible of this fine fruit.

A radically different policy is followed at the Dinuba cannery and at the Kings County Packing Company's plant at Reedley. In the latter factory very little mechanical equipment is used and there is much hand work. Only dead ripe figs are accepted, the management rejecting as too green a large amount of fruit that the Fig Growers would think excellent, while the fig that is considered ideal at Reedley is so ripe that it would be rejected at the Dinuba cannery as being too soft to handle with their equipment.

Such ripe figs must be very delicious when canned and the care in hand sorting results in a beautiful product. The labor expense is naturally very high, but little capital was invested in equipment.

The policy of the Fig Growers is just the reverse of the Kings County concern, judging by the Dinuba plant. The building is perfectly designed and built and contains machinery that makes possible highly efficient operation. A comparatively small number of workers handle smoothly and rapidly a large quantity of fruit. The capital invested is large, but the labor expense small and the total cost of production, therefore, must be considerably less per can than at the Reedley plant.

When figs are handled mostly by machinery, firmer and less mature fruit has to be used than when most of the work is done by hand. Every fig canned at Dinuba is quite ripe, however, and the management claims that with skill in cooking, processing and preparing the syrup, as fine-flavored fruit is produced as when riper figs are used. This would make possible a large and rather inexpensive pack of high quality figs, which could be sold at a price that would encourage extensive consumption.

ADVISES "BUGGING" KADOTAS

The Kadota got to the trade first, but the Calimyrna is making a tremenhous hit. Not one thing can be said against the great merits of the preserved Kadota fig. The important fact, however, is that the great boom which this variety has had has resulted in production overtaking the present demand, while a big new acreage is coming into bearing and old orchards are producing bigger crops each year. It will be a marvel if the preserving plants can handle all the fruit that will be offered to them in a couple of years. Nearly every preserving concern received many more Kadotas this year than they had figured on at the opening of the season, although the Calimyrna crop was much less than was expected.

As pointed out *(Continued on Page 7)*

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

DON'T TRUST THE ALMANAC

Farmers are warned by the United States weather bureau not to attempt to carry on operations according to weather forecasts printed in almanacs. "Accurate prediction of the weather and temperature for a season in advance cannot be made for places in general," the Government weather experts point out, "because there are no known laws on which to base them." The patent medicine almanac was accepted as gospel by many of our worthy ancestors. But now (as one of our farmer friends jocosely remarks), "we don't need an almanac. We can just figure on a cold rain when the weather bureau says, 'Fair and Warmer.'"

FIG GROWERS' OPPORTUNITY.

A dozen years ago California black figs sold as low as two cents a pound, dried; now they retail at 10 to 20 cents, fresh. As late as October of the present year fresh figs sold at 15 to 20 cents a pound in Los Angeles.

The very attractive prices obtained for this old fruit in new form—new to the trade—may spell opportunity for the grower. Most of the figs sold fresh are so green they are unfit to eat. If they were allowed to ripen thoroughly, attractively packed in five-round baskets or otherwise and sold at reasonable prices, it is possible that large quantities of figs could be disposed of in this manner very profitably.

There is no more wholesome and palatable fruit grown than fresh California figs. It will pay to push them.

ORLAND MAKES RECORD PAYMENTS.

Orland farmers are the only water users in the United States who have made all their payments to the Government when due, according to officials of the Reclamation Service. The latter are inclined to attribute this 100 per cent record to the fact that Orland has a local water users' association, which looks after the collection of payments.

It is true, of course, that a man on the ground can collect a bill from his neighbor to better advantage than can a Government official at Washington but it is likely that Orland farmers have more to pay with than workers on other reclamation projects.

The Government is becoming seriously alarmed over the delay in the payment of funds advanced for constructing irrigation works, and it is possible that future projects may be held up on this account.

"PLEASE PASS THE CHEVON."

At least 100 persons in every 1000 in America know the meaning of "chevon," although the coined word is but 14 months old, believes B. M. Halbert, prominent Texas goat raiser. The word was created by Mrs. E. W. Hardgrave of the Lone Star State, and was selected as the winner from more than 2000 names entered in a contest.

"This Chevon meat is good to eat;
When barbecued, it can't be beat.
If you would help the goat to fame,
Just make this word a household name."

Thus sang the goat breeders in unison. And the French scholars who say it should be spelled "chevron" are reminded that we have a good American word thus spelled, designating the insignia worn by military officers. Others who fear the term may be confused with "cheval" (horse meat) are reminded that the consumption of horse meat in America is negligible and the French name for it is practically unknown here. "Chevon has come to stay," concludes Halbert, who won't let dissenters get his goat!

MACHINES MILK MORE COWS.

During the World War the labor shortage forced many dairymen to install milking machines. The same cause now leads more producers to seek relief in a similar manner. In many cases their purchases prove unsatisfactory. But this is not the fault of the apparatus, according to a representative of a large creamery company, who has this to say upon the subject:

"In order to prevent a milking machine from injuring a cow's udder and causing a falling off in production, the implement must be properly adjusted and operated. Only an expert or one who has had experience in using a power milker knows how to do this. Yet manufacturers of milking machines often entrust the important work of showing a farmer how to use their apparatus to a hardware clerk, who knows little or nothing about the dairy business. If experts were furnished for this purpose, sales of milking machines would increase materially."

In all fairness, however, it should be added, that when a mechanical milker is used by the average dairyman himself, or by a member of the family, little trouble is likely to be experienced. "Hired help" has caused injust condemnation of many milking machines.

"What's New?"—Keeping Abreast of Agricultural Progress

Farm Bureau Acquires Park

TWELVE acres near Hollister has been turned over to the San Benito Farm Bureau for a picnic ground, the only one in that part of the county. A "Wild West" show was held there in September and the proceeds used to improve the park.

Vetch Invades Butte County

FIVE thousand pounds of purple vetch seed will be planted this autumn for cover crops and hay by Butte County farmers living in the foothill section near Oroville. The seed was obtained from the Humboldt County Vetch Growers' Association, which is introducing vetch into various parts of the State.

Yeast Increases Egg Money

IN ten months, yeast-fed hens earned 24 cents each more than others belonging to Dr. E. C. Morris of Petaluma. The test was started last November, two 50-hen pens being fed and cared for exactly alike, except that one lot was fed dry yeast. These laid 1350 more eggs than the others, in the time mentioned, and appeared to be more energetic, he reported.

Avocado Picking Bag

AN avocado picking bag has been invented by Hamilton Michelsen, a Florida grower. The bag is made of heavy canvas and is provided with a hook at the outer end for severing the fruit from the tree. The big is fastened to the end of a bamboo pole, which sometimes is 30 feet long. When avocados are bruised they decay quickly.

Baled Shavings for Bedding

OWING to the high price of straw in localities where there are many planing mills, as in Los Angeles County, shavings are being used for bedding in horse and dairy barns. A bale of shavings weighs 75 pounds and is said to absorb 50 per cent more moisture than straw. Wood does not decay as rapidly as straw, but when used for bedding finally turns into humus, which most soils need.

Cheap Oil Injures Plants

MANY cranberry plants in Western Washington have been seriously injured by a cheap oil spray, which was substituted for the standard nicotine formula. Both this year's crop and that of 1924 will be reduced on this account, according to C. L. Robinson of the Department of Agriculture. A. L. Huntley, local inspector for the Tacoma district, succeeded in getting everyone to spray for fireworms, with excellent results.

Ship Berkshires to Manchuria

CALIFORNIA swine breeders are highly elated over the recent shipment of seven purebred registered Berkshire hogs to Manchuria, which is considered the best stock country in the Orient. The animals were bought from A. B. Humphrey of Escalon (San Joaquin County).

The purchase was made by Kan Matsushima, animal husbandry expert of the South Manchurian Railway's experimental farm, who spent several months looking over the products of prominent American breeders.

Yolo Barley Acreage Reduced

AS against 15,000 acres in barley in 1921, it is now estimated that there will be less than 1000 acres planted to that cereal for next season's harvest in the Holland Land Tract, near Clarksburg (Yolo County). Diversified agriculture has accounted for the difference. The extension of intensive farming has been stimulated by the completion of the irrigation system this season. The tract is largely subirrigated through a carefully planned system of combined irrigation and drainage ditches radiating from the main canal, a plan that has made for very economical irrigation cost.

Refrigerated Fruit Box

A REFRIGERATED fruit box is used extensively for shipping Florida avocados. It was invented by Hamilton Michelsen, an avocado grower, who packs from 12,000 to 14,000 crates of fruit each season—and sells it at his own price.

The iced crate was made necessary by frequent delays in express shipments, the fruit being sent long distances, sometimes to Maine and California. The express company agreed to re-ice the crates every 15 hours. As a result, no losses have occurred in six years of very extensive shipments—except one crate that was frozen.

The ice is contained in a compartment above the fruit. Thomas L. Bowers, another Florida avocado grower, uses a box which has three compartments, the middle one for ice.

Producers Operate Meat Market

THE production of fine cattle for several years has been a feature of the McKiernan stock ranch, near Success (Tulare County), but the final disposition of the meat at Porterville, only six miles distant, through the medium of a city market to be controlled by a newly acquired partner, is a new feature of the business that promises unusual success.

Following the custom of the foothill stockman, McKiernan, during the summer season, drives his cattle to the mountain meadows of the Sierras, where they thrive on the luxuriant green feed of the reserve.

In this case, however, only the cows and calves are removed, steers of marketable age and condition being left on the home ranch for fattening, to supply the ever-increasing trade of the local meat market, which is under the management of the other partner, McDermott. The scheme is said to be working out admirably for both the producer and the consumer.—S. W. W.

Testing Airless Cold Storage

THE steamer Victoria, plying between Melbourne, Australia, and Hong Kong, China, is trying out a new cold storage system invented by an Australian. It is known as the Gregg-Allen airless storage system, and is being put to the most rigid tests to determine its practicability in keeping fruit fresh during shipments. Experts are watching the tests with keen interest.

More Ice for "Reefers"

OWING to increased fresh fruit traffic the Southern Pacific is enlarging its ice plant at Roseville, where all the company's refrigerator cars used in California north of Tehachapi, are iced. The present capacity of the plant, 500 tons a day, will be increased to 800 tons, in time to handle the 1924 business.

During the month of July 1400 carloads of ice were used daily at Roseville, large quantities being shipped in from other points. This ice storage plant has a capacity of 45,000 tons.

Standardizing Bean Grades

CALIFORNIA bean grades have been standardized, according to rules formulated by a committee representing leading growers, dealers and the State Department of Agriculture. The two grades will be known as "Choice Recleaned" and "No. 1." All beans below the latter grade are to be sold by sample.

Beans are to be graded by size as well as quality, a screen test being employed to determine if the stock is of standard size. Beans containing more than 16 per cent of moisture or more than one-fourth of one per cent of rocks will not be graded.

A Good Year for Pests

ACCORDING to a statement recently issued by the State Department of Agriculture, the climatic conditions of 1923 have been very favorable for the development of certain diseases. Rust (Puccinia Pruni-spinosae), heretofore regarded as negligible, has invaded certain districts and caused heavy losses in individual peach orchards. The abundance of grape mildew (Uncinula necator) is another case of rapid and widespread development of a disease. Shot hole (Coryneum Beijerinckii) on apricots was almost general. Unusual diseases as rust on grape leaves, rust on bluegrass in lawns, downy mildew on apricots and black mold, (Macrosporium parasiticum) on leaves of onion seed crops, point towards unusual conditions favoring such diseases.

The presence of the spores and wintering stages above named and other diseases is sufficient reason for planning early spray campaigns for next season. Growers should prepare to insure their crops against another year.

In deciduous orchards, a winter spray of oil emulsion or lime-sulphur will clean the moss, kill scale insects, destroy the eggs of red spiders and spores of fungi and put the trees in better condition to meet the stress of another season.

Reveries of a Rhymster

By JASON WELLS

BORNE on a gypsy breeze, came a sweet odor—
And out of the past haunting memories flew,
Drifting no longer like ship without rudder;
But gathering swiftly to pass in review.

THE freshly-turned furrow; the red clover meadow—
The dank, woodsy path that led down to the pond;
The musty old mill crumbling there in the shadow—
The bloom-laden orchard that stretched out beyond.

THE newly-made hay in the barn loft, so fragrant;
The grain that was stored in the musty feed-room;
The hickory fire-log—what fantasies, vagrant
Arose in the spell of its haunting perfume!

THE apples so mellow; the ginger cake, tempting,
That Grandmother hid in the massive stone jar;
The savory bread—and the boyish pre-empting
Of crusts, when its odor was caught from afar!

JUST memories borne on the vagabond breezes—
Surging as ghosts through the gates of the past.
A scent long forgotten, like magic, releases
Dear tokens of childhood, recovered at last!

HOME FARM HAPPENINGS

By ONE OF US

DOCKING LATE LAMBS.

Every year there are some lambs that come late and miss the docking process.

After the weather gets warm and the flies are bad, we are afraid to take the tails off because of flies and possible infection.

Every year a few long-tailed lambs in the band make the whole lot look ragged. We decided this fall to trim up these "hang-overs," and during the latter part of September the operation was performed.

An Ellenwood iron was used—a long, chisel-like affair that is heated almost red hot in a little stove that comes with the outfit.

By searing the tails off slowly it is possible to do the job without the loss of blood. After the tail is off, a fly repellant mixture is daubed over the stump and liberally around the hind quarters. In the mixture are pine tar, sheep dip and crude oil.

The tails apparently were all healed after the first day—the operation a success and the patients all "alive and kicking."

PRUNES BEAT THE RAIN.

There is great rejoicing in our camp because prune picking was finished Thursday morning, September 20 and the rain came that night.

There is a lot of satisfaction in having the last of the prunes in the tunnel of a dehydrator before the first rain starts.

The first part of the crop was dried in the sun on trays—but after the intensely hot weather of the first week in September the nights began to be quite cool and the fruit was sent to a neighbor's plant to be dehydrated at $15 per green ton. The last fruit from the field trays was taken to the warehouse the same day the picking was finished.

Just luck—being through in time—because this has been a terrible season to get enough pickers. Rather expensive and a lot of bother, but the fruit was ripe and had to be picked.

After about a week of unsettled weather the sun came out and prunes were picked again.

Thousands of trays were stacked during the rain, and the prunes that were fairly well dried are coming out all right. Some greener ones started to "grow whiskers" and were sent to the dehydrators to finish.

It is remarkable what good prunes can be made of this moldy fruit—when it can be dehydrated within a reasonable time.

In spite of the good sun drying weather during the early part of the season there are more dehydrator converts than ever before.

GOAT MEAT IS GOOD.

While a neighbor had his band of Angora goats cleaning up some of our brush land this summer there was a fine opportunity to give goat meat a good trial. And all who ate it pronounced it splendid.

Fried, boiled, baked and stewed—it was good any way it was cooked and only those who were told knew that it was "chevon."

One man who said he could never eat mutton ate roast leg of six-year-old wether goat, came back for a second and third helping and pronounced it as good meat as he ever ate.

During a six weeks' or two months' period two big six-year-old wethers and four wether lambs were consumed.

There is no reason why goat meat should not be just as sweet and juicy and tender as it is. A goat is a very dainty feeder, and an animal of most particular habits.

GOATS ARE CLEAN ANIMALS.

Goats are very fond of "browse" of all kinds—oak, willow, cottonwood, elder—and are delighted with wild rose bushes. But they want only clean, sweet food and good water.

Goats are easily killed and dressed, and not being very large, are "handy" to handle. The big wethers dressed 65 pounds apiece; the lambs about 25 pounds.

The meat was nicely marbled in the older animals, the fat and lean being intermingled as it is in the carcass of a champion Angus. And from these old wethers the chops were delicious.

These were not only tried on our own outfit, but on several visitors, who indicated not only by what they said, but by the number they ate, that the chops appealed to them. The hides have been sent to be tanned for rugs.

The campaign of the goat breeders to call goat meat "chevon" may be all right, but as far as we are concerned, goat meat called just plain goat will be perfectly all right.—W. S. G.

Finding Best Grains for Coast

Oats, Wheat and Barley Tests in Humboldt County Produce Good Results—Farmers Co-operate With Department

FARMERS long have felt that variety tests carried on at State experiment stations were entirely inadequate, because of the wide variation in local conditions. This applies especially to California, where there are very great extremes of soil and climate.

Branch experiment stations are of great value, but only partially supply the need. The most practical and comprehensive plan at present is the making of tests by the farmers themselves, in co-operation with representatives of the U. S. Department of Agriculture.

During the past five years a series of such tests has been made with grains by W. H. Perrott, Humboldt County rancher, who has 600 acres of upland near Loleta. Eight acres was devoted to "trying out" 156 kinds of oats, 24 varieties of barley and a large number of wheats.

Each year the poorer varieties were discarded, and the size of each test plot was enlarged, until during the past season, acre patches of the best behaving kinds were grown. The crop from these selected grains is being sold to other farmers for seed.

INTERIOR BARLEY FAILS

One of the most striking results of the test was the indication that Mariout barley, which has proved such a great success in the interior valleys of California, is very much of a failure on the Coast. It was sold by a seedman for "common coast barley." This indicates the importance of seed purchasers being able to identify varities.

University Club barley out-yielded the common kind 30 per cent. The former has shorter beards, which break off easily, a characteristic which enhances the feeding value of the grain.

Six acres of Blue Stem wheat yielded six tons—33 bushels per acre. "This is the only variety suitable to coast conditions," states Perrott. "Bart wheat, highly prized in some sections, on my place was not worth cutting."

More oats than any other kind of grain is grown in Humboldt County, where it is planted in connection with vetch. Peculiar interest, therefore, attached to the results of the oat tests. Abyssinian proved to be one of the best oats, out-yielding California Red 50 per cent.

Richland oats stand up well on heavy land, of which there is a large area around Eureka. This is a white variety, practically immune to rust, a common disease in damp coast climates.

White Russian is a strong grower and proved best for silage, when grown with vetch. The grain holds up the vines, while the vetch, being a legume, furnishes needed fertility, the two together making a fine farm team.

Green Mountain is very similar to White Russian. Sparrowbill is another good oat, having thick, short grains.

The tests were conducted under the direction of Prof. W. W. Mackie of the agronomy department, California College of Agriculture, assisted by J. W. Logan, Humboldt County farm adviser.—O. H. B.

Seepage Irrigation of Pomegranates

By SYLVIA W. WYLDE

WHAT is pronounced by authorities to be one of the most useful and interesting experiments in pomegranate culture ever undertaken is to be seen in a seven-acre orchard near Springville, Tulare County, controlled by August Millinghausen, who is an active worker in the development of this unique industry.

MR. MILLINGHAUSEN

The study of the "splits" problem, which to date is the only trouble affecting the foothill pomegranate producer of these parts, has occupied much of this grower's time and effort, resulting in an odd system of irrigation that seems to be bringing the desired results.

After various experiments, Mr. Millinghausen decided that the splitting of the pomegranate was not caused by irrigation according to the popular theory, but was a result of allowing the soil to become quite dry and then turning on a head of water, the sudden wetting causing the fruit to split almost immediately.

Acting upon this conclusion, Mr. Millinghausen installed the following system of irrigation, which has been in force several seasons, during which time a very small percentage of split fruit has been noticed. Steel pipes were laid between the tree rows, a special hydrant being provided for each tree.

The process of continual seepage then was employed, giving each tree a steady and uniform irrigation. With the exception of considerable work being necessary to keep the pipes free from accumulations of debris, the system is pronounced very satisfactory and less laborious than the usual method.

VALUABLE ON HILL LAND

Owing to the hilly nature of this district, irrigation is always difficult, reduring constant attendance in order to prevent washouts. This system of seepage irrigation takes care of this problem in a very satisfactory manner, which is an additional point in its favor.

The trees in this orchard are five years old, and are bearing their third crop this season, which promises to be by far the heaviest in their history. Shipments from this ranch will be handled, as usual, through the medium of the Lindsay-Strathmore Pomegranate Association, the records of which show this fruit to be the finest in its line ever handled by them.

Pomegranates from this orchard now are on display, weighing from one and a quarter to two pounds each, and measuring from 12 to 18 inches in circumference.

Since this form of horticulture is rather new, many uses of the fruit are still in an experimental stage, one being the introduction of both the fruit and the juice into the hospitals, where it has been endorsed by several leading physicians.

The Millinghausen product has found its way into several hospitals, several boxes of fruit going as far as the Deaconess Hospital in Spokane, Wash., last season, where it was used for its tonic properties.

Another experimental feature is the making of pomegranate syrup for use at the soft drink fountain, for which purpose it has been found very palatable and healthful.

A movement is on throughout the section to create a demand for this syrup; the pomegranate association of Lindsay expects to have definite information regarding it at any time. This would create a market for the culls and the fruit that is below standard size, the disposition of which has always been an unsolved problem of the pomegranate grower.

As the result of several years' experience with pomegranates, both with orchard and nursery stock, Mr. Millinghausen is of the opinion that the foothill environment is peculiarly adapted to the culture of this fruit.

NATURAL GAS FOR POWER

Installations totaling nearly 65,000 horsepower using natural gas for fuel are reported by the Southern Counties Gas Company, in Southern California. Some farmers, it is said, have effected a saving of 50 per cent in power bills by using gas in specially designed engines.

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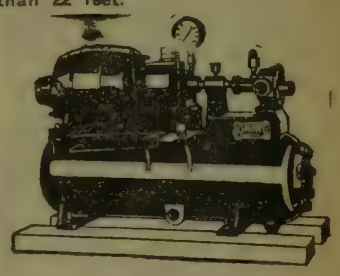

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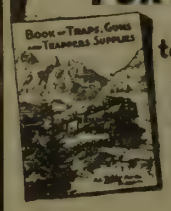

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By HELEN TEMPLE

PLANT BULBS CAREFULLY.

While the Dutch are steadfast in their liking for tulips, we Californians have developed a love for bulbs of all kinds and descriptions, starting from our dahlia craze.

HELEN TEMPLE

We plant bulbs and still more bulbs and the more we plant the more we want to plant. Often when we find a bulb that isn't in our garden of flowers we either beg, buy or borrow it, hurry to the garden, trowel clasped tightly in one hand and the bulb in the other, then stand in earnest contemplation until we find a vacant spot among our flower beds.

Often the poor little bulb is planted among alien neighbors and we expect it to enjoy life just as much as it did when it grew among roots of its own kind. Frequently a forgetful hoe will end its life, or perhaps the alien is crowded out entirely. Anyway, the bulb didn't have a fair chance and we are the losers.

Quite naturally, we feel disappointed in that bulb. However, if we had planted the little bulb among others of its kind, either cousins, second cousins or other congenial company, it would have repaid us a thousand times over.

A border or bed of bulbs of blending colors and similar characteristics is decidedly worth while and surely worth planning carefully. While I do not advocate the formal bed of bulbs, quite often it is necessary to plant them formally to carry out the color scheme, or perhaps to balance an informal garden.

PLANNING AND PLANTING WALKS.—The informal garden with the uneven lines of shrubbery, then perhaps a border of tall bulbous plants and the lawn with an informal perennial garden in the background, loses its haphazard appearance if the walk is straight and well kept, with a border of bulbous flowers on each side. The formal border should not be of more than three colors and the bulbs must be of uniform size and planted at a uniform depth to obtain the desired effect.

To establish the most practical walk through your garden of flowers, start as hurriedly as possible from your door and go through your garden as instinct tells you is the shortest way. Then establish your walk there. You will save the lives of your flowers, as well as the patience of your family by following this suggestion. Then plant your border along the walk with bright-faced bulbous flowers that do not mind the dust.

The winding path is quite picturesque, but we busy housewives can't always stand at the door and watch our children and husbands and dogs come up the path. And we know very well that they'll come the shortest way, so why not provide a nice, wide walk in that place?

HOW TO SET OUT BULBS.

All fall bulbs should be planted as soon as possible after the middle of October. Prepare the soil by spading it a foot or more deep. If it was not fertilized in the spring, do not fertilize it now. Manure touching a bulb is sure death, even though the manure is old.

It is possible, however, to add richness to the soil even at planting time, by the use of bone meal, which is not injurious to the bulbs. Many planters add a spoonful of bone meal to the soil used about each bulb. Sometimes the fertilizer is thrown into the bottom of the hole with a handful of sand before planting the bulb.

The popular rule for the planting of bulbs is to set them one and a half times as deep as the bulb is thick, but we must use judgment in following this rule. Small bulbs usually are planted about two inches deep, while lilies should go under ground six or seven inches. Tulips usually are planted four to six inches.

When the larger bulbs have bloomed and begin to droop, plant shallow-rooted annual or perennial flowers between them. By the time the foliage of the older bulb has died down the young plants will have established themselves into promising bloomers.

The planting of the annual or perennial flowers in the bulb border is not practical, unless the bulbs are to remain undisturbed underground. Many of our finest bulbs are left undisturbed for several years, becoming more beautiful with age. Tulips, in some localities, may be left underground three years. In other localities it is necessary to lift and store them each year.

BEST KINDS OF TULIPS.

Tulip beds and borders are very popular at the present time. Perhaps it is a strain of our Dutch forefathers, who were gardeners, that has taken hold of our instincts again. Anyhow, tulips really are one of our most beautiful bulbous flowers and the most wonderful borders and beds in our California gardens are planted with them.

We are planting tulips of all descriptions—Darwins, Parrots, Early, Breeder, Striped and Doubles in fact, we are beginning to wonder if we will find room for them all. The Double tulips make one of the most striking informal borders grown, especially if no more than two varieties are intermingled.

One of the prettiest double tulips is the Couronne d'Or (or Crown of Gold) which is, as its title indicates, a beautiful golden-yellow, blooming in early April. This, with the White Murillo, a double white tulip, makes a splendid border or bed. One of the newest varieties of double tulips in a wonderful coloring is the Peach blossom, a deep, rosy pink.

A bed of either double or single tulips nine feet long and two feet wide will require 95 bulbs planted five inches apart each direction. A 4-foot circular bed of doubles or singles planted about four inches apart will need 126 tulips. If planted six inches apart in a circular bed of four feet across, only 60 tulips are needed.

The popular method in making all formal bulb beds, especially tulips and hyacinths, is planting against a wall, in parkings, between the house and walk, or in an angle of the house. In the latter location the bed should curve in half moon shape and be filled with tulips set about five inches apart. The corner space against the house calls for colors that blend with the color of the house. Don't plant yellow tulips or lavender hyacinths against a house that is unfortunate enough to be painted red.

OTHER BEAUTIFUL BULBS.

We again may plant grape hyacinths, snow-drops, guinea-hen flower, winter aconite, glory of the snow, squill and crown imperial. It is sad to learn that we will lose the importations of all narcissi after 1926, when the bulbs named in the foregoing list will again be quarantined.

Narcissus is one of the earliest spring flowers. It is the most important, for it is so easily grown. Quite often the paper white narcissus is an apartment dweller's entire garden. It is forced into bloom so easily in fiber and water, or with pebbles, that we hardly appreciated it, until we learned that we shall be deprived of it through the new quarantine law.

We Californians, however, can supply ourselves with quantities of mother bulbs and plant our borders and beds with them and thus have them in our gardens every year. In fact, I can not understand why it is not possible for us to grow forcing bulbs as well as foreigners grow them. It is said by authorities that the American source of supply of forcing or garden bulbs is so uncertain that it may be considered non-existent.

If we do not supply ourselves with a quantity of the best narcissi, which include double and single jonquils and daffodils, we certainly shall be out of luck. Personally, I think California gardeners could supply the market with first class narcissi, if they made an effort to do so.

FLOWERS THAT LIKE SHADE.

Snow drops, glory of the snow, scillas and grape hyacinths are most successful when grown in masses. They need some protection and seem to enjoy the shelter of a few leafy shrubs. They do not need lifting each year, but may be grown in a permanent bed for several years. Take bone meal and a small quantity of lime into the soil each year; also provide mulch in the older regions. Crocus, snowdrops and Guinea-hen flower also like a partially shaded situation, while scillas do not like the sun on their feet, of rather the covering over them.

Besides the planting of bulbs at this time, we must not forget the sowing of hardy annuals to bloom and early spring blooming. Sow all hardy annuals in the open, where the frosts are light, but sow in flats in the interior sections. Set out pansies, verbenas, carnations and stocks as early as possible in the fall.

And don't forget to sow another row of sweet peas and a package or two of California wild flowers, including a goodly quantity of our native poppies.

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ORCHARD and FARM

How I Made An Almond Harvesting Sled

By L. C. BARNARD

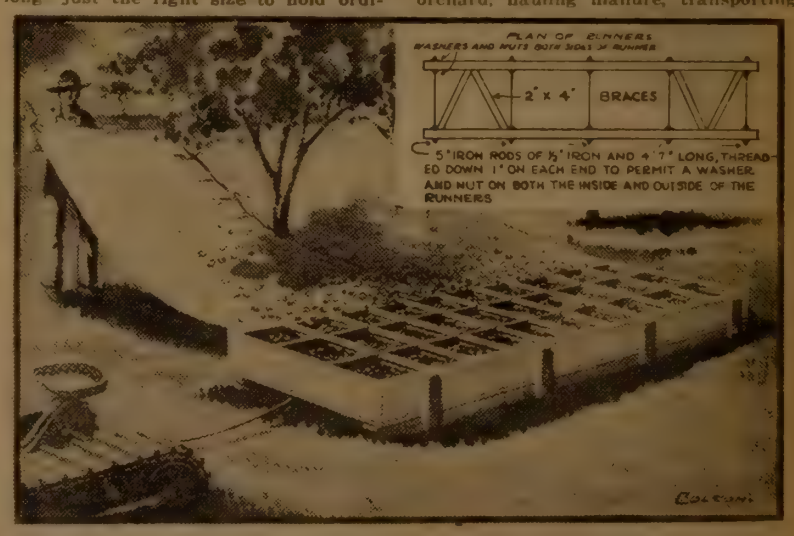
[Editor's Note: The author of this article, formerly of the Pomology Department of the University of California, now is manager of the Greenfield orchards near Concord (Contra Costa County), comprising 75 acres of Bartlett pears, 30 acres of almonds and 11 acres of apricots.

He designed and constructed the almond sled described here, in order to reduce labor expense and save time in harvesting the crop.

ORCHARD and FARM will pay liberally for descriptions of other devices invented or constructed by farmers, fruit growers, poultrymen, livestock raisers and others. Send rough sketch, diagram or photograph when possible.]

OTHER almond growers may be able to reduce harvesting expense by constructing a sled similar to the one illustrated, which has proved to be a great labor saver.

The sled is 4 feet wide by 20 feet long—just the right size to hold ordinary lug boxes set three abreast, their sides parallel to the sides of the sled. The total capacity is 30 lugs.



The runners are 4 inches by 6 inches by 20 feet. The floor of the sled is of 1 by 12-inch boards. The sides, which are 10 inches high, and removable, are held in place by 2 by 4 posts, fitting into four iron sockets made for the purpose and fastened on each side. The runners are braced, and held together by iron rods, threaded and fitted with washers and nuts.

A chain is provided for the hitch. We use a small, track-laying tractor.

HOW SLED IS USED

Before starting for the orchard we load it with the empty lugs. Since our trees are planted 24 feet apart, we move down the center of the row. When the center of the sled is opposite the desired tree, the sheets (in this case 12 by 22 feet), are spread one on either side of the tree and lapped over.

The sheets are fastened at one end to the inside of the sled side-piece, as shown in the illustration. When the almonds have been knocked from the trees they are easily "juggled" into the lug boxes by raising the outer edges of the sheets and shaking them.

When filled, the lugs are hauled on the sled to the huller, where they can be handled without sacking or boxing. It will be seen that a considerable quantity of almonds can be handled in a day with this outfit, with a minimum of labor.

The following figures give the cost of construction:

Labor, 8 hours	$ 4
Lumber	16
Paint	3
Five iron brace rods, sockets, hooks	6
Total	$29

OTHER USES ALSO

This same sled can be employed for many other farm operations. Following are some of the uses to which it has been or will be put on the Greenfield place: Hauling surface irrigation pipe, hauling lug boxes to field, taking boxes of fruit to end of rows in orchard, hauling manure, transporting almond hulls, harvesting apricots for cutting, hauling pruning brush, moving trays from dry-yard.

In a block of almonds where each row was of the same variety, even better results could be attained by tacking two sheets on each side. In this way two trees could be harvested at the same time. On our place this is not done, owing to the fact that there are three different varieties, so planted that when one row is ripe the other on the opposite side is about two weeks later.

DIVIDING DAIRY DOLLARS

While other farmers receive but 21 per cent of the consumer's dollar dairymen get 77 per cent. Butter is a highly concentrated article; therefore transportation costs are low, while the elements of deterioration and shrinkage in storage and speculators' profits cut a very small figure in the product of the modern creamery.

CHOPPING ALFALFA HAY

A California dairyman claims he saves 25 per cent on his hay bill by chopping all alfalfa fed to cows. Electric power is used. The cost of this, together with labor expense, being counted in estimating the saving effected by chopping.

Makes Money on Rented Land

Humboldt Dairyman Believes It Pays Better to Let the Other Fellow Buy High Priced Acreage

By O. H. BARNHILL

TO buy or not to buy? Is it cheaper to rent or to purchase land at the present high prices? That's the question many dairymen puzzle over while pailing cows and feeding fodder.

John Hansen, successful Humboldt milk producer, has made good money on rented land and believes he can keep at least one jump-ahead of the man who purchases high-priced real estate.

"Look at my layout," says he, indicating a thousand acres of hay and pasture land well improved. This place is priced at $115,000. I get the use of it for $4,000 a year—less than four per cent of the valuation.

"If I owned the land and had to pay the taxes—$1,600 a year—I'd be making only two per cent on my investment, figuring the use of the land at what it is costing me.

"Yes, I know land owners count on the increase in real estate values—'unearned increment,' they call it—but farm land is not going up these days. Why should it, when it pays the owner so little interest on his money?

"If a more profitable system of farming is found, land may get higher. Meanwhile, I'm 'sitting tight' and am satisfied with leasing."

HIGH COST OF RENTING

Of course, the man on the other side of the fence—the neighbor who owns his farm—points out that Hansen has a big bunch of money tied up in cows and equipment—he could have sold out during war times, when butterfat prices rose to 60 and 75 cents, for $40,000. It is noted also that a rentor can't farm a place to the best advantage, because he doesn't have the use of the land long enough to justify making needed improvements and using long-term crop rotations for building up soil fertility.

"I've got my second 10-year lease on this place," Hansen points out, in answer to the latter objection. "That will make 20 years I'll have the use of the land. Our longest crop rotation is four years, although it sometimes pays to leave land in grass a longer time, for winter pasture."

Rentors are popularly supposed to be a shiftless set, but there are many notable exceptions to this rule. Hansen is one of them. He practices a very advanced system of dairy husbandry, and has built up one of the heaviest producing herds in Northern California.

COWS MAKE STATE RECORD

An even hundred of Hansen's cows have tested 427 pounds, a state record for a herd of that size. He is now milking 115 grade Jerseys, which will average about 400 pounds. Milk and cream are sold to a Eureka distributor, who pays 10 to 15 per cent premium on butterfat prices. Since the latter now average about 50 cents, a gross yearly income of $23,000 is indicated. This looks pretty good to a man outside looking in, especially to the great army of California cow owners who are getting only half or two-thirds of Hansen's per-animal production.

Unlike most Humboldt dairymen, Hansen makes extensive use of silage, having two silos with a combined capacity of 350 tons. These big "cow kraut barrels" are filled with oats and vetch, which are grown together, and Indian corn.

The latter does not grow to perfection on the Northern California Coast, owing to the cool climate; therefore it must be handled carefully in order to make good silage. The crop is left in the field as late as possible. Frost usually does not come until November and sometimes "holds off" until nearly Christmas.

VARIETY OF FORAGE CROPS

Seventy-five acres of alfalfa make two good crops of hay and one of fall pasture. Clovers—red, white and alsike—are grown together with Italian rye grass. The first crop is fed green and the remainder of the season's growth used as a soiling crop, cut and fed green.

Eighteen acres of stock beets and five of carrots are grown, being pulled and fed as needed during the fall and winter. A small daily ration of concentrates, judiciously compounded and proportioned according to each sow's individual capacity, completes the dairy ration.

MILKING BY MACHINERY

A good milking machine helps solve the labor problem, which is acute. One man to run the machine and three "strippers" handle 115 cows, which would require six hand milkers. The machine extracts the milk much faster than it can be squeezed out by hand—another important point.

"The secret of success in running a milking machine," Hansen points out, "is in keeping the apparatus absolutely clean and sterile. At first the cows had considerable udder trouble—now they have none at all. It also is necessary properly to adjust the suctions. We use a milker that is run with an electric motor, which exerts an even pull."

Hansen has been milking cows for 36 years and admits that he is tired of the job and would like to engage in some other less confining kind of farming. He is "going into sheep" rather extensively, having 900 "woolies" which he thinks may pay better than cows.

"I believe the 500 acres of bottom land on this place will support 4000 sheep," declares Hansen. "Wool is worth 40 cents a pound and an average fleece will weigh eight pounds. Yearling lambs weigh 70 to 100 pounds and will sell for 10 cents a pound. Figure the profits yourself. Sheep are a good deal easier to care for than cows."

Most of Hansen's sheep are Shropshires, a dual purpose breed valued especially for mutton. Instead of having ewes lamb in March and April, Hansen considers it an advantage to have the lambs come two months earlier, so they can be sold when the market is highest.

Hansen is a big, husky Dane, a native of Schleswig-Holstein. He came to this country at the age of 15, worked for wages until he "got a start" and by industry, frugality and the exercise of good judgment has attained his present high position in the dairy profession.

Two sons and two daughters constitute by far the best crop Hansen has raised since coming to America. These young folks have been given a much easier, pleasanter time than their father enjoyed, but he does not begrudge the expense.

"My children are all home, which is more than some of my neighbors can say of their boys and girls," he relates. "My oldest son is 22 years old. If I couldn't have my boys to help run the place I'd quit farming."

Sheep on a dairy farm? Surely! And Hansen believes they will be very profitable. Furthermore, this artistic photograph shows the woolies can decorate an already beautiful landscape.

Fig Grower Sees Rocks Ahead

(Continued From Page 3)

In the beginning of this article, there seems one way to avoid a glutted market; instead of trying to keep his figs from getting "bugged," when the Kadota grower sees an oversupply of cannery stock in prospect, let him buy his figs all he can and turn off a big crop of very good dried figs.

If I were planting a fig orchard for dried fruit, I would take the Kadota and probably the Black in preference to either. After a full crop of dried, caprified Kadotas is produced there is still a large quantity of uncaprified figs, which can be preserved.

Possibly the Kadota will always be more important preserved than dried, but from the heavy production this year the companies will have to "go some" in order to preserve and sell all the Kadotas that are coming their way. Caprifying and drying looks like a fine and profitable way to "get out from under."

A good Calymyrna orchard where the fruit can be sold to the cannery is a fine money maker and promises to continue to be so, but any Calimyrna orchard that nets good profits with dried fruit at present prices is a wonder.

Kadota growers probably will deny indignantly the prospect of an oversupply. It will take at least one bad year to turn them to caprifying and drying; but when they come to it they will find the Kadota a heavily producing fig, not subject to splits and sours, which can be dried at a good price and which will leave a big surplus for preserving.

Concord Grapes

THAT Eastern Concords can be grown successfully in several different sections of Southern California is the contention of Fred W. Kelsey of El Monte (Los Angeles County).

In a letter to the Editor, he says: "Eastern Concord grapes can be grown over a considerably wider territory than is generally believed and much wider than that generally stated by the University.

"There are three plantings of from three to ten acres near my place in the San Gabriel Valley which have been the best money-makers in the neighborhood. There is a planting at Sierra Park and a large planting of 60 acres at Tustin, which is used by a grape juice factory there. This planting has been very profitable and is to be increased, I understand, to several hundred acres.

"Young vines now growing in the San Fernando Valley promise good crops.

"Some of our agricultural leaders at present seem to hold the opinion that California Concords (Pierce-Isabella) are the only kind that will be profitable in this State. But my observations of both kinds, I believe, justify the conclusion that the Eastern Concord does just as well as the P.-I. in the districts where I have observed them.

"The California Concord does seem to be a stronger grower, and produces 15 to 20 per cent more tonnage than the Eastern, as it is a larger grape and has about the same amount of juice in proportion to its size as the Eastern.

"It has, however, certain defects. Its vigorous growth brings it out early in the spring and carries it over till late in the fall and this sometimes results in frost injury when the Eastern Concord, being a slower grower, escapes.

"The California Concord is a heavy grape, not firmly set, and shatters badly. The Eastern Concord ships well short distances, and is in strong demand in Los Angeles and nearby cities.

"At Tustin, where juice is the prime consideration, 60 acres are planted—50 to California Concords, and 10 to Eastern Concords, and the juice is blended, which makes a drink 'de luxe.'"

Papaya Pointers

THE papaya, commonly known as pawpaw, when used as a breakfast fruit, is cut in halves longitudinally, and after the seeds are removed, served with the addition of lemon juice, salt and pepper, or sugar, according to taste.

The fruit, as well as other parts of the plant, contains a milky juice in which an active principle known as papain is present. This greatly resembles animal pepsin in its digestive action and is invaluable as a remedy in dyspepsia and kindred ailments.

Its digestive action has long been recognized in the tropics, as is evidenced by the practice of natives, who rub the juice over meat to make it tender, or in preparing a fowl, wrap it in papaya leaves and let it remain over night before cooking it.

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31x4	2.75	.90	35x4½	4.25	1.65
32x4	3.00	1.40	36x4½	4.25	1.65
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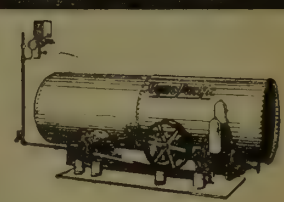
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Arizona Citrus Crop Moving

By H. C. HEARD

County Agricultural Agent, Phoenix

ON OCTOBER 1 the citrus crop of the Salt River Valley, adjacent to Phoenix, started to roll, when the Arizona Citrus Growers' Company, the local marketing Association, loaded out the first car of Clayson grapefruit. Grapefruit shipments are nearing the season's peak with navel orange picking already under way. The current season is a few days ahead of normal but is justified by a high sugar content, reached very quickly during the past few weeks.

H. C. HEARD

The Clayson grapefruit is a local strain, having an exceptionally fine flavor and ripening a week or so ahead of the Marsh variety. It is not now being used extensively for propagation, since it contains a large number of seeds. It originated in a grove belonging to a Mr. Clayson, whose nursery stock came from Florida. Ten or twelve years ago it was the favorite variety with Arizona growers.

Marsh shipments began about October 15, the shipping season for both varieties of grapefruit lasting until early May.

Shipments of navels, sweet seedlings and various seeded varieties of oranges will begin about the 1st of November, continuing till Christmas. Arizona Valencias will start rolling about the 1st of March, the season lasting about three months.

The Salt River Valley crop of all citrus fruits looks well this year, the yield being rather heavy, while the fruit sizes up nicely. This is a decided relief to local growers who had considerable difficulty in handling too large fruit last year.

CO-OPERATIVE MARKETING

Eighty-five per cent of the Salt River Valley crop is marketed co-operatively through the Arizona Citrus Growers' Company, which is affiliated with the Mutual Orange Distributors. The volume is not large, comprising about 200 cars in the 1922 season.

Arizona citrus has been marketed co-operatively about 25 years, the present company being essentially a reorganization of the old association four years ago.

The Clayson grapefruit is marketed under the "Salt River" brand, while a copyrighted "Desert Sweet" label designates Arizona-grown Marsh grapefruit. Orange varieties are sold under the "Sunflower" and "Golden Rod" brands of the Mutual Orange Distributors.

Older plantings are mostly oranges, while the present plantings are primarily Marsh grapefruit, although Valencia oranges find many enthusiastic boosters. Few lemons are grown. Last year for the first time grapefruit shipments exceeded oranges, about 120 cars of the former being produced.

The history of Arizona citrus dates back about four decades, when nursery stock from California and Florida was brought in. The chief variety was Washington Navel, but from mixed nursery stock and from growths below the bud, a good many sweet seedlings oranges entered in.

In the earlier days, before the building of the Roosevelt dam, water shortage often was a handicap and it was only when a constant water supply was assured by the completion of this dam, that interest in citrus was much increased. Then followed heavy plantings of Marsh and Clayson grapefruit.

FROST CHECKED EXPANSION

The freeze of 1913 injured much of the fruit that was still on the trees and cut back a big share of the tenderer vegetation. This served to check the increase in acreage, until the meteoric fluctuations in Pima cotton prices detracted attention from most other types of local farming. Now, however, the continued prosperity of citrus growers again has taxed the ability of nurserymen to supply the stock needed for an extension of plantings, and it is probable that the next five years will witness an increase of citrus acreage to four or five times its present size.

Salt River citrus growers are favored with certain valuable advantages. The frost danger is light, the notorious 1913 freeze killing but few healthy trees. The freeze of 1921, general over the Southwest, was of little consequence, since the trees were little injured, while most fruit except Valencia oranges had been harvested. Some of the Valencias were frost-damaged but the loss was not great.

Arizona produces an excellent quality of fruit, the flavor of its grapefruit being renowned, while the high color incident to the arid, warm climate is an attraction to the purchaser.

With no very serious pests, and its other advantages, Arizona is likely to enjoy gradual expansion of her citrus industry. The adaptable acreage now under cultivation, however, never will allow Arizona to become a serious competitor of her sister State on the West, though in the light of present and prospective developments the business in Arizona is generally considered one of the most desirable of her many agricultural enterprises.

Prospers on One Acre

JOSEPH SCHILLINGER, living in the Charles Weeks Poultry Colony near Owensmouth (Cal.), reports a net profit of $1070 from 575 hens in 6 months. This is almost $2.00 net per hen for a period of six months and at the season of the year when eggs are cheapest.

Schillinger joined the poultry colony about one year ago, purchased one acre, and built a cottage and poultry house. He put in 1200 baby chicks last September and raised 575 beautiful pullets that began to lay in March. This remarkable record has been made possible because of the many varieties of green feed raised for the hens, and because they are well bred hens, housed in an open front house.

As the best prices for the season are yet to come, these hens should net for the entire year around $4 each. Besides the green feed for the hens, Mr. Schillinger raises a fine family garden and has more than half the acre in strawberries, raspberries and blackberries.

The many visitors to this remarkable little poulary farm marvel at the luxuriant growth of vegetables. Schillinger says it is due to the fact that he has plenty of fertilizer from his hens.

With his rent free home and abundant garden his expenses are nominal. Although at first skeptical, today he is convinced that any industrious person can prosper on one acre properly managed.

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FALL CHICKS

ECKMAN & MILLIGAN, Lankershim, Cal.

Songsters Add to Joys of Ranch Life

THE screened aviary shown above was constructed recently on the Fred Noble Ranch, near Saticoy (Ventura County). It houses a score or more of canaries and other songsters whose music is sweet to the ears of Mr. Noble and his family. His daughters take great pleasure in raising the birds, which have been a source of much enjoyment at practically no expense beyond the cost of their shelter. Swings and perches were provided in the "flight," indicated by arrow.

Many farm families enjoy breeding pet birds. There may be monetary as well as aesthetic value in this hobby. Well-bred song birds bring good prices and the demand far exceeds the domestic supply, many being imported from European countries annually.

One California poultryman has a large aviary and instead of selling his surplus canaries presents them with his compliments to customers. In creating good will, the birds have paid for their care many times over. —J. C. K.

Many Alfalfa Problems Solved

Stanislaus County Growers Reach Important Conclusions Following Study of Dwindling Yields

By A. A. JUNGERMAN
Agricultural Extension Service

ALFALFA growers in Stanislaus County have had more or less trouble with production, both old and new stands being affected. Alfalfa fields that were plowed up and planted to beans, grain, sorghums, hay, or melons and then reseeded to alfalfa failed to produce in many instances as good hay as formerly.

Growers made such complaints as, "My hay doesn't produce as it used to. I have a good stand but it isn't doing well." Also, "My old alfalfa is running down and thinning out and will have to be plowed up; I'm not getting the hay I did several years ago."

These questions were brought to the attention of the Agricultural Extension Service of Stanislaus County by growers more forcibly this past season than in any previous year; therefore, an investigation was carried on, growers were interviewed and fields examined carefully.

USE OF FERTILIZERS

After a thorough inspection of fields it was definitely determined that the main cause was not a specific disease nor insect pest; therefore efforts were directed towards other lines of investigation.

The results secured by the Agricultural Extension Service in the County by the use of certain fertilizers and soil amendments on alfalfa for three consecutive years, 1920, 1921, 1922, showed that proper fertilizing gave increased yields in most cases.

The work was done mostly with lime-and-sulphur combination, superphosphate, sulphur, manure, and gypsum-and-manure combination.

The quickest and most striking results were obtained on lighter soils using lime-and-sulphur combination and sulphur with superphosphate, while heavier soils responded more slowly, yet showed good gains by using lime-and-sulphur combination, or gypsum and manure. Sulphur alone did not show up as well as did the hydrated lime and sulphur combination the first year, but did show good results the second and even the third season without further application.

The average increase in yield in the county was about 3 tons per acre per season.

The lime-and-sulphur combination was mixed at the rate of 500 pounds hydrated lime with 150 pounds sulphur per acre.

MORE FREQUENT IRRIGATION

Yet in talking with growers it was found that some who had used fertilizers apparently did not get results. To these growers it was recommended that they irrigate oftener and study their soil moisture more carefully. The problem was studied from time to time all this past season and certain definite facts were discovered: First, that where growers had allowed their alfalfa to come into partial bloom and the field to become more mature before cutting, vigorous stands and good production resulted; second, almost to a man these same growers practiced more frequent light irrigation, and maintained a more uniform and adequate moisture supply.

Third, most of these growers had made use of fertilizers, either lime-and-sulphur combination, superphosphate, or gypsum-and-manure combination; fourth, where growers cut their hay before it came into bloom, the later cuttings, beginning with the third, showed signs of trouble, spindly growth, yellow appearance, lack of vigor and fewer stalks per crown, the yield and quality of the hay naturally being poorer.

MUST CHANGE SYSTEM

Many of the growers now practice a system of regulating their cuttings with reference to the irrigation run; cutting regularly before irrigation, without giving due regard to the maturity of the crop, instead of regulating the cutting of the crop properly in accordance with maturity. This plan, it has been determined, will not give satisfactory results.

In a district with a high water table, it was discovered that more frequent light irrigation was a great advantage. Even though moisture conditions appeared fair on first appearances, it was found frequent irrigation tended to wash down any accumulation of alkali salts that might do damage to the crop. Here again the use of fertilizers and proper maturing of crops assisted in getting better yields.

Farmers who two years ago threatened to plow up their alfalfa are producing fine yields. Some growers in the same district who did not believe in irrigation but practiced "subbing," common to most growers in that district, have now plowed up their alfalfa. Other stands have run out and need reseeding.

MATURE HAY PAYS BEST

Farmers who operate dairies and feed their hay themselves, but who have changed their system of cutting, state their cows do better on the more mature hay, there is no waste because cows clean it up, and production is increased because of the greater feeding value.

One grower on 15 acres keeps 22 cows, has 65 tons of hay in the barn at the present time and has another cutting coming. He said his six cuttings will average better than one and one-half tons per acre. He cuts when his crop is about one-half in bloom, irrigates twice on an average between cuttings, and fertilizes with combination of manure and gypsum.

Two years ago this grower was ready to plow up his alfalfa. We recommended that he change his methods, make use of his manure, irrigate oftener and cut his hay when more mature. He is now getting the results and his neighbors are beginning to ask him how he does it.

Selling Swiss Cheese

HUMBOLDT COUNTY is one of the few places where all conditions are favorable for the manufacture of high-grade Swiss cheese. The climate is ideal for dairying, being moist, mild and equable, while the workers are old country people, Danes and Swiss, who for generations have been impressed with necessity of great care and cleanliness in handling milk and other dairy products.

The bacteria count of Humboldt cheese is the lowest of any locality in the United States, being 20,000 per cubic centimeter, according to the California Central Creameries, who make a specialty of Swiss loaf cheese. One of the most attractive packages for this product is a five-pound redwood box, inside of which the cheese, encased in tinfoil, fits snugly. The fact that Humboldt County is located in the redwood belt lends peculiar fitness to this attractive package, which has proved of great assistance in selling. —O. H. B.

McCurdy's Santa Clara Pear Production

(Continued From Page 2)

years old; with trunks 15 inches in diameter, have tops only a rod across and are not much higher than that.

"Small topped, close-set trees are the most profitable," asserts McCurdy. "Such trees are easier to spray, prune, thin and pick than are large ones. One hundred seventy-five small trees will bear more fruit than 60 large ones."

Severe cutting back is necessary to keep the tops from interfering or getting too tall. The question was asked if this didn't cause the trees to sucker badly, throwing out a wilderness of shoots.

CONTROLLING SUCKER GROWTH

"It will unless the trees have been grafted onto quince roots," McCurdy explained. "This stock has a dwarfing influence upon the trees, which is necessary for close planting."

Although comparatively small, single trees have borne 20 boxes of packed fruit.

Well, what about yields—quantity and quality of fruit produced? Have the returns justified the labor and expense of caring for the trees so painstakingly and generously?

McCurdy proved "camera shy" when it came to taking a pen picture of yields and prices, fearing that the result would encourage too many persons to engage in pear growing. He admitted, however, that Winter Nelis trees had yielded up to 1400 boxes per acre, although after bearing several heavy crops, the yield dropped to 500 boxes one year. A block of 14-year-old Hardys yielded 1100 boxes per acre, 26 tons, this year.

As for quality and prices, it is claimed no other district can surpass the Santa Clara Valley, as far as some varieties are concerned. New York auction prices are cited in proof of this claim.

PEARS BRING RECORD PRICE

The highest pear price of the 1922 season was obtained for a car of McCurdy's fruit last spring, after all competing fruit was off the market.

"It pays to pick out an able and reliable agent and let him handle all your crop, year after year," claims McCurdy. "If your fruit and pack are what they should be he will build up a market for your product which will give you better returns than can be obtained by selling to Tom, Dick and Harry every year."

McCurdy puts up three grades of fruit in boxes bearing his own labels, appropriately lettered. The utmost pains are taken to see that every pear in every box is up to grade and exactly as represented.

SORTING SAVES HANDLING

A unique feature of McCurdy's system is the orchard sorting of fruit, which saves one handling and more or less bruising. Sorters take the fruit directly from the picking buckets and grade it for the packers. The owner keeps close watch of this work, visiting the sorting table several times each day. American-born men of Portuguese parentage are employed, the same sorters doing the work year after year. Chinamen pack the fruit, throwing out any "off grade" specimens which the sorters overlook.

Each pear is wrapped in printed tissue paper, the top and bottom layers being protected with corrugated paper pads. Half boxes are lined with fancy lace paper. Packers are paid 10 cents a box and sometimes pack 100 boxes a day. Good pine box shook costs 17 cents each. Box makers are paid $1.25 per hundred and make 480 boxes in 8 hours, earning $6 a day.

Both horses and a motor truck are used to haul fruit. The truck is a six-speed Ford which is capable of moving two tons of pears out of the orchard and of running empty on the highway at 35 miles an hour. The boxes of fruit are held in place with two ropes, which run over the load from front to rear, where they are cinched tight with an iron windlass. Two four-inch boards nailed together in the form of a trough protect the top rear boxes from being broken when the ropes are drawn taut.

"NO KICKS OR COMEBACKS"

"There never has been a 'kick or comeback' on my pears," relates McCurdy. "My New York agents telegraph orders for so many carloads to go to London or other markets, naming an f. o. b. price for the fruit, which always is paid in full. They act as agents for both grower and merchant, dealing only with reliable firms."

Bartlett, Buerre Bosc, Hardy, Cornice, Winter Nelis and Easter Buerre are considered the best varieties. The last named sort does not ripen until late in October and keeps in cold storage until spring. The Nelis takes on a beautiful smooth russeting, which almost completely conceals the greenish-yellow skin. Many Cornice have a delicate pink blush.

As for blight and frost, those two arch enemies of the pear, they do not bother Santa Clara Valley growers. The frost sometimes mars the appearance of a portion of the fruit, but does not reduce the yield. Blight has appeared, but dies out before doing any material damage, according to local growers.

ALL CONDITIONS FAVORABLE

With a deep, fertile soil, plenty of water for irrigation, no frost or blight, no other diseases or pests which cannot be controlled successfully, and a good cash market, what is to hinder Santa Clara Valley pear growers from making big money?

"Nothing," confessed McCurdy. "I could sell my place for $150,000, which is $100,000 more than I paid for it years ago, but it isn't for sale. My faith in Santa Clara pears is indicated by the fact that I've purchased 60 acres of land, paying $650 an acre, and am planting it all to pears. The trees are grafted on quince roots and will be set 16 by 20 feet."

McCurdy is a big, breezy Westerner, who knows the pear game from start to finish, and enjoys every bit of it. Although he now goes in for golf as well as orchard work, he personally superintends all the operations, frequently lending a hand when help is needed. The example of quick, efficient work set by the boss has a salutary effect upon the workmen.

When a man is found doing his work improperly he is summarily dismissed and his place taken by the proprietor, if necessary. This happened once when two men were "fired" for loading a car wrong, McCurdy finishing the job himself.

A beautiful farm house makes a real home of the McCurdy pear orchard, to which the neighbors now point with pride, as evidence of the horticultural possibilities of the Santa Clara Valley.

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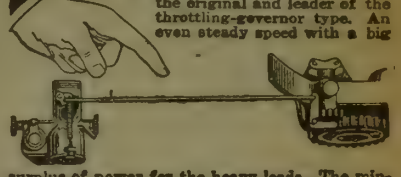

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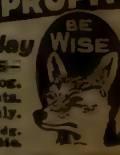

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Seven Square Miles in His Farm

WHEN, five years ago, the Round Valley Land Company selected a man to develop and manage then 4750-acre Mendocino County farm, they chose J. B. Bellati, a practical, hard-headed, hard-fisted farmer who entertained no delusions about dropping into a swivel chair position. He had enough experience with large-scale agriculture to realize that he was tackling a tough job, one that meant much work and great responsibilities.

This seven-square-mile farm is located in Round Valley, which is in the extreme northeastern corner of Mendocino County, bounded by Trinity, Tehama and Glenn Counties on the north and east. The entire valley is eight miles long and five miles wide, circular or oblong in shape. The altitude is 1250 feet.

Near the center of the valley is the village of Covelo, 18 miles east of Dos Rios, on the Northwestern Pacific Railroad. Stock grazing and dairying are the principal industries, the valley being surrounded on all sides with mountain and foothill pastures. Hog raising, grain, hay and fruit farming are side issues.

"One reason why farmers fail who attempt dairying on a large scale," declared Bellati, in explaining his method of management, "is because the first thing they do is to put up expensive barns and fill them with high-priced animals, before a proper supply of feed has been provided. Feed should come first. Get your barn full of hay and your silos filled with cow kraut. Then, if you have plenty of pasture, bring on your cows and you will have a chance to make some money."

Taking his own advice, Bellati planted 700 acres of alfalfa, which generally yields three crops annually, but made four cuttings the past season. Two large silos were filled with green corn and much vetch and other feed provided. Eight thousand sacks of grain was threshed this year. Sixty acres are planted to hops and 86 to fruit trees.

There are 600 cattle on the ranch, of which half are milch cows. A high-grade herd of Jerseys and milking Shorthorns is being built up. The latter breed is preferred for general farming in a mountain valley for various reasons, one being that the Shorthorn calves can be made to bring in good "side money."

Pork production is a prominent feature of the farm program, more than a thousand hogs being raised each year.

The visitor naturally surmises that farming operations conducted on such a vast and varied scale require the services of many department managers and foremen. Bellati, however, has but two assistants, one of whom looks after the dairy and the other supervises the general farming operations.

By personally attending to all the ranch work, the general manager has no difficulty in co-ordinating the activities of the different departments, which where there are several sub-superintendents—sometimes makes no end of trouble.

In addition to his numerous other duties, he found time to look after the collecting and installation of an extensive exhibit at the Ukiah fair in September.

"There is practically no end to development and experimentation on a large ranch," Bellati points out. "We are gradually working out the most profitable system of production, making the place pay as much profit as possible as we go along."—O. H. BARNHILL.

Sheep Displace Cows

W. H. PERROTT, former Humboldt dairyman, frankly admits that unsatisfactory labor conditions was the main reason why he quit the milk game. Looking around for the best kind of animals to replace cows, he chose sheep.

The successful coyote war conducted by the Government, good prices for wool and mutton and, last but not least, the small amount of labor needed, were the deciding factors which caused sheep to win out on the Perrott place. There are 600 acres in the upland farm, near Loleta. Such land is valued at about $100 an acre.

Four hundred fifty Shropshires comprise the Perrott flock, which is to be doubled in size within the next few years. Registered sires are used. Back in the interior, Merinos are raised extensively, but in the damp coast climate the dual purpose breeds are preferred by most stockmen.

"We estimate that about one-third of our sheep income is derived from the fleece, the balance coming from mutton sales," states Perrott, who had a remarkably fine exhibit of Shropshires at the Ferndale Fair this year. "Some of our 3-year-old ewes have grown 17-pound fleeces in 15 months. Our lambs shear seven to nine pounds. As for mutton, early in September I sold 250 5-months-old lambs at 10 cents a pound. They averaged 72 pounds each."

Mr. Perrott is president of the Humboldt County Woolgrowers' Association, a branch of the State organization. There are about 65,000 sheep in the county. Nearly all the owners are members of the association.

"Before we were organized," relates Perrott, "the local wool market was in bad shape. Producers had no means of procuring reliable information regarding market conditions. The result was much 'dickering' between buyer and seller, the former getting each man's crop as cheap as he could.

"Things are different now. Each wool grower is kept fully posted on market conditions, which enables him to obtain full price for his product.

"Our association saves us about 25 per cent on our sacks, twine and sheep dip. The State organization was instrumental in arranging for the two-year Government coyote war in California, which has proved so successful, wherever waged, in controlling the chief enemy of sheep and goats."

Try It On Your Tractor

"PUT an egg under two inches of smooth mulch and a track laying tractor can go over it without cracking the shell." That was the reply made by a hillside orange grower to another who said he would not use a tractor on a stiff clay loam, because it packed the soil. Surely if a tractor would not break an egg under two inches of mulch it would hardly pack the ground if the operator used any judgment.

It turned out that the tractor owner never had tried the egg stunt, but had taken the dealer's word for it. ORCHARD and FARM would like to hear from some tractor owner who will try this and report results. It must be a track laying tractor, of course, for the grouters of a wheel driven tractor would dig in more than that depth.

Both men agreed that a tractor in order to be efficient certainly would have to stir the soil behind it deeper than it packed the soil. Both agreed that in some ways horses were preferable to tractors on clay loam hillsides. The one who used horses had a small place and worked his own team. But the other had a large place and his experience was that he could not keep enough horses to get the spring work done on time and that hired teams and hired men, either of which were not familiar with the work or the orchard, soon would wreck so many trees that the owner would have to get a tractor.—TULARE FARMER.

Bud Selection

(Continued from Page 3)

branch occupying more than one-third of the entire head, which appears to be typical Ontario, but which bears fruit totally different.

The fruit in this case is small, crinkled and very inferior. The fruit of the rest of the tree is normal. No second generation fruits have yet been produced from this variety but there is no question about its being a mutation.

PRACTICAL LESSON INDICATED

There is a very practical lesson to be learned from the observations of the two bud sports mentioned. If any one should decide to cut budwood or grafts for propagating purposes, from either the Merrill or the Poe orchard, where the trees mentioned occur, there would be a possibility of securing a large number of buds from the mutant branches.

In the case of the Poe orchard the branch bearing the inferior fruit is the largest branch of the tree. It is a branch that would naturally attract anyone cutting bud sticks. It is no exaggeration to say that 1000 trees could easily be grown from bud wood removed from this branch in one season. Some one in the event that this should be done would hold a serious grievance against the man who sold the trees, even though nothing dishonest on his part had been done.

Can there be a more striking example of the necessity for care in the selection of buds? With such facts as these staring us in the face, can we condone the practice of certain nurserymen who cut buds from trees that have never produced or from trees about which they have no other knowledge than what some one has given them regarding the variety?

Freak Branch

Here's an odd example of mutation. The large, vigorous branch marked with a handkerchief bears fruit entirely different from that produced by the rest of the tree.

Yet the branch itself differs from the others only in its strong growing tendency. Note size as compared with others.

Such occurrences, which are by no means unusual, emphasize the importance of selecting bud wood only from trees of known characteristics and productiveness.

Dry Fodder For Ensilage

FARMERS who do not get their silage made at the usual time may yet have good silage if they will utilize the dry fodder for this purpose, according to the experience of many Eastern producers.

Fodder silage not only makes better feed than dry fodder, but it is also more convenient to feed. Even though the corn fodder appears dry and wilted, the stalk will be found to contain considerable moisture.

If there is not enough moisture in the corn to pack the corn well in the silo, additional water should be added. If this is added at the fanbox, the fan thoroughly distributes the additional water.

Even entirely dry fodder will make good silage providing water is added equal in weight to the fodder. In any case, the fodder should be trampled down thoroughly.

Silage made in this manner will keep well. The quality is not quite as good as that made from corn cut while still green, but it makes excellent feed. Silage made from corn fodder, moreover, is not nearly as sour. It has a pleasant, sweet smell, and the cows not only like it but thrive on it as well.

Farm Bureau Wins Case

THE Farm Bureau has won its hog minimum case. The Interstate Commerce Commission has ruled that, beginning October 13, 1923, 16,500 pounds shall be the prescribed minimum for loading of hogs.

Seventeen thousand pounds is the old minimum. The Farm Bureau was able to establish the fact that the 17,000 minimum increased the risk from overloading to a costly degree.

Federation officials state that with the new minimum, savings in freight plus reduction in risk will average more than $1.50 a car.

In 1922 on twenty markets there was received 402,000 carloads of hogs. From these figures it is estimated that a yearly saving of $603,000 has been made by farmers who ship hogs—amounting to more than three times the annual cost of running the American Farm Bureau Federation.

GRADING OREGON POTATOES

Oregon's new potato grading law provides that all potatoes not marked with the grower's name and address, together with the grade, shall be labeled culls.

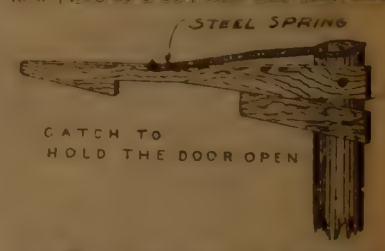
Open Door Latch

ONE of our barn doors used to swing shut just when we particularly wanted it to remain open.

We worried along for several years with various prop sticks that always fell down when a gusty wind came around the corner of the barn.

Some of the boys tried profanity at such times, but nothing really persuaded that door to stay open in all kinds of weather until we made this big wooden grasshopper catch to hold it.

It was made in our farm shop in about an hour's time. The catch leg is a piece of 2"x6", four feet long, with



a notch to engage the top of the door. This notch is 3 inches deep, one foot back from the point. It is attached to the post by a heavy lag screw as shown in the drawing.

The steel spring is a broken leaf of a wagon spring with three holes bored for ⅜" by 5" lag screws.

The stop block is a piece of 2x6, bolted to the post to stop the door and to rest the dog at the proper height. There is plenty of play room between the dog and the door stop to permit the door to close instead of springing out from under the dog.

The post is the trunk of a eucalyptus tree set to reach up ten inches higher than the top of the door.

A wire is attached to the heel of the catch lever to release the dog when we want to shut the door.

Plant Wild Flowers Now—Reward Next Spring

By RALPH D. CORNELL

Master in Landscape Architecture

Photographs Courtesy Cornell and Payne

CALIFORNIA possesses more varieties of native flowers and plants than any other State in the Union. She has practically one-third as many indigenous plant species as the entire continent of Europe. She has contributed more plants to the gardens of the world than any other one spot on the surface of the earth.

And the vegetation of California is distinctive. It is different from that found in any other part of the world and includes a very wide variety of species. More than 3000 kinds of flowers and plants grow wild in our hills and along our coastal plains.

Notwithstanding, few of us really appreciate the beauty of California wild flowers in the springtime as they carpet our waste lands. Few of us realize that the very existence of many kinds is threatened in and by the larger centers of population with their intensive life and human concentration. Few of us realize that these wild flowers, threatened with annihilation in their native places, can be brought into our gardens and grown harmoniously under artificial conditions.

During the season of profuse bloom of our California wild flowers, when the hills are colored by solid carpets of pink and yellow and blue, is hard for any of us to conceive of the fact that many of our varieties have become extinct in localities where once they grew in abundance—the fact that civilization is proving to be as destructive to some forms of our wild plant life as it has been to many of our wild animal species.

OLD DAYS ARE GONE

At one time the San Fernando Valley was one vast garden of flower color in the springtime, but the orchards and truck gardens have crowded out the wild flowers during our march of progress. It used to be that our unpaved highways were lined with the brightly colored faces of our flower friends, but these faces are growing fewer and fewer as each year adds its swelling numbers to those who motor and would possess all they see. One little flower by the wayside may cheer hundreds who glimpse it in passing, but torn from the bosom of its mother earth, its hour has struck, its field of usefulness becomes very small and it may survive no longer than to give the very transitory pleasure obtained in its plucking.

The wild flowers gathered by any one person seldom would be missed from the spot whence they come. But when our modern motorists multiply this one, a hundred and a thousand-fold, it is very obvious that the supply may not meet the demand. Every flower plucked prevents the maturing and distribution of many seeds, so that more lives are taken than at first seems apparent. Most of us have been disappointed, at some time, in our search for flowers in places where they had been abundant in years previous. The cause of this disappearance may be too much "civilization."

As an antithesis to the destruction of our wild flowers there has been considerable good work done in their conservation and in artificial seeding. Splendid results have been obtained from wild flower seeds both on untilled lands and in the intimate confines of the garden. Sown in the autumn upon land that first has been loosened and cultivated, the seed loosely raked into the ground, natural rains will be sufficient to bring the flowers to splendid and beautiful maturity with no further attention—granting, of course, that they have not been sown in a weed patch that will smother them, or under conditions that are patently adverse.

MANY VARIETIES AVAILABLE

Wild flowers, thus sown on our vacant lands, can be so selected that they will give a long succession of bloom, so that certain colors will predominate, or they may be planted to create a composition in color. There are types for shady places, for sunny exposures, for sterile soils. The results obtained may appear like a miracle to the unpitiated. October and November are good months in which to sow the seed.

Campaigns have been conducted for the sowing of California wild flowers on vacant lots, as an aid to the beautification of our towns and cities. The results of such planting have often been strikingly beautiful.

The thought that wild flowers are fit for planting on waste lands only is a decided mistake, however. They grace the spring garden, whether it be in California or the Eastern States, which use many of our annual flowers. For a quick ground cover, for cut flowers, for beds of color, our native flowers are unsurpassed if properly selected.

Baby Blue Eyes mature quickly to cover the ground with a carpet of blue, and make an excellent cover to sow beneath and among taller growing flowers or shrubs. The blazing stars, poppies, godetias and many others are unsurpassed for cutting. Any of the annual flowers will mass into a riot of color.

Seed from any of our wild flowers may be saved and sown in the spring garden. Many varieties are for sale on our local markets, gathered by seedsmen who specialize in wild flowers.

PINK AND RED FLOWERS

In the various shades of pink and red, seedsmen list seeds of the sand verbena, the columbine, Indian paint brush, clarkia, scarlet larkspur, prickly phlox, farewell-to-spring, pride of California, California phlox, canyon lupine, flaming poppy, the pink and red monkey flowers, owl's clover, scarlet bugler and Indian pink.

In white are seeds of the white snapdragon, prickly poppy, wild pea, white daisy, white lupine and white evening primrose.

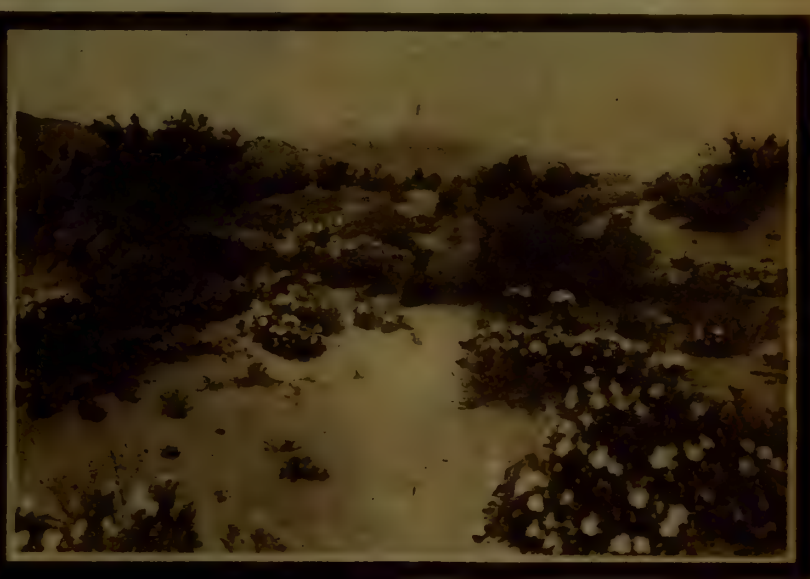
In yellows are sunshine, yellow daisies, wild wallflower, California poppy, meadow foam, sunflower, tidy tips, yellow lupine, wild marigold, blazing star, yellow monkey flower, yellow evening primrose, sun cups, yellow pentstemon, cream cups and mullein.

In blue and its shades are seeds of Innocence or Chinese houses, shooting stars, blue gilia, bird's eye gilia, lupines, baby blue eyes, spotted nemophila, violet beard tongue, blue pentstemon, phacelias, wild heliotrope, wild canterbury bell, thistle sage, blue-eyed grass and wooly blue curls.

For the men of moderate or limited means, California wild flowers offer an avenue of access to the realm of beauty with very slight expense. It is true that the season of bloom usually is limited to the spring months, but the loss in duration of time is recompensed by the intensity of pleasure that the flowers give during their flowering period. By proper selection of varieties, this season may extend over five or six months.

One or two dollars will buy enough wild flower seed to plant an entire city lot. An acre of ground may be covered for a sum ranging from $15 to $100, depending upon the kinds of seed purchased.

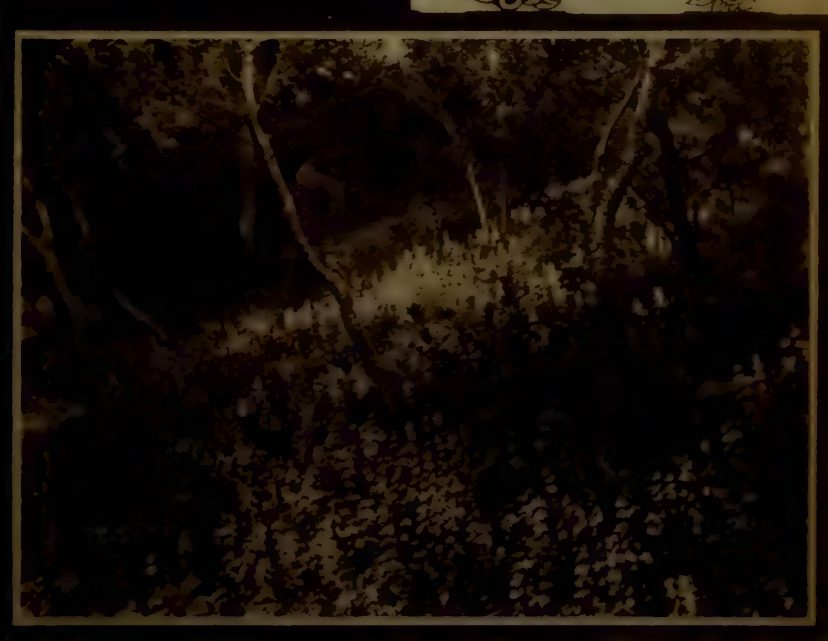
The attention which they require is almost a negligible factor, for centuries of adaptation have fitted them to thrive under California conditions.



Evening primroses and sand verbenas on the desert.

Left—Meadow of yellow daisies, artificially planted.

Yellow monkey flowers, blue gilia and baby blue eyes. A symphony in color, artificially planted.



Innocence or "Chinese houses," planted in clever imitation of Nature on a protected hillside.

Come out of your shell!

ALMOST every day, some question crops up that puzzles you. "Should I do this or that or the other thing?" It happens to every poultryman—no matter how long he's been in the business. Sometimes your neighbor knows the answer. Sometimes he doesn't. More often than not it's apt to be guess-work anyway!

So, whenever a poultry problem starts a-hatching in your head—come out of your shell! Ask questions – as many as you like. That's what the Sperry Poultry and Dairy Service Bureau is for. We realize that, in helping you, we are helping ourselves.

To this end, we maintain numerous service headquarters. We answer many thousands of questions by mail. This service is always personal, always individual, always free! Years of practical, hard-pan poultry experience, together with our laboratory and research work, make our answers authoritative and worthwhile.

Whether you are a beginner or a veteran, please feel free to write us about your problems. There are no strings to this offer. It holds good whether you use Sperry Feeds or not. There's a handy coupon below—use it!

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- Whether electric lights can be used harmfully on a flock?
- How to recognize the symptoms of coccidiosis (bloody diarrhea) in young chicks?
- Why greenstuff is as valuable as "greenbacks" to the flock?
- Which is best for round worm treatment—continuous feeding or periodic feeding of tobacco dust?
- Whether the lack of shell-making material causes soft-shelled eggs or shell-less eggs?

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Name _____ Address _____

ORCHARD and FARM

SECTION OF THE SUNDAY EXAMINER

OCTOBER 28, 1923

Ten Acres, Ten Years and Ten Thousand Hens

A Real Commercial Egg Farm

"TOO many beginners in the poultry business scatter their efforts and waste time puttering at unnecessary tasks," asserts Joseph H. Tumbach, who devoted 13 years of hard work to learning the lessons which he outlines in this article for the benefit of the novice. Tumbach made $10,000 one year with 4200 hens. —*The Editor.*

By ALBERT J. MASON

WHEN Joseph H. Tumbach borrowed money on his life insurance 13 years ago in order to come to California, he did not know anything about chickens and had no idea of entering the poultry business. But today he is one of the largest and most successful market egg producers in Southern California.

Tumbach maintains more than 10,000 hens on his 10-acre place in Pasadena, and has made $10,000 a year with less than half that number. The land which he bought at acreage prices is now practically surrounded by homes and it is only a question of time until the hens will have to give way to bungalows and mansions. But "he should worry" when 50-foot lots are bringing $2000 and up!

Of course, that is looking ahead a bit. Retrospect is even more interesting in Tumbach's case, for he has climbed to success by an arduous route, along which he points out many milestones for the guidance of others who would emulate his achievements.

"The first three years were the hardest," relates Tumbach. "In fact, I didn't really get started until the third year. With money borrowed from a friend who first interested me in poultry raising, I leased a little tumbledown place not far from my present home. My next step was to get married. I explained the situation to the only girl, and she was game enough to come and share the hardships of building up the business.

"We often look back and laugh over those days, but there was nothing funny about it then. We kept our entire household expenses within $35 a month and I did not buy a new suit of clothes for over three years.

"In this connection I want to emphasize the importance of the wife's attitude in establishing a poultry ranch. I have often told young couples with limited means who came to me for advice that they had better stay out of poultrying unless the wife felt interested in the business and was willing to help with the work. I have long since 'fired' Mrs. Tumbach, and she devotes her time to household and civic duties and philanthropic activities, but we look back upon those years of hard work and self-denial as among the happiest of our lives."

Tumbach now employs three men the year around but supervises all the work, particularly the brooding. He maintains no one can make a success of any branch of the chicken business by leaving the management to hired help.

His is strictly a specialty farm. He has concentrated all his efforts upon commercial egg production. True, he sells excess cockerels and hens, and some eggs for hatching. But the breeding end of the business so far has been strictly a side line. "I feel now," ventures Tumbach cautiously, "that after so many years, we have begun to approach the point where we can say we are developing a 'strain.' But I do not approve of the methods of some breeders who claim to have reached this goal in a short time."

We may add at this point that Tumbach's "strain," whatever its attributes, will not be trapnested. He doesn't believe in ordinary trapnesting as a business proposition. "By the judicious use of trapnested stock," he admits, "it may be possible to increase the production per hen, but it is more than a grave question in my mind as to whether by this method one can *profitably* increase production *per flock*."

HIS CULLING METHODS

Tumbach likewise takes little stock in ordinary culling methods. He does not use the pigmentation test or other forms of selection based on anatomical considerations. He has placed heavy production ahead of fancy breeding type and has increased the flock average yield on more than 140 eggs by culling for vigor and using January-hatched cockerels for breeding. "I believe that in three years there will be little culling except by trapnesting and on the basis of vigor, unless it is for marked bodily deformities," he asserts.

"But if it costs a dollar a hen to trapnest and if I can secure an average yield of 140 eggs without that expense, it is easy to figure how much more a hen would have to yield in order to make the trapnesting commercially profitable. Our eggs averaged us, in 1922, 33 cents per dozen."

Recently Tumbach was instrumental in having grade "A" of the Accredited Hatchery list separated into two divisions, one to include non-trapnested flocks.

But to return to the early struggles. Tumbach learned one very important lesson which (Continued on Page 9)

An attractive windbreak of evergreen trees, with picturesque mountains rising behind, adds inspiration to the financial attractions of the work of Pasadena's progressive poultryman, whose plant is coveted by the ambitious subdivider.

From this medicine mixing barrel needed chemicals are added to the poultry drinking water.

Tumbach's Policeman

This big, red-blooded game bird is literally "cock of the walk" at the Tumbach poultry farm. He prevents much fighting on the part of young cockerels, thus saving valuable bird life and energy. This method of keeping poultry peace is practiced by many successful growers.

Health, vigor and uniformity are characteristics of Tumbach's heavy-laying White Leghorns.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
OCTOBER 28, 1923

Overcoming Central California's Citrus Problems

Extensive Experiments Indicate Best Methods of Soil Management and Pest Control—Conditions Very Different From Southern District

By ROBERT W. HODGSON
Agricultural Extension Service, University of California

TO ONE who has devoted his attention almost exclusively to the problems of Southern California citrus growers for the past six years, a recent visit to the Central California citrus sections and an analysis of the principal problems confronting the growers in that part of the State affords much material for interesting analogies and contrasts. In some respects the problems of growers in the two sections are markedly similar; in others, very different.

ROBERT W. HODGSON

To the Southern California citrus grower the problem of fertilization is paramount; to the Central California citrus grower—at least at the present stage of the industry—it must be said that fertilization is exceeded in importance by problems of soil management.

With reference to pest control, there are certain similarities, in that the control of pests is perhaps of equal importance in the two sections, although the pests themselves are quite different in character.

Each section is confronted with certain problems more or less unique. Perhaps the outstanding problem of this character which perplexes the Central California citrus grower at the present time is that much-discussed subject, the June drop.

The relative importance of the different problems mentioned varies greatly in the two sections. There are many who would list the problems of Southern California citrus growers in the order of their importance as fertilization, pest control, irrigation and soil management. If the writer were listing the problems of the Central California citrus grower in the order of their importance, he would place them as follows: Soil management, irrigation, June drop and thrips control.

PRESENT DIFFICULTIES

The relative importance of the problems of soil management in Central California citrus districts is likely due to the occurrence there of soil types unique to that particular part of the State. A large part of the orchards are located on the Porterville adobe soils, sometimes referred to as "dry bogs," and practically all the remainder are situated on soils underlain at various depths with well-defined hardpans. Both situations offer exceedingly difficult soil management problems—problems which have caused the Central California citrus growers untold worry and trouble.

The increasing perplexity of the general problem of soil management led some four years ago to a series of cooperative soil management trials, supervised by the Citrus Experiment Station at the University of California. At the recent Central California Citrus Institute, Gordon B. Surr, soils specialist of the Experiment Station, who has been connected with the trials from the beginning, rendered a progress report which the writer believes will be of extremely great value to Central California citrus growers.

The tests which have been conducted have included seven different treatments: (1) The standard practice developed in Southern California—the use of a winter cover crop and summer cultivation to moderate depth, practiced systematically and thoroughly; (2) the use of a summer cover crop in addition to the winter cover crop; (3) the use of a straw mulch; (4) alfalfa grown in alternate middles; (5) application of five tons of straw in the fall, plus the usual amount of barnyard manure; (6) deep tillage accomplished by the use of the mold-board plow, the orchard being plowed at least three times during the season; (7) a rotation providing various combinations of the above mentioned treatments.

During the four test years the best results have been secured uniformly from the standard Southern California practice. The average improvement in the amount of fruit produced by the plots given this treatment has been slightly over 300 per cent.

Comparing the various treatments in yield of fruit and arbitrarily assigning a standard of 100 to the treatment giving the best result—the use of a winter cover crop and thorough summer tillage—the standing of the various treatments at the present time is as follows: Standard practice, 100; summer cover crop, 65; straw mulch, 52; alfalfa in alternate middles, 53; straw application in the fall, 42; furrow tillage, 50; combination of the various treatments, 67.

Additional findings brought out in these studies, which are of high value to the Central California citrus industry, are the results of the irrigation studies. It was shown that the running of irrigation water in the furrows from 36 to 48 hours is sufficient to provide ample moisture. In the past the practice of running the water in the furrows from six to eight days was common and has resulted in the waterlogging of thousands of acres, with a sequent decline in vigor of the trees and diminution in yield.

It has been found that even in the heavy clay soils in this part of the State the irrigation furrows should not exceed 300 feet in length. The best results have been secured from the application of two and a half to four acre inches in furrows not over 300 feet long, for periods of 36 to 48 hours, at intervals of approximately 28 to 30 days.

PREVENTING JUNE DROP

During the past two years the Citrus Experiment Station has done further work on the June drop problem, duplicating portions of previous studies on this subject made by Dr. J. Eliot Coit and the writer in 1916 and 1917 and following up certain phases of the problem suggested as a result of the preliminary investigation.

The fungus phase of the problem has received special attention during the past season, with results which corroborate in practically every detail the findings made in the earlier studies. It does not appear that spraying affords any hope of relief in reducing the amount of June drop.

The beneficial influence of a summer cover crop in increasing the set of the fruit has been brought out in the course of *(Continued on Page 10)*

Soil Management, in Which Deep Tillage Plays an Important Part, Is Conceded to Be the Chief Problem of Central California Citrus Growers.

Cows, Chemicals, Legumes Restore Riches to Worn Out Soil

By O. H. BARNHILL

Encouraging Example of Humboldt Ranchers, in Building Up Old Hill Farm

THE idea of skimming the cream off of virgin farm land, thus appropriating the soil riches which for ages have been accumulating, appeals strongly to one class of men. There are others who like to take an old, worn-out, dilapidated, run-down farm and build it up until it has regained its pristine productivity.

Duff Brothers, Humboldt County ranchers, belong to the latter class. They bought for $12,000 a 170-acre farm which for 60 years had been farmed by the original homesteader on the take-everything-away-and-give-nothing-back plan. For five long, hard years they have been working out a system of soil rejuvenation and dairying which now is beginning to show substantial and gratifying results.

ENJOY OCEAN VIEW

They named their place "Marine View Farm," because of the wonderful outlook on land and sea which it commands. It is located on Humboldt Hill six miles south of Eureka and only two miles from the ocean. On clear days Eureka, Arcata, Loleta and Ferndale can be seen plainly, together with the main portion of fertile Eel River Valley. The breakwater and harbor, with here and there a wrecked vessel, are close by, while in the distance, across the wave-washed beach, great trans-Pacific liners appear and disappear. This inspiring view helped sell the wornout farm.

The farm comprised 150 acres of pasture land and 20 acres covered with fir timber. An unusual and valuable feature of the place is the very effective windbreaks. Miles of stately firs, with branches intertwined and reaching to the ground, their tops towerng hgh above the landscape, surround some of the fields, a splendid monument to the original homesteader.

The Duffs are planting more windbreaks, and have learned that firs and other evergreen trees should be planted in December, on the coast, for best results, as it is practically impossible to transplant them from the forest in the spring.

DEFINITE PLAN FOLLOWED

After carefully studying the situation, the following general plan of farming was decided upon: Raise leguminous hay crops, keep cows, spread manure, produce pork and potatoes. It was found, however, that the soil had been so thoroughly impoverished that it would not grow clover, even when inoculated seed was planted. Dry, pulverized soil from fields containing nitrogen-gathering bacteria was mixed with the seed. The clover grew a few inches and then died.

The greatest immediate need of the soil was found to be humus. In order to supply this, straw and manure were scattered over the ground and plowed under. Vetch proved easier to grow than clover and, being also a legume, furnished nitrogen as well as humus.

A series of commercial fertilizer tests were begun, in co-operation with the Extension Service, which is represented in Humboldt County Farm Adviser by J. W. Logan. A carload of mixed chemicals, costing $38 a ton, was shipped in and applied to the soil. Two formulas were used: 2.5-10-5 and 0-11-7. The first figures indicate the proportion of nitrogen, the second, phosphorous, and the third, potash.

The first combination proved most effective for grain and hay crops, the second for potatoes and roots, the soil containing sufficient nitrogen for vegetables.

The result of this fertilization was to increase the hay yield from two tons per acre to five tons. The chemicals were applied at the rate of 550 pounds per acre, which made the extra three tons of hay cost but $10 for fertilizer, counting the increased yield for only the first year.

Potatoes, which at first did not pay to plant on account of poor yields, now make seven tons—235 bushels—per acre. Twenty-five acres of tubers were grown this year, of which five were certified by the State Department of Agriculture.

GROW NEW WHITE POTATO

Three main varieties are grown: Early Pink Prizetaker, British Queen and Dutchess Seedling, which ripen in the order given. A new white variety developed from a Beauty of Hebron seed ball eight years ago, has been named "Pride of Humboldt," and will be registered by F. V. Shear, state potato specialist.

Gophers are a great pest on Humboldt Hill. Eight hundred were trapped on the Duff potato patch the past season. No nematode infestation has been found on the farm.

Grass pea, a new and promising legume, is being tested, the seed coming from Texas. This field pea grew vines eight feet long and has grass-like leaves.

Chester White hogs are considered a valuable side-line, shoats attaining a weight of 230 pounds in seven months. The pigs pick up a good share of their living in the large family orchard, which the owners have not yet rejuvenated, but which could be made to bear large crops of fine fruit.

PRACTICE WINTER DAIRYING

Thirty high-grade Guernsey cows earn a good income and play an important part in building up the worn-out farm. Instead of following the usual custom of having cows freshen in the spring, the Duffs dry up their cows in August, when good pasturage is not available, and have them "come in" the latter part of October.

"Winter dairying has many advantages," points out W. L. Duff. "In April butterfat sells in San Francisco for 35 cents a pound, while in October it brings 53 cents. Egg producers have learned to have a large portion of their eggs come in the fall, when prices are high. Dairymen should do the same with their calves, where conditions are favorable, as they are on our farm.

"We make a *(Continued on Page 10)*

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ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY

Issued as a section of country and suburban editions of the
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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

HERE'S A HOPEFUL SIGN.

Recently at Eureka (Humboldt County) members of the local Wool Growers' Association held a meeting. On the following day the cattlemen met. And now comes the interesting part of the story: The next day members of the two associations held a banquet together. Shades of the Old West! Sheepmen and cattlemen at a love feast, discussing mutual problems and agreeing to help one another! Who says we aren't making progress?

TARIFF SHUTS OUT FEEDERS.

Last winter a traveler in Canada counted, while going 150 miles, 300 dead cattle and horses that had frozen to death standing up. How many more had died lying down can only be conjectured.

And yet, United States farmers were forced to sell corn for 30 cents a bushel, for lack of feeders. Before the present tariff on cattle was imposed, Canada exported 200,000 feeder cattle to the United States. Her trade with us in one year has dropped off $400,000,000, according to the Fair Tariff League.

COMPETITION FOR DRIED FRUIT.

Will South American fresh fruit crowd considerable dried fruit off the United States market? A prominent dealer, who has investigated the subject thoroughly, predicts that in the future this is what will happen.

The fruit industry of Chile is said to be growing rapidly and now has reached very large proportions. The fruits grown there are similar to those produced on the Pacific Coast.

It is predicted that the transportation problem will be solved by ship refrigeration. Chile, being in the Antipodes, is in a position to supply us with fresh fruit at the time we depend largely upon the dried product, which therefore may be replaced, to some extent, by South American importations.

PITY THE POOR PACKERS.

The publicity agent for Armour and Company writes ORCHARD and FARM to explain that the $10,000,000 which is expected to be saved annually as a result of the Armour-Morris combine will not represent that much profit, because his company is not making any money and hasn't for three years.

"We sincerely hope this $10,000,000 a year will enable our company to earn a profit," writes MacManus, "since we cannot continue in business while operating at a loss."

Pity the poor packers! Here they have been patriotically putting up meat at a loss for three years, while the public has been complaining of the high price of steaks and chops and the farmer criticizes the low price he is paid for livestock. It's a hard world.

SELLING COUNTRY PRODUCE.

Country merchants say that buying and selling farm produce is the most unprofitable and unsatisfactory branch of their business.

"We often make money on the goods brought in by the farmer who specializes in fruits, vegetables, poultry or dairy products," admitted a county-seat grocer. "It is when we buy stuff from the general farmer or big rancher that we lose money.

"Why do we take their produce? Because we've got to in order to hold their trade. We make enough money on what we sell big ranchers to more than offset what we lose on their rancid butter, spoiled eggs and decayed fruit and vegetables. The rancher knows this and takes advantage of the situation, by forcing us to buy his surplus produce, no matter how poor it is."

The specialty farmer calls this unfair competition.

GIVE LOCAL GROWERS A CHANCE.

A farmer went to town with a load of roasting ears, for which he expected a good price, judging by the way corn was selling.

"Market glutted," announced the leading dealer. "We'd like to handle your corn and our customers would like to buy it, because it is fresh and the ears have been pulled at just the proper stage of development. It would be a good deal for us if it were not for this wilted corn we shipped in recently. We've got to sell it at a high price or lose money, but if we put in your corn nobody would buy the imported stuff."

The dealer finally agreed to ship the farmer's corn on consignment to a district where roasting ears were not grown. The shipment of 140 sacks of first class corn netted the grower 3 cents a dozen.

This is a true story. Did the producer get a square deal? Why was the market oversupplied with outside goods? Why not give local growers a chance?

"What's New?"—Keeping Abreast of Agricultural Progress

Demonstrate Orchard Heating

ORCHARD heating demonstrations will be held by the Extension Service at East Whittier, November 5; La Canada Park, November 6; Covina, November 7; North Pomona, November 8. Different types of heaters will be in operation and the important factors of successful frost protection will be discussed by experienced operators.

Foreign Walnuts in New York

NEW YORK failed to buy her customary quantity of California walnuts this year. This is taken by officials of the California Walnut Association as an indication that the East has decided to eat more foreign walnuts, which are selling at 2½c a pound less than last year's prices.

The demand for walnuts in the corn and wheat States is much stronger than was expected. Nebraska and North Dakota took their full quota of nuts, while Kansas and North Dakota fell far short of their customary supply.

Valuable New Cover Crop

BERSEEM, a new clover from Egypt, is being tested at the branch station at Meloland (Imperial County) with very gratifying results. It yields better than yellow melilotus and grows during the winter, when most leguminous crops are more or less dormant. As a winter forage crop for livestock it is considered very promising.

Berseem is sown from September to November. When sown early the first crop matures about Christmas. Three succeeding crops increase in size, the last one, which matures in June, usually being saved for seed.

Quote Low Prune Prices

OWING to a carry-over of 15,000,000 pounds of last year's crop, the California Prune and Apricot Growers' Association opening prices for 1923 prunes were one to two cents below last year's quotations, running from five to nine cents a pound, bulk basis. In 25-pound boxes—the way most of the crop is sold—prices are from six to twelve cents a pound for the main sizes. Prices are expected gradually to advance throughout the year.

The association is packing 25,000,000 pounds in cans and cartons, the market for which is increasing each year.

Hens Help Citrus Grove

AT the September meeting of Los Angeles County citrus growers much interest was manifested in the experiment of Edward Insley of Covina in combining orange and egg production.

Not only have the hens shown a good profit during the past three years, but they have furnished an average of two pounds of nitrogen per tree per year. The result has been a remarkable improvement in the Insley orchard.

Several growers, burdened with increasing fertilizer costs, contemplate following Insley's profitable poultry example.

Use Oil Fruit Wrappers

APPLES picked at the proper maturity, wrapped in oil paper and placed in storage within 24 to 48 hours will not scald and will keep four to six weeks longer than those handled in the ordinary manner, according to J. H. Wright, Yakima, Washington, fruit dealer.

For three years Wright has been testing oil wraps, using them on ten carloads of apples last year. A carload of Staymen Winesaps, the worst variety to scald in storage, was held in perfect condition until April. Rome Beauty, Winesap, Grimes Golden and Delicious also were successfully kept in this manner, some specimens being in good condition the following August.

The cost of oil wraps is seven cents a box, about one-third more than the ordinary kind. The paper should contain 15 per cent of oil.

"Save the Bees"—Vansell

THE reduction in the number of bees in California, due to a succession of unprofitable seasons, seriously threatens the fruit industry, according to G. H. Vansell, entomologist of the University Farm at Davis.

"Bees for pollination purposes next spring will be absolutely unavailable to many fruit growers, unless something is done to save these useful insects," declares Prof. Vansell. "A fourth unprofitable honey crop has discouraged apiarists to such an extent that some of them are allowing their bees to perish, because they cannot afford to buy high-priced sugar to feed them.

"Bees are absolutely indispensable for the profitable 'set' of many fruit crops. Orchardists should help beekeepers over the present period of stess, buying some of their stock, if necessary."

Mexicans Milk Holsteins

A FIRST-CLASS 160-cow dairy is being built up near the city of Mexico, where the milk is marketed, by Antonio Mutiozabal, who began business three years ago by importing 26 Holstein heifers from the United States.

Additional stock was obtained in Mexico and bred to a pedigreed Holstein bull from the United States. One hundred young animals have been raised in the past two years. Carnation King Ormsby is the present herd bull.

A number of Mutiozabal's cows give over 16,000 pounds of milk per year, in a high, dry climate, where conditions are not favorable to heavy production. Alfalfa is the principal feed, supplemented with cornmeal, wheat bran, pasture and beets. The farm comprises 130 acres and the buildings cover five acres.

Pear Prices Reduced

CALIFORNIA pear growers held their crop for $50 a ton until the middle of July, then dropped to $35. Even this price was not paid by canners until the latter realized that the supply of fruit would be reduced by fresh shipments to Eastern markets. The bulk of boxed Bartletts brought $1.75 to $2 a box.

Shipments to the middle of September, including canning stock, amounted to 5900 cars, compared to total shipments for last year of 6477 cars. The non-bearing acreage of pears in the State is 20,000; bearing, 44,000.

Inspectors Reject Shipments

THE vigilance of Southern California horticultural inspectors is indicated by the recent rejection of 79 shipments of miscellaneous goods, most of which originated outside the State, on account of insect infestations.

These included avocados, mangos and avocado seed from Mexico, which contained avocado weevils; 86 bales of cotton linters from Texas and a consignment of household goods from the same State, which contained cotton seed, and nine straw-packed shipments of goods from areas infested with alfalfa weevils.

Eggs by Water to New York

THE Washington Co-operative Egg and Poultry Association recently shipped ten carloads of "Washeoggs" on the giant ocean steamer Nepomset to New York, where, after a four weeks' voyage, the cargo arrived in good condition. The eggs were loaded at Seattle, where the association has their headquarters warehouse on the waterfront.

The freight saving on the ten-car shipment amounted to $2,850, two cents a dozen. The association plans to forward a second shipment on the Nepomset, which is equipped with first-class refrigerator machinery and cold storage facilities.

Buys Oregon Peppermint

THE 1923 crop of the Oregon Mint Growers' Association, 3500 pounds, recently was sold to Daniel J. Fry of Salem for $2.66 a pound. Competitive bidders were present from California and Michigan. About 1,500 pounds of oil was produced by independent growers.

Oregon peppermint usually is redistilled and sold as Michigan oil, but Fry promised that this year's crop would be marketed as Oregon oil. A movement has been started to build at Salem a peppermint oil refinery, which would result in higher prices to growers. The bulk of the Oregon crop is grown in the Williamette Valley. Thirty pounds per acre is considered a good yield.

Children Prefer Holsteins

THIRTEEN of the fifteen members of the Boys and Girls' Calf Clubs of Los Angeles County own Holstein heifers. Three girls are taking the work. The testing of the Downey Club heifers' milk has been made possible by Mrs. Baldwin's gift of a purebred heifer, which was sold for $200 and the money deposited in a bank to the credit of the club.

The club heifers were all tested for tuberculosis by Doctors Cook and Hurt, who made no charge for their services. Only one animal reacted. She was replaced by a purebred of equal quality and the same age. E. G. Stinson of Orange and the Los Angeles County Farm offer free bull service to club workers.

Trading Scrubs for Purebreds

SIXTY Colorado farmers recently traded five dozen scrub bulls and boars for an equal number of purebred sires. The trades were all even—no "boot" money required.

This unique deal was made possible by the Burlington railroad, which ran a special train over its Colorado line October 15, carrying four carloads of purebred sires. There were 15 each of Hereford and Shorthorn bulls, Poland China and Duroc Jersey boars.

After the trades were made the train returned to Denver with 60 scrub animals, which were auctioned off at the stockyards to the highest bidders, the proceeds being prorated to the breeders who furnished the purebred bulls and boars.

Tap Trees for Turpentine

THE turpentine privileges in 6500 acres of pine timber in the Sitgreaves National Forest, Central Arizona, have been offered for sale by the Forest Service. Eighty thousand cups are to be operated during the first four years and many more during the remainder of the seven years leasing period.

Forest officials are enthusiastic over the possibilities of establishing in the Southwest a profitable industry in the production of naval stores, the price of which recently has been soaring, on account of the depletion of the timber supply of the Southeast. The yield here is only about two-thirds of that procured in Florida, because of difference in tree varieties and shorter season.

Only such trees as are to be cut for lumber will be tapped. In thus conserving a waste product, the timber is not injured to any appreciable extent for lumber purposes, officials say.

News of the Avocado Industry

Growers to Discuss Marketing Problem—Prices, Yields and Fertilization Tests Considered

By J. ELIOT COIT

Contributing Editor of ORCHARD and FARM

THE California Avocado Association will hold its fall meeting and exhibit November 17 at the Fullerton Union High School. The program consists largely of a consideration of the marketing problem. The principal speaker on this subject will be George B. Hodgkin, recently appointed secretary and general manager of the association.

DR. J. ELIOT COIT

An avocado luncheon will be served at noon. An innovation this year will be the omission of any set program after lunch, the entire afternoon being devoted to viewing the exhibit and social intercourse between members.

A great deal of avocado interest lately has been developing in Northern San Diego County. The climate and soil conditions in this region long have been known to be particularly favorable to avocado culture. The main hindrance heretofore has been lack of an adequate water supply.

Now, with the Vista, San Dieguito and Santa Fe irrigation districts nearing completion, large areas of irrigable land are being opened up. An extensive planting of avocados will be made in these districts during the coming year.

All of the standard varieties, such as Fuerte, Spinks, Dickinson, Sharpless, Lyon and Puebla, do well under coast conditions. Fuerte continues a leading favorite, with Spinks and Dickinson for pollinators. Three new varieties—Dorothea, Anaheim and Dutton—are very promising and will be planted to the extent of available trees. Queen appears to be growing in favor for frostless localities.

Orange I. Clark of Point Loma Homestead recently has reported on a very interesting and valuable series of practical avocado pollination tests. He enclosed various combinations of varieties within tents made of netting, with a hive of bees included in each.

BEES GOOD POLLINATORS

He reports that under coast conditions Spinks is a better pollinator for Fuerte than Dickinson. He also finds that an abundance of bees located in or very near the avocado orchards is a very great help in setting a heavy crop.

The results of his test indicate that the heavy drop of young fruits in midsummer is largely due to faulty or imperfect pollination.

The annual report or yearbook of the California Avocado Association is now in press and will be distributed during October. It will contain a lengthy illustrated article by Dr. A. B. Stout on pollination of avocados, and also an illustrated article by O. I. Clark reporting the results of his practical tests of cross-pollination of varieties.

FUERTE BRINGS TOP PRICE

Avocado prices during the past season were from 75c to $1 per pound for Fuerte; Spinks, Dickinson and Sharpless, 40c to 50c; Taft, 45c; Mexicans, such as Ganter, Harmon and Northup, 20c to 25c.

Old Taft trees have set a good crop this year quite generally over Southern California and growers are beginning to feel more favorable toward this variety. The six-acre eight-year-old orchard of Tafts on the San Joaquin Ranch, in Orange County, has set about 10,000 fruits, averaging a pound each.

The fruit is confined almost entirely to alternate rows which were girdled last fall. No better example of the effect of girdling than this has been seen by the writer.

The crop of Mexican varieties and seedlings is very heavy generally, and prospects are good for an abundant supply of seed for propagation purposes.

Pacific Slope Dairy Show This Week

HERE are some of the outstanding features of the Pacific Slope Dairy Shop which is to be held this week at the Oakland Civic Auditorium, according to the indefatigable and ubiquitous Bob Jones, who has labored in season and out of season to make the show a success:

Exhibits of dairy products from Pacific Slope States entered in competition, under the supervision of Professor G. D. Turnbow of the University of California.

Dairy cattle show, in which the best of Pacific Coast purebred Holsteins, Jerseys, Guernseys and Ayrshires will be entered, under the supervision of Professor William Regan of the University of California.

Exhibits from States and Counties of the Pacific Slope, portraying opportunities for newcomers, particularly featuring dairying opportunities.

Comprehensive display of the most modern dairy machinery and appliances for creameries, ice cream plants, evaporated milk plants and the dairy farm.

"The Story of Milk," an educational exhibit; a complete creamery in operation; Cheese—"From the Milk Can to the Grocery Store." These are some of the special displays which will be of interest to the housewife and the city man, as well as to those of the dairy industry.

Exhibits by the State Department of Agriculture, California College of Agriculture and Dairy Councils, featuring educational work being done for dairy improvement and human nutrition.

The program for entertainment is a comprehensive one, including band and orchestra music for dancing; "cabaret dairy lunch," something new; "The Merry Dairy Fairies"; music by radio from Pacific Coast cities through eight clear-toned audiphones; Pacific Coast Dairymen's "barnyard golf" sweepstakes; visit to California Agricultural College and a baby show.

Future Food Supply

PERSONS who are apprehensive of our food supply giving out should read what H. R. Smalley of the soil improvement committee, National Fertilizer Association, has to say upon the subject:

"Those who warn us that Greece and Rome and Carthage fell because of inadequate food production, do not usually mention that the agriculture of these ancient civilizations had little in common with the high developed agriculture of today," Smalley points out.

"Modern machine farming, supplemented by a thorough transportation system; huge storage warehouses and terminal elevators; elaborate cold storage facilities and refrigerator cars; meat-packing plants; canneries and a multitude of food manufacturing and processing establishments, certainly had no counterpart in any former period of human history.

"Broadly speaking, our outlook for the future, from the standpoint of food supply, is unusually bright compared to what it was only two or three generations ago. It is only 80 years since the first acid phosphate was manufactured by Sir John Lawes.

"Since that time immense deposits of phosphates have been located in various parts of the world—in this country chiefly in Tennessee, Florida and Montana. Almost inexhaustible deposits of potash salts are located in Germany and France and smaller deposits elsewhere. Our own country is now producing 40,000 tons of the best potash in the world.

"Nitrate of soda from Chile, sulfate of ammonia from coke ovens, animal by-products and quantities of commercial nitrogen. Some fixed nitrogen from the air is on the market, and the quantity of nitrogen from this source can be increased indefinitely whenever it is badly enough needed.

"Legumes can be made to add tremendous quantities of nitrogen and organic matter to the soil, if grown in proper rotations. Lime is plentiful, and can be obtained in nearly every locality.

"With all of this soil-building, crop-producing material at our disposal; with a fairly good knowledge of the principles of crop feeding; with a rather burdensome surplus of certain food products at the present time; and with some 300 million additional acres of land which can be brought under cultivation through drainage, clearing, or irrigation, it would seem that the spectre of starvation is not likely to walk in this country for at least several generations."

The Fig Variety Controversy

THERE has been much difference of opinion among growers as to the characteristics of the two well-known varieties of figs, Brown Turkey and Brunswick. Some have maintained they were one and the same.

In a recent experiment, however, "Bob" Hodgson, Los Angeles County farm adviser, grafted both varieties on one tree and found there was a marked difference in the fruit. The Brown Turkey was much larger, he reports, and the Brunswick displayed characteristics exactly like those of the Texas Magnolia. In fact it appeared to be the same variety as the Texas, to which local growers have applied the name, Brunswick.

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Poisonous Rabbit Brush

APPROXIMATELY 1000 sheep in a single Nevada flock were killed by eating rabbit brush, a poisonous desert plant similar to sage brush. Other losses from this source range from 500 per flock down.

The bush also grows in California, Oregon and Utah. It is a low, dense shrub one to three feet high. The old branches are gray, the new shoots greenish-white. No antidote has been found for rabbit brush poison.

LESS MEAT IN COLD STORAGE

The amount of meat in cold storage in the United States August 1, 1923, was 60,000,000 pounds less than at that time the previous year.

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Bob Jones' Corner

Little Stories Farming

By
ROBERT E. JONES
Contributing Editor

LARGE SUGAR BEET CROP

The Salinas district has an excellent sugar beet crop this year, judging by the color and luxuriant growth of the beet leaves. Estimates of yields per acre are pressing 20 tons. The beets go to the Spreckels refinery at Spreckels, near Salinas. This factory is said to be the "largest in the world" of its kind. The words are quoted because I read recently that a dispute has arisen between Salinas and Oxnard as to which place has the largest sugar making plant in the world. In the absence of judges, the dispute ended in a draw.

BRIGGS GROWS GLADIOLI

Our livestock friends will be glad to know that W. A. Briggs, for many years a field man for various farm papers, and Mrs. Briggs and son, Donald, are now well established as bulb growers near Del Monte. No longer does Briggs pursue the news of "Pontiac Johanna Financial King's" latest record, nor the breeders' card for the ad column.

He is in bigger business, for the Briggs have a special strain of gladiolus which the Chicago bulb buyers order in advance. They are in the carload class now and I suppose we'll never again find the congenial Briggs at livestock sales.

You'll see a sign beside the road, as you approach Del Monte, reading, "Briggs Floral Company." Drop in, you livestock people, for our old friend Briggs will be glad to see you.

VEGETABLES DISPLACE CATTLE

The Salinas Valley has been regarded in our time as the cattleman's last stand in a sizable valley. It is at the city of Salinas that California's annual rodeo celebration is held. Of course, that carries the stamp of early-day cattle raising. But I noticed on a recent trip to Salinas that the Chamber of Commerce and local boosters are laying more and more stress on the newly introduced lettuce industry and artichoke growing.

Lettuce and artichokes certainly have "arrived" on the deep, black soil about Salinas and are crowding sugar beets, "Salinas Burbank" potatoes, barley and beans, for which the immediate vicinity of the town is famous. Lettuce loading stations have been built at many nearby points. The lettuce crop is harvested late in July, which the local people say is an advantageous time.

Artichoke growing in Salinas is a newer industry, but seems as promising as lettuce. A number of growers from Half Moon Bay and Pescadero have set out large acreages of artichokes in the Salinas Valley.

LIDDIARD'S CROW STORY

We California people should be careful in using that phrase, "largest in the world." Walter Liddiard of Victoria, B. C., and I recently took a trip in order that he might learn something of California farming. He wasn't much to boast about British Columbia. In the course of two or three days I showed him several things that were the "largest in the world."

We came upon a flock of crows, and he remarked that these birds are quite a pest in British Columbia. "They are keen birds, too," he said. "Once out at the beach I saw a crow fly aloft repeatedly and drop an object of considerable size on the rocks. Each time the crow flew a little higher. Finally he seemed satisfied and stood on a large rock, picking at the object which he had dropped.

"My curiosity was aroused, so I walked over to see what he had dropped. To my astonishment, I found it to be a freshly broken clam. The bird had picked up that clam on the beach, flown aloft to break it open, and was making a meal of it. Keen, I'll say.

"You know," he added, "our crows are the 'largest in the world.'"

GREENE'S "TIN-CANNED" TREES

Harry Greene lives at Monterey and has his unique tree planting club there. I can remember Harry Greene years ago pleading with the California Legislature to finance a systematic tree-planting plan for California. They thought him a pest in those days. Some called him "Tin Can Harry" because he urged and practiced the planting of trees in tin cans. His idea was and is that young trees grown in tin cans can be put in a permanent place without disturbing the root system.

Down in Imperial I purchased a "tin-canned" tree from a nurseryman. He explained at great length that it was not necessary to take the tree from the can—simply slit the sides with tin shears and set the can in the hole. He promised that the tin would rot away in time for the roots to spread out. And it did. I remembered that Harry Greene had told this story to the Legislature and at many other places. Harry Greene was the original "tin can" tree man. If he accomplishes nothing else on this earth, the pioneer work he did in arousing a tree-planting consciousness is enough to merit the gratitude of all Californians.

DEVELOPING SALINAS VALLEY

Romie Jacks, of Hereford fame, also lives at Monterey, though his herd is on a bottom land ranch below Salinas. And this brings us to the Salinas Valley, which is undergoing a gradual but decided change from cattle growing to diversified farming. Anywhere else in the world the valley of the Salinas River would be classed as large. But this is California, which has the great valleys of the Sacramento and San Joaquin.

Salinas Valley is more than 100 miles long and about 25 miles wide, I should judge, at Salinas, which is eight or ten miles from Monterey Bay. The soil is deep and rich, and water for irrigation can be had at a depth which would make a Southern California farmer jubilant, but which doesn't get much of a "rise" out of water-wealthy northerners.

Southern California capital is leading the way in making the Salinas Valley an irrigated area. The new development applies, perhaps, more to horticulture than to dairying, which has been well established on irrigated alfalfa lands in the Salinas Valley for many years.

CARMEL VALLEY HORTICULTURE

There's a nook of a valley, with deep, rich soil, down the coast from Carmel, California's art and literary colony. It lies along the Carmel River. This little valley has attained more than local fame for the quality of its late fall pears. The Comice and certain other French varieties which bring high prices for the holiday trade reach perfection in the Carmel Valley.

Edward Berwick, a pioneer publicist for parcel post, early promoted development of this little district along horticultural lines. It is an old valley, agriculturally speaking, for California. It was settled in the Spanish days when Monterey was the leading city and capital of California.

At the mouth of both river and valley is Carmel Mission, which was the headquarters of Father Junipero Serra. The land was in Spanish grants for generations and much of it still is in large holdings. The advance of fruit growing was impeded by lack of transportation, but the motor truck has solved this problem, as it has a similar problem in the Yucaipa Valley, above Redlands. Strawberries from Carmel Valley are among the finest grown, and they come at a late season of the year, when good prices can be obtained.

TRACTOR WINCH IS POPULAR

One of the large California tractor manufacturers is featuring a "tractor winch," which may be attached to a 60 horsepower machine, and which has a capacity of 300 feet of ⅝-inch cable with a winding speed of 2½ M. P. H. It is used principally for hoisting and "snaking" work in the woods.

Improving Fig Pack

THIS year for the first time California dried figs surpass in quality any brand of imported figs. The fact that in the past California Smyrna figs have suffered in comparison with imported figs was not due to any defect in climate or soil conditions, but to ignorance of just how to handle the fruit in the packing house.

This year, after making a very careful analysis of packing methods in Smyrna, the California Peach and Fig Growers' Association has put out a new pack, which is being very enthusiastically received in the East by the same buyers who were formerly inclined to "knock" the California product.

The greatest difficulty formerly was due to insect infestation and tough skin. To overcome these troubles the association built an immense vacuum fumigator, through which all fruit passes. This process kills all insect life, including eggs.

A sterilization process under live steam, at a heat fatal to all life, which washes the fruit and leaves the skin with a delicate and tender texture, is supplementary to the fumigator.

METHOD VERY SANITARY

Under the new system, fig packing becomes one of the most sanitary fruit processes in the country. All fruit is carefully inspected for smuts, sour fruit, and other imperfections, by trained graders. Modern machinery and smart American girls insure high quality.

According to Mr. Moorhead, sales manager of the Peach and Fig Growers, some of these superior packed figs have reached most of the large markets of the East and the reports coming in are extremely encouraging. Many dealers believed the new pack contained figs from Smyrna. A majority pronounced the pack equal to that of Smyrna and many said it was superior.

In many European countries figs occupy as important a place in the diet as does bread in America. In the United States figs are still in the confection class, generally speaking. The California Peach and Fig Growers' Association has set out to place this fine fruit in the staple food class. The new method of packing is a long step in this direction.—J. E. COIT.

Tying the Bowline Knot

THE bowline knot is used by cowboys and stockmen as a "horse necktie" and to fasten freight packages on packhorses and mules.

It is the one knot that will not slip nor draw too tight to be easily untied. For general farm use it is valuable when putting up hay fork tackle in the hay barn or when stacking hay in the field and for hauling on the road.

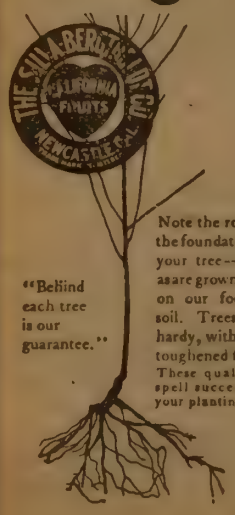
Every farm boy should learn to tie it easily and quickly. It is simple when you know how, but it requires practice to apply it to the work in hand to the best advantage.

BOWLINE KNOT

When using the bowline knot for a neck rope to tie a horse or other animal, you need a hard knot near the outer end of the rope. Slip this knotted end back through the loop of the bowline knot and draw snug. With a little practice it can be done quickly.

HERBERT A. SHEARER.

Bergtholdt Trees



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Building Better Stock Farm Fences and Gates

How Certain Mendocino County Mechanical Problems Were Solved in the Workshop of a Ranch Where Utility Received First Consideration

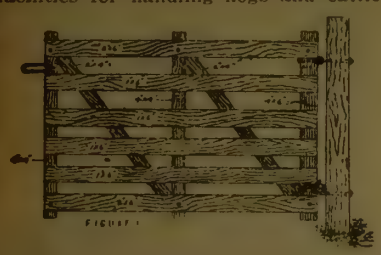
By HERBERT A. SHEARER

WHEN we bought our stock ranch in the hills of Mendocino County we soon learned the value of good fences. We had several miles of log and brush fence strung with one or two barb wire to keep the cattle from wandering away, but most of our time was spent on horseback, chasing the strays back on to the range.

Then for six months we built fences and hung gates, not fancy fences, nor pretty gates, but they were hog tight and cattle proof. And the gates would open wide and fasten shut.

We then built stock pens with large posts, thick, rough boards and heavy wooden gates, with connecting lanes to handle and control the wildest range cattle as well as hogs of all sizes.

We have never bragged much about our range fences but we are proud of our stock lanes and pens and our home facilities for handling hogs and cattle



for feeding, marketing, branding, separating, breeding, doctoring, training for the show ring or any other purpose.

FOR VETERINARY WORK

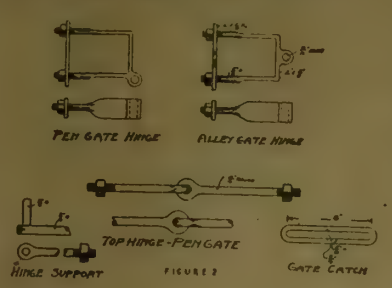
If a suckling colt annoys its dam before weaning time it probably has bad teeth that should have attention. All domestic animals in fact, are subject to accidents and disease that need attention and they should get it promptly. Simple remedies applied immediately will often save veterinary bills or the loss of an animal, or both. That's when good corral equipment pays big dividends.

The illustrations show both the wooden and the iron parts of the best cattle gates and the most convenient pens for segregating animals.

Figure 1 is a heavy stock gate, with blacksmith-made hinges to swing the gate one way only. The upper hinge and the lower hinge are not alike. The upper hinge is of two eye-bolts, linked together. This invention prevents a breechy hog from lifting the gate off the hinges, a trick that an educated sow learns about the time her second litter of pigs commences to demand a larger supply of milk.

Figure 2 shows how the heavy hinges are made. The hinge to the right swings the gate either way. The hinge to the left swings the gate one way only. It is good practice in blacksmithing to forge these hinges in the farm shop. Make light ones first for the garden gate, then try the heavy ones.

At the lower right hand corner the gate fastener is shown. It is a link eight inches long, inside measurement. It is

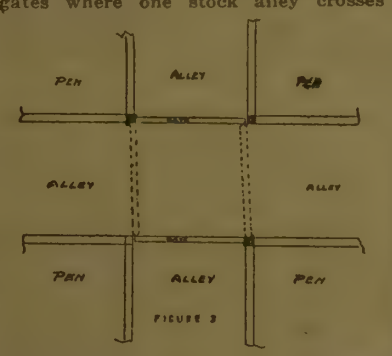


made of five-eighths inch round iron, bent and welded in the form shown. The opening is three-quarters of an inch wide to work easily over a heavy staple or U-bolt made of five-eighth inch round iron.

One leg of this staple or U-bolt should reach clear through the keeper gate post with a burr on the end. The U projects on the gate side far enough to put a pin or a padlock through the staple to hold the link in place. The link is made long to allow for gate settling and to give the necessary play room.

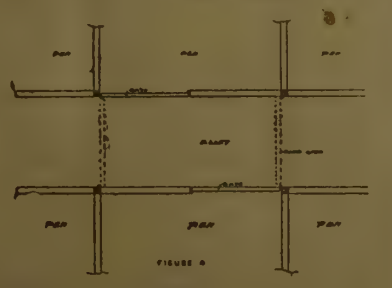
ARRANGEMENT OF ALLEYS

A study of the diagram, Fig. 3, will give a good idea of the arrangement of gates where one stock alley crosses



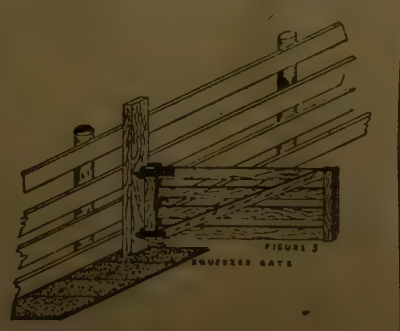
another alley or lane. The two gates close or open either one of these alleys so that animals can be controlled readily. These gates have corner hinges so they will open back flat against the fence to leave a clear passage through in either direction.

Figure 4—This diagram shows stock pens on both sides of a straight lane. These gates also have corner hinges to swing them back against the fence to open or close either the pen or the lane as desired. The intention is to



suggest the possibility of making two gates and a little fencing provide facilities for quickly cutting out certain animals from the herd and locking them into small pens.

Figure 5—This is a "squeezer gate" hinged to a post against the fence in one of the pens. It is a short, heavy gate about three feet high to crowd an animal against the fence and to hold it for inspection, marking or treating in any way. It is intended for



the smaller animals and it is made low to reach over easily while making the examination.

However, a larger beast may be held by using a rope to strain the gate to the fence. Sometimes a second rope is stretched over the animal's neck to prevent it from trying to jump over the low squeezer gate.

A concrete slab is shown. This is a good provision, especially when it becomes necessary to throw an animal. One rancher in the Sacramento Valley uses this device for slaughtering. He puts up a tripod over the concrete floor and attaches a double block and tackle to do the hoisting.

The concrete is made and laid in blocks the same as a sidewalk. If hogs run in the squeezer inclosure, a curb or low wall will be needed to stop them from rooting under the concrete floor.

GRADING FLORIDA ORANGES

Of the 1,764,634 boxes of citrus fruit produced in Florida the past year, only 3745 boxes were graded "Fancy," while 717,674 boxes—40 per cent—were classed as "Russets." The latter sold for $3.61 per box, while the former brought $5.43. The "Brights," of which there were 372,746 boxes, were priced at $4.46 and 669,469 boxes of "Goldens" averaged $4.08.

FOUR POUNDS OF WALNUTS

The California Walnut Growers' Association is featuring a four-pound sack, stamped with a guarantee of quality, which is expected to increase bulk buying by housewives throughout the Nation. The four-pound size was decided upon because sales officials felt it was "neither too much nor too little" for the average family.

BAART WHEAT IS LEADER

It has been demonstrated that Baart Wheat is superior to any other variety when planted in heavy clay or adobe lands, especially those where drainage is poor.

over-head valves

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Now the right kind of Paint will do the most good.

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The control governor of "Caterpillar" Tractors is especially designed to operate with utmost accuracy and smoothness—a feature that you will appreciate. The catalog tells more—send for it.

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CERTIFIED White Leghorn quality chicks from selected free-range heavy laying utility hens mated to double pedigree cockerels with authentic trapnest records Our breeding flocks are inspected and accredited by the Sonoma County Farm Bureau. Safe arrival and full count of live, vigorous chicks guaranteed Booking orders now for the spring season of 1924 delivery Send for catalogue and active prices MUST HATCH INCUBATOR CO., INC., the World's Largest Electric Hatchery, 432 7th St., Petaluma, Calif

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BABY CHICKS every week. Barred Rocks Rhode Island Reds, White Leghorns. Get fall chicks now. Order now for 1924 delivery Safe arrival guaranteed Write for circular about our heavy layers. THE J. H STUBBE POULTRY RANCH & HATCHERY, Phone [illegible], Palo Alto Calif

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MAMMOTH WILD BLOODED BREEDING TURKEYS Imported stock Toms, $5 and up. Hens, $4 and up. JERSEY STOCK FARM, 11534 San Fernando Road, Route 3, Box 103, Burbank, Calif.

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OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water; thorough drainage, rail, water and highway transportation Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and BERRY FARMING in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land. Near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

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CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

FARM wanted, immediately. Send particulars. Mrs. L. Roberts, 320 E. Tray, Roodhouse, Ill.

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FRUIT TREES, BERRY and SMALL FRUIT PLANTS. Now booking orders for fall and spring delivery. Twenty-seven years of practical experience Write for price list. Descriptive catalogue sent on request. M. J. MONIZ, Box 477, Sebastopol, Calif.

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Mendocino Coyotes Doomed

COYOTES have proved the costliest predatory pest with which Mendocino County farmers have had to contend. In 1890 there were 1,700,000 sheep in that section; now there are only 80,000. Although other causes contributed to the decline, these figures speak eloquently of the losing fight which woolgrowers have waged against this skulking foe.

The bounty system has been tried and found wanting, in spite of the support it has received at the hands of interested hunters. Stockmen in some districts have added large sums to the price put on coyote scalps by the county, but without avail. Anderson Valley trappers were, in some instances, paid $75 for each animal killed.

The higher the bounty the more it is to the trapper's interest to maintain the supply of coyotes, in order to furnish profitable employment during idle seasons.

For two years the Mendocino Farm Bureau has been working to get the Federal Government to co-operate with them in putting on a coyote poisoning campaign. The Biological Survey, through which this service is handled, was willing to go to work, but trouble was encountered in getting an appropriation from the county, which was necessary to carry the war into the coyote's camp.

The opposition to this movement, according to Farm Bureau workers, was led by professional trappers, who knew it would put an end to their employment. They persuaded many stockmen that the proposition was "only another Government graft," which would result in "throwing away good money" and that "many fine dogs would be sure to be killed by eating poisoned bait."

It may be wondered why the stockmen were not alive to their own interests. They were, but, "What is everybody's business is nobody's business." The trappers were personally interested, while with the stockmen it was only a matter which concerned the general good of the community—"Let George do it."

Here's where the Farm Bureau proved useful, for by organizing the stockmen's forces it was possible, after two years' effort, to secure an appropriation of $5000 to help defray the expense of clearing the county of coyotes.

"What a pile of money to pay for exterminating a few measly coyotes!" exclaims the uninformed outsider. It does not look big to Mendocino farmers, who paid out $9000 in coyote bounties last year and still have the pests to contend with, in numbers almost as great as ever.

R. K. Stewart of the Biological Survey was placed in charge of the work, which started October 1. He is putting in his time directing the campaign and in showing others the best method of putting out poison. Some men have been hired to do this work, but much of it is performed by the stockmen themselves, who get together in a neighborhood and plan a local campaign. During the time poisoned bait is exposed all dogs are kept tied up, or securely muzzled.

"Coyotes quickly detect the taste of strychnine, which is 500 times as bitter as quinine," Stewart points out. "In order to disguise this bitter taste, we prepare the poison in such a way that it is tasteless until 15 seconds after it is dissolved by moisture, which affords ample time for it to reach the animal's stomach.

"Back fat of the hog was formerly favored for bait, the poison being injected into the meat through a small slit. We now use beef suet, which is ground up and molded into cubes an inch square. A hollow place is formed out of one side with a pointed stick and the poison pushed into the opening with a large quill, into which a small stick is fitted, the opening being afterwards filled with suet.

"Tweezers are used in handling the bait, to avoid contaminating it with any scent which might arouse the acute coyote suspicion. The bait is scattered in places which coyotes are likely to visit, or placed a rod or so from a large piece of unpoisoned meat, which is used as a decoy.

"A small bird makes good coyote bait, into which the poison in a gelatine capsule is inserted. The objection to such baits, however, is that they are likely to dissolve the poison, which would render the meat bitter. The suet keeps the poison dry, even in rainy weather."—O. H. BARNHILL.

Want Shelled Almonds

THIS year marks the entree of the California Almond Growers' Exchange into the shelled almond market nationally. Large Eastern buyers of almonds who maintained before the House and Senate committees that they could not use the California almonds in their products were among the first to respond to the low opening prices of Blue Diamond Brand shelled almonds and were the heaviest purchasers.

One Eastern manufacturer of almond products put in his order for a volume of shelled almonds, which, in the shell, would amount to 220 tons and which would require 15 freight cars to transport.

Heavy diversion of the 1923 crop tonnage to the shelling machines will hold the market for almonds in the shell to a firm level, in the opinion of food commodity brokers throughout the country. Some of them look for an advancing market for almonds in the shell between now and the holidays, even in the face of lower quotations on California almonds by independent shippers and speculators.

Hopland Hens Make Egg-Laying Records

THE searcher for the biggest poultry farm on the Pacific Coast should not fail to count the birds at the Hopland Stock Farm. Hopland—as of course everybody knows—is located on the Russian River in Mendocino County. The surrounding farm land is noted more for quality than quantity, comprising the small but fertile Sanel Valley, noted for rich grain fields and productive orchards.

While poultry is only one department of the Hopland Stock Farm, the egg plant here is one of the largest and best equipped in the world. There are five modern laying houses, a total length of 430 feet; 300 feet of rearing houses; 190 feet of brooder houses and a feed mill

As for the total number of fowls on the place, the writer did not stop to count them, but learned that 35,000 were raised the past season and that there were 45,000 on the farm at one time.

The Hopland poultry plant is efficiently managed by C. Swanfelt, who is a firm believer in conducting every operation in the most efficient manner possible. He practices the double yard system, in order to keep the ground clean, and to provide pasturage. Barley is grown in the yards. Alfalfa, Swiss chard, kale and mangels furnish the bulk of the additional green feed.

More than 7000 hens were trapnested last year and preparations are being made to keep tab on the nest performances of 3500 layers this season. The best Hopland hen laid 316 eggs in 358 days.

At the Ukiah Fair in September, sixty coops of White Leghorns were shown by Swanfelt.—O. H. B.

What Fairs Are For

"AS a general thing we remain vastly ignorant of the accomplishments of our neighbors in agriculture or breeding lines, until we visit the fair and get acquainted," points out W. W. Van Pelt, secretary of the Riverside Fair.

"The fair, therefore, offers the opportunity to exhibit your products, first, for personal pride and benefit; second, to show the world and your neighbor what can be, and is being done; and, third, to present for comparison, an approach to perfection in breeding, in all classes of live stock, and in the broad field of agriculture with its many specialized departments of horticulture and viticulture."

Pistachios at Lodi

ORCHARD and FARM is in receipt of a letter from Eugene C. Tribble of Lodi, who has had much experience in propagating pistachio trees. He states that the Terebinthus has, under his conditions, proved a total failure, regardless of soil type.

Tribble further states that after experimenting for years he finds the one stock which has proved its adaptability to all soil conditions, whether adobe or otherwise, is the Atlantica, which is a strong, vigorous grower and produces good trees. The best variety Tribble has found for working onto this stock is the Red Alleppo, which is a fine, large nut of excellent flavor. The tree is a wonderful producer.—J. E. C.

BULL BATTERS FLIVVER

An Iowa bull is reported to have become intoxicated on fermented silage juice and to have given battle to a mail carrier's auto. After badly battering the flivver, the drunken bull staggered off down the road.

HAULS COTTON WITH TRACTOR

Ten tons of cotton from field to gin with a 30 horsepower tractor—that's the regular thing in Imperial Valley, where A. M. Shenk of Calexico handles a "train" of ten or more wagons with his track-layer.

The California White Leghorn Breeding Farms

SUPERIOR ENGLISH LEGHORNS—INTERNATIONALLY KNOWN

The World's Best

Write for mating list and learn why.

FALL CHICKS

ECKMAN & MILLIGAN, Lankershim, Cal.

3 Speed transmission

Three speeds forward and one reverse—this is one more handy feature of "Caterpillar" Tractors. They have the pull for heavy work and the speed for light work. Write for full information.

THE HOLT MFG. CO.

Stockton, Calif. *Peoria, Ill.*

There's only one "Caterpillar"—Holt builds it

Tumbach's Ten Thousand Hens

(Continued from Page 2)

he wishes to pass along to others—the mistake of frittering away one's time on small lots of odds and ends.

"So many beginners," says Tumbach, "start with little flocks of several breeds, which means maintaining many different pens, keeping complicated records and duplicating equipment. They try to handle a commercial proposition on the same basis as a small, back-yard breeding flock. They waste hours of time and hundreds of dollars on unnecessary labor. They don't concentrate.

BELIEVES IN CONCENTRATION

"I started out on this basis, and tried to keep pigeons and turkeys besides. I spent enough time with 100 chickens to have raised 1000. I had a heavy overhead and not sufficient revenue to justify it. But my system of bookkeeping opened my eyes, with the result that I decided upon one breed (the White Leghorn), laid my plans for large scale production of market eggs, borrowed more money and proceeded upon a carefully pre-determined basis.

"Fortunately, however, I had learned enough by now to avoid further serious mistakes. I wouldn't advise any one to start out on a big scale without experience. Even working on various farms may not give sufficient insight into the business. It would be better for the beginner to study his field, decide on what branch he wanted to follow, start in a modest way and then build up along this certain line as rapidly as possible."

It will be seen that Tumbach is very methodical. After once determining upon his course, he applied all his knowledge of business and accounting in order to place his project upon a known basis.

We know of no other poultry plant in California where as complete, accurate and valuable records have been kept for so long a period of time as at the Tumbach farm.

This producer knows just how many laying hens of different ages he had in 1911, how many eggs he sold and what he received for them. He can figure his net profit for any month of any year from the time he made his first investment to the "final day of reckoning."

There is no guesswork on the Tumbach farm. All the work is done according to a stated routine. The owner can tell you exactly what will be done at 4:15 p. m. "next Friday" or 9 a. m. tomorrow, barring unforseen circumstances. One man who had been in Tumbach's employ for four years quit because he lacked the imagination to rise above the monotony of his daily tasks!

REGULARITY DEEMED ESSENTIAL

But it is this very regularity which contributes in no small measure to Tumbach's success. His place is known as "The Home of the Happy Hens" and it is well named. He *cares* for his fowls, in a sentimental as well as a business way. There is no harsh treatment. The birds get the best of feed and care. It is an axiom with Mr. and Mrs. Tumbach that no animal which is not worthy of kind treatment shall be kept on the ranch. "Contented hens, like contented cows, are more profitable," insists the Pasadena poultryman.

Nor has he ever allowed his own comfort to come ahead of that of his chickens. Many a time he has gone out in the night during a storm to make sure everything was all right in the poultry houses. On hot days, sprayers are kept in operation in the yards.

During my visit a neighbor called to buy a sack of sprouting oats. "If you wanted some of my good white bread, you'd be welcome to all of it," replied Tumbach. "But I can't sell or give you any of the biddies' sprouting oats because there is a shortage now and I'm afraid I couldn't buy any more at this time."

Tumbach is a man who has ideas and puts them to work. He is an independent thinker, and doesn't always follow the beaten path. This is reflected in some of his operating methods.

All the hatching is done at a commercial plant. "Specialization," explains Tumbach. "I am a specialist and so is the hatchery man. I prefer to let him handle that end of the business."

Tumbach confesses that he makes a good deal of "fuss" over handling the baby chicks, but claims he has avoided coccidiosis and white diarrhoea, those insidious chick diseases, citing this as sufficient reason for his unusual care of the "babies."

Even though it were necessary to work all night, Tumbach says he would have the brooder house warmed up and ready for the chicks 24 hours before they were due. He practically lives with the little fellows for a few days and has an automatic thermostat alarm which sounds at the dwelling and warns of any irregularity in brooder stove operation.

Two lots of chicks are hatched—one in January and one in March, the same brooder houses being used for both.

METHOD OF FEEDING CHICKS

At about 36 hours old the chicks are given sharp grit, which is followed by a feed of hulled oats and finely cracked wheat and corn, equal parts of each, every three hours.

On the third day bran is given and continued several days. This is fed in the morning in small troughs, which are removed before noon. Charcoal, at the rate of 10 per cent, is added to the bran.

On the fifth day the dry bran is replaced by a dry mash made as follows:

	Pounds
Bran	1180
Shorts	160
Corn meal	150
Ground hulled barley	100
Fish meal	150
Dried milk	150
Oil cake meal	50
Charcoal	50
Salt	10

Green stuff now is fed at noon instead of the grain—green barley or alfalfa, chopped very fine, lawn clippings, lettuce, or anything fresh and succulent. (Some poultrymen say lettuce is harmful; Tumbach prefers it.)

At three weeks the morning feed is omitted and sprouted oats fed from 9 to 10 o'clock. Coarse grain is added gradually to the chick grain, until at seven weeks the chick grain is entirely replaced.

Tumbach carries the hens through two laying seasons and sells them at the end of the second season, when he figures they have reached the non-profit stage. Pullets raised in the spring of 1923 will be sold in the fall of 1925.

YARDS CULTIVATED FREQUENTLY

The yards in use are either plowed or cultivated once each month. If the ground is dry, the sprayers are operated until it is thoroughly wet down. Vacant yards are sowed to barley or Sudan grass.

One novel plan on the Tumbach ranch is that of giving medicine in large quantities to entire flocks. The owner says on this subject:

"Primarily, we prefer dosing the birds through the water rather than through the feed. A bird is much more likely to go without food than without water. The water on our place is piped all over the plant. A main line extends through each of the two long rows of houses.

"At the point where this main line enters the first yard a 52-gallon barrel is installed on a platform six feet high. The barrel is connected to the water line with a shutoff valve just below the barrel. Another shutoff valve is put in the main line just outside the barrel connection.

"The barrel is equipped with a drain pipe on which a screw cap is set, to permit of the barrel being drained if desired and to remove sediment. The barrel is filled by opening both shutoff valves. When filled the main line is cut off. When 'dope' is to be given it is put in the barrel. This saves a lot of time and work. If some such arrangement is not used it is necessary to watch and refill the water pots promptly."

Tumbach has established a reputation for high quality eggs, a reputation which is jealously safeguarded by careful grading, cleaning and even candling when necessary. His entire product has been handled by one Los Angeles commission firm for years. He does not market through an association. "The best thing about the egg business," he points out, "is that no salesmanship is required to dispose of the product. There is always some kind of a market."

Making no pretense of being a breeding plant, but operated strictly on a commercial basis, the Tumbach farm is an interesting combination of hard-headed business management and sentiment. For here the owner has established an attractive home, and here he and his wife have performed a real labor of love.

"To be sure, the land is too high-priced for a poultry business and I do not charge interest on the true valuation," concludes the owner. "But here I have a comfortable home and a paying business, and if the plant is worth $50,000 or more—why, let's just give the hens credit for buying it."

How to Eat Avocado

THE avocado does not cook, preserve or can to any advantage, therefore it should be eaten as fresh fruit. The color of the fruit, which should be green, does not change when it approaches the edible stage.

Under natural conditions, it is never ready to eat as it is taken from the tree; the stage at which it should be eaten is more appropriately described as "mellow," which is just as soon as you can feel the pulp break down under pressure of the fingers, and while all the natural color is still intact. Before the pulp is fully mellow or after it is watery soft it is not palatable.

To be served as a breakfast fruit, for which purpose it is very much appreciated; if practicable, after the fruit is "mellow," put it on ice long enough for it to get cool, then cut the fruit in halves, take out the seed and thin brown lining, put lime or lemon juice in the seed cavity or sprinkle salt or pepper or sugar over the pulp, according to taste; serve on a dessert dish and eat with a spoon.

For salads, serve with either lime or lemon juice, salt, pepper, chopped onions, or any other kind of salad dressing, according to taste.

The fruit should be bought, if possible, from the dealer while solid or firm and kept until ready to be used.

If you want to hasten developments, put it in a moderately warm place in the kitchen.

The fruit not needed for use at once will keep longer in a cool place in the pantry or cellar, but never put them near the ice until the fruit is mellow enough to be eaten, but when ready to be eaten by putting them on ice they may be kept in good condition for several days.

Well-developed fruit of the best varieties, properly served, has a very attractive nutty flavor that delights many people at first; still there are others to whom when tasted for the first time, the appetite may be a little cautious, but afterward to all it becomes very palatable and as much appreciated as any other article of food.

The most delicately constituted person, even small children and invalids, can eat avocados freely without fear of ill effects, as we know of no one that has suffered any discomfort from eating it when the fruit was in proper condition, but instead it furnishes the most complete nutrition of any food now known.

GEORGE B. CELLON.

Shredding Green Corn

ALL green corn fed on the Curtis dairy farm, near Exeter (Tulare County), is run through the silage cutter before being fed. The regular spout of the silage cutter runs over the top of the silo, but the cutter is filled with a side spout which can be turned into a wide box on runners.

Late every afternoon when corn is fed this box is filled and hauled to the side of the milking shed and put in for the cows to eat while they are in the stanchions. This is very much better than feeding the corn stalks whole.

Some Early Amber sorghum also is grown for feed. As silage this is not up to Indian corn, or at least the cows do not seem to think so, but for fresh feeding it runs away ahead of the Indian corn. The stems are very sweet and there is a lot of grain in the heads. The second feeding the cows show far more eagerness to get into their stanchions and at their feed than they do when the corn is fed.

The yield per acre is considerably less than with the Indian corn, but it can be grown fairly well on land so thin and sandy that corn would be a total failure.—TULARE FARMER.

FARM BUREAU BROADCASTING

The American Farm Bureau Federation has opened broadcasting station KYW at Chicago. News only will be sent out.

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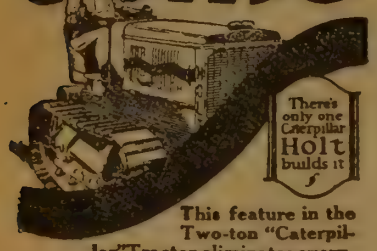

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Drying Better Anderson Apples

Mendocino Fruit Growers Making Substantial Progress in Marketing Their Crop

APPLE growers in the Anderson Valley (Mendocino County) faced a difficult problem in marketing their product. The haul over the rough mountain to Ukiah, on the Northwestern Pacific Railroad, 24 miles distant, bruised the boxes of fruit so badly that it could not be sold at a profitable price. An extension of the railroad from Christine to Healdsburg had been projected, but until the road was built the farmers were forced to find a practical way of marketing their fruit.

The location of this valley is considered very favorable for growing heavy crops of fine apples, being shut off from heavy ocean fogs by redwood covered hills, yet close enough to the sea to insure that moist, cool atmosphere in which apples thrive. Many leading varieties grow there to perfection, a fact which was demonstrated by the splendid exhibit which Anderson growers made at the Ukiah fair in September.

This was by far the largest, best and most complete apple display at the fair, comprising 60 boxes and 120 plates, which included 33 varieties. A large number of superior sorts were shown by August Gossman, a local nurseryman, who takes a personal interest in building up the horticultural industry of Anderson Valley.

The Gravensteins exhibited by J. W. Reilley and E. E. Fitch were good enough to make Sebastopol growers in the celebrated Gold Ridge district apprehensive of losing their laurels. Charles Anderson showed some fine Kings and a Beitigheimer which weighed a pound and a half. A plate of Wolf River—beautiful, big, red apples—attracted much attention.

Golden Delicious, a comparatively new sort, were shown by B. G. Gowan, prominent Farm Bureau worker, who labored in season and out of season to make the Anderson exhibit a great success. In addition to apples and other fruits, various farm products were shown, including millet, sweet clover, Sudan grass, wheat and oats.

But let us stop admiring this fine exhibit long enough to find out how the Anderson Valley farmers solved the problem of marketing their apples. "We dried them," explained Gowan. "Nor were we dismayed by the ridicule which has been hurled at New England dried apple pie. We knew our product would be in an entirely different class, being made of fine fruit heavily cured in California's golden sunshine."

The price has ranged from 21 cents a pound during war times down to six cents last year. The present crop brought eight cents. The leading varieties dried are Baldwin, Bellflower, Ben Davis, Greening, Swaar and Jonathan Beauty. The latter is replaced by Ben Davis, from which the heaviest tonnage has been secured in the past. Growers dry Baldwins for their own use. When "fresh" fruit sells best. Eleven pounds of fresh apples make two pounds of dried fruit.

"Quartering is replacing slicing," Gowan stated. "Thick pieces of fruit are preferred to thin, because the former has more clear inside meat. Quartered fruit commands a price premium of one cent a pound. It also can be spread out to dry much more quickly than the sliced kind. One man can keep two peelers busy where the fruit is quartered, while each slicer requires the services of one spreader."

An average crop of Anderson Valley dried apples is 250 tons. From 100 apple trees F. H. Ward this year dried 11,000 pounds of fruit and sold it for $880. This yield, which is not considered unusual, indicates that good money is made raising and drying apples in this favored district.—O. H. BARNHILL.

Stanislaus' Three-Cornered Co-operation

A DEPARTMENTAL plan of organization has been worked out by the Agricultural Extension Service of Stanislaus County, which differs from the former Farm Bureau plan in that it ties in a marketing organization as a third co-operating party.

Such a department has been organized and perfected by the dried peach and fig producers of the Stanislaus County Farm Bureau. A poultry department is being organized along the same lines and additional departments may be formed by the producers of other commodities.

The plan is fairly simple. In all those districts or centers in the county where dried peaches and figs were grown commercially, committees were chosen, through either special or farm center meetings. The various representatives thus chosen were called together and a county department organized for dried peaches and figs. Officers were elected and by-laws adopted.

A director of the commodity marketing organization was made a member of the executive committee. It happened that the head of the department later was elected a director of the California Peach and Fig Growers' Association. He thus serves in a two-fold capacity.

When the program of work of the department is planned for the year there are present three interested parties: The farm adviser, representing the College of Agriculture of the University of California, the Farm Bureau and the commodity marketing organization. A well-rounded program should result.

This plan, as it has worked out up to the present time in Stanislaus County, has brought about a better understanding on the part of the growers of what the marketing associations are trying to do and has given the marketing association a closer contact with the grower and his problems. It is thus mutually beneficial.

It also has afforded the Extension Service an opportunity to assist not only in production, but also in solving economic problems.

The executive committee of the department, which includes all representatives elected from various centers, meets once a month at a regularly appointed place and time. A member of the marketing association always is present to discuss some phase of the organization or marketing problems in addition to the regular business of the department.

At the last meeting, held at Modesto September 28, a joint committee was appointed to work out a program for the State Peach and Fig Institute, which is to be held at Modesto next January.

H. T. Clark of Modesto, is chairman of the department. The executive committee has fifteen members, all of whom belong to the Farm Bureau and the California Peach and Fig Growers' Association. Five meetings have been held since last May, when the department was organized.—A. A. JUNGERMAN.

Solving Citrus Growers' Problems

(Continued from Page 3)

these studies, but this effect did not continue longer than one season where alfalfa was used as the summer cover crop. Where this crop was left in the orchard for a period of years, the results in all cases were found to be detrimental to the health and vigor of the trees. This is unquestionably due to the heavy character of the soil in part and in part to competition for nitrogen during the critical period when the fruit is setting.

At the present time the most promising means of increasing the set of the fruit appears to be through the use of quickly available nitrogen in early spring which was also noted in the earlier studies of this problem. Nitrogen determinations made during the past two years have shown that in all cases where the nitrate content of the soil solution was above ten parts per million during the months of February, March and April, satisfactory crops were set and matured.

The present recommendation is to plow down the winter cover crop as early as is possible in the spring, not later than February 15, and immediately to apply nitrogenous fertilizers of high availability in amounts sufficient to furnish from 100 to 150 pounds of nitrogen per acre. The value of annual spring cover crops has been investigated slightly, but it would seem highly desirable for more exhaustive studies of this phase of the problem to be initiated in the near future.

NEW THRIPS DISCOVERIES

As a result of the careful life history studies of thrips, made during the past year by A. J. Fleebut of the United States Department of Agriculture, practically all previous work on the control of this pest has been abandoned. It is now almost certain that the thrips winter over in the succulent tissues of the citrus tree and not in the soil nor on weeds, nor in trash in the orchard.

This finding apparently renders the problem of satisfactory control of thrips somewhat more difficult than has been supposed. The present effort is to work out relatively satisfactory measures combining thrips and gray scale control.

Although it is too early to surmise what the final control measures probably will be, it appears that a combination of fall spraying with lime-sulphur and miscible oil and a late spring spraying of lime-sulphur and Black-leaf 40, applied after the crop has set, may give satisfactory results.

It has been shown definitely that the scarring of fruits does not occur during the blossom period, at which time the thrips apparently work on other parts of the blossom than the fruit. After the petals have fallen, the thrips turn to the fruits, which renders it necessary to delay spring spraying for several weeks later than has been the practice in the past.

Renewing Old Farms

(Continued from Page 3)

nice bunch of money on our calves, which would be impossible with spring dairying. In May and June dairy calves often sell as low as $1 each and sometimes are not considered worth keeping, being killed when born. Our calves bring $13 apiece when two months old. They are raised mostly on skim milk and mill feed and are not troubled with scours."

COWS ARE GOOD MILKERS

The Duff cows average one pound of butterfat per day for 10 months. They are fed oats-and-vetch hay, mill feed, beets and carrots. The hay crop the past year amounted to 130 tons, of which 40 tons was left in the field, because of lack of mow room, being hauled in and fed as needed. This was being done the middle of September and speaks well for a country where it is supposed to rain nearly all the time.

Frequent ocean fogs give the hay a dirty color, but the cows eat up every bit of it. A portion of the hay is fed green after the pastures dry up. Roots supply succulence instead of silage.

A new barn was built at the time of the writer's visit. The dimensions were 40 by 76 feet, requiring 31,000 feet of lumber, which cost only $380. Potato storage space is provided by an apartment 16 feet in the center of the structure, being 40 feet long and seven feet high. Above this is a 25-ton hay mow. On one side there is a machine shed 16 feet wide and one for horses 16 feet in width, while on the other side of the potato bin there is a calf shed 12 feet wide.

"To see a farm growing better day by day in every way gives the owner a comfortable feeling of satisfaction, unknown to the soil robber," Duff declares. "In our work we aim to utilize the many modern discoveries and agencies which are available for our assistance. The twentieth century farmer enjoys many advantages which the pioneer did not possess, a fact which we fully appreciate."

Professional Pruning

A. R. BADLY, Mendocino County horticulturist, has made a special study of pruning fruit trees. After doing this work for several years in the Pacific Northwest he attended a pruning school at Milton (Washington), where orchardists from four States were given expert instruction. Four weeks were then spent in studying this interesting subject at O. A. C., which awarded the industrious student a professional pruner's diploma.

Properly heading young trees is the kind of work which Badly likes best. Instead of allowing branches to grow in wrong places and afterwards cutting them off, he rubs off the buds before they have become limbs. Three to five of the latter are considered sufficient to form the framework of a tree. A larger number results in weak branches, set so close together that it is difficult for workmen to reach the center of the tree.

"I am neither a long nor a short pruner," confessed Badly, "but a 'middle-of-the-roader.' The principle of long pruning is all right, but the way it usually is practiced results in overloading trees with inferior fruit.

"A Mendocino pear grower tested both systems unfairly, pruning half his 10-acre grove too short and the remainder too long. The result was that the short-pruned trees grew a forest of brush and very little fruit, while the other trees were badly broken down with an overload of small fruit.

"A common mistake is to shorten fruit spurs," Badly added. "This will work all right with grapes, but with apples or pears it often results in the remaining fruit buds sending out shoots, instead of blossoms."

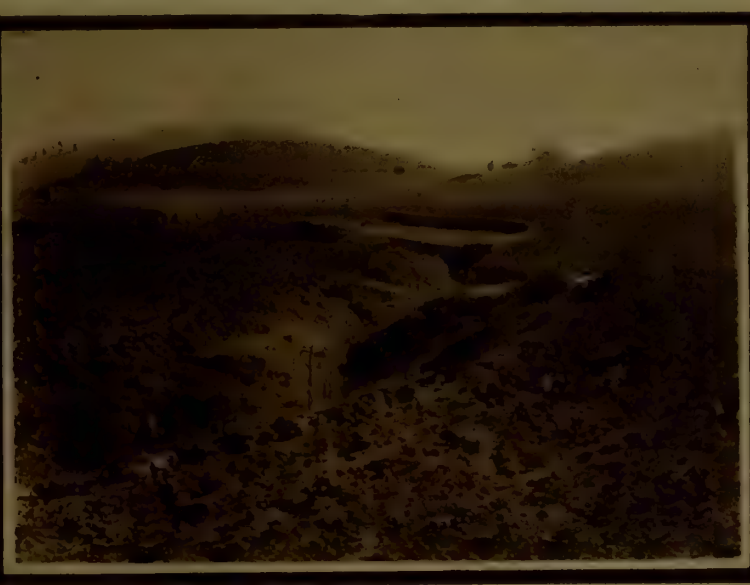
Badly pruned 49,000 trees last year, including 16,000 for Curtis Miller.—O. H. B.

Plant-TREES-Protect

Of Vital Importance to Farmers

THE planting and protection of trees is of more interest to farmers than to any other class of citizens. The farmer, too, has the greatest opportunity to be of service to his State in aiding this movement. Incidentally, he will increase the value of his own property, assist in the protection of watersheds, check soil erosion, and beautify the countryside in which he lives. The illustrations below "speak louder than words."—The Editor.

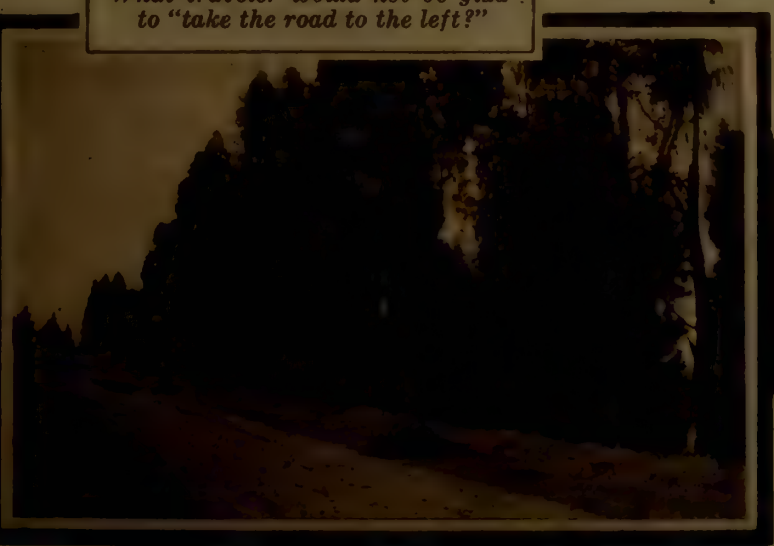
Plant a few trees about the barn lot for beauty and utility.



Here's a good example of destructive soil erosion on a barren hillside. A clump of trees at the head of this gulley would help.

Trees at the entrance to a farm add both dignity and beauty. What traveler would not be glad to "take the road to the left?"

Without the big shade trees, this lovely farm home would be just a "house." Who could measure the actual cash value of a tree?



Windbreaks, intelligently planted, may actually change climatic conditions. Cypress compensates for missing branches of eucalyptus.

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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

NOVEMBER 4, 1923

Pedigreed Citrus Trees Proving Profitable

Careful Bud Selection the Key to Successful Lemon and Orange Orcharding

This fine example of tree surgery indicates that Nusbickel values shade trees as well as those which bear fruit. Rotten wood has been removed carefully and the cavities filled with concrete.

By O. H. BARNHILL

Associate Editor ORCHARD and FARM

"YOUNG fellow," pointed out the experienced tree propagator, "you'd better forget the new-fangled notions about bud selection and winning the confidence of orchardists. I've been in the business twenty years and have found that fruit growers blame most all their bad luck onto nurserymen, no matter how hard you try to please 'em—so what's the use?"

F. H. Nusbickel, recipient of this sage and pessimistic advice, smiled patiently. He was only two years out of college and had high hopes of being of real service to the citrus industry by growing better trees for planting new orchards and renewing old ones.

That was 18 years ago. Many of the first trees he raised have come into full bearing, proving or disproving the value of his theories.

In order to read at first hand this interesting chapter in the citrus industry, the writer recently visited the Nusbickel farm between Glendora and San Dimas. "When I began work in 1906," related the proprietor, as we sat in the spacious sun parlor of his beautiful country home overlooking one of the world's richest citrus districts, "I had neither capital, friends nor experience. I was firmly convinced, however, that I should acquire all of them if I worked hard and conscientiously."

Before beginning his horticultural operations, Nusbickel visited a number of representative citrus orchards and nurseries and made a careful study of conditions. He found many trees which were being given the best of care, yet failed to bear large crops of good fruit. The fault, he decided, lay with the nurserymen, who produced fine looking trees, but not the kind that would fruit profitably.

The seat of the trouble seemed to be in bud selection. Not only was propagating wood taken from trees more noted for wood growth than fruit bearing, but coarse, rank, unfruitful bud wood was used for grafting purposes also. True, some growers procured clons from what they believed to be superior trees, but without accurate fruiting records it was impossible to select the best specimens.

In order to find the very finest trees, Nusbickel began keeping records, which for accuracy and comprehensiveness could hardly be improved upon. Not only is the exact number of pounds of fruit produced by each tree every year shown, but in the case of lemons, the amount at each picking also. Since lemons are harvested eight times a year, the magnitude of the work may be imagined.

SELECTING SUPERIOR TREES

The record of J. P. Englehart's three-acre lemon grove at Glendora is a fair sample. Nusbickel began keeping tab on these trees ten years ago. An interesting feature of the record is the segregation of the winter and summer pickings, the purpose being to discover which trees bear the largest percentage of their crop during the season of high prices.

Not more than one tree in ten in this fine orchard was considered good enough for propagation purposes. Nusbickel was asked to show just how buds were selected. Leading the way to a nearby tree, he clearly demonstrated the process.

"It is not enough to get clons from a first-class tree," he explained. "A tree is really a vast community of limbs, twigs, buds, leaves and fruit, many of which differ radically from their neighbors. We pass up the rank, sappy growth, no matter how fine and thrifty it may be, selecting twigs which are bearing the finest fruit. The outer and inner ends of the twig are rejected, only the last year's growth being retained. My partner and I select every bud used in our nursery and always shall. When we become unable to do this important work we'll quit business.

RESULTS OF BUD SELECTION

"Orange trees which deteriorate into Australian Navels—rough, coarse trees, bearing spongy, thick-skinned fruit which drops early—have been propagated from sucker growth or poor trees. When the best bud wood is used and proper care given the trees, both in nursery row and orchard, the resulting trees will not only be heavy, consistent bearers of first-class fruit, but also will grow in the proper shape, requiring little pruning."

So much for theory—how about practice? Nusbickel rented a 13-acre place near Glendora and devoted five acres to tree growing, the remainder of the land being in berries. "I never worried about finances," he declared. "My observation has been that the man who does good work will find plenty of money coming his way."

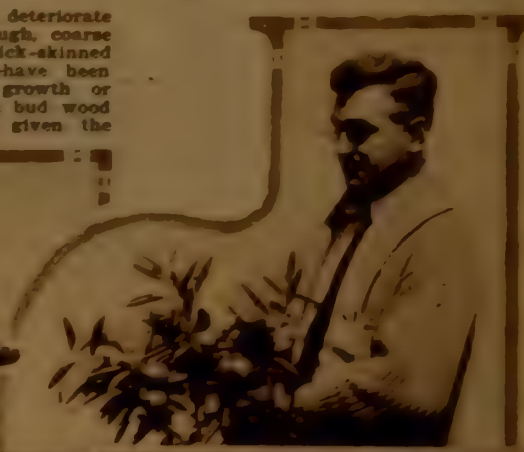
So strong has been the demand for Nusbickel's trees from both old and new customers that all the stock he could grow has found ready sale and he now has one of the largest citrus nurseries in the State, if not the largest—100,000 trees. Some of the best citrus orchards in Southern California were grown from his trees.

DEVELOPS MODERN ORCHARD

The visitor expressed a desire to see an orchard which had been grown from the best buds obtainable. He was taken through the 40-acre grove which Nusbickel has developed in the past seven years. A finer, more uniform lot of citrus trees would be hard to imagine.

One of the best indications of the excellency of the trees is found in the fact that for the first five years the entire pruning expense of a 40-acre block was only $350, an average of $1.75 per acre per year. Another proof is that ten acres of lemon trees in their sixth year bore $8000 worth of fruit, an average of $800 per acre.

Careful production records have been kept of each tree. *(Continued on Page 9)*



Nusbickel personally selects all the budwood used in propagating trees in his citrus nursery.

The Nusbickel residence, built with the profits of intelligent bud selection, is one of the finest country homes in Southern California. The trunk of the tree in the foreground is shown in the top photo, with a thoroughbred Nusbickel boy.

A rock-walled, winding driveway, bordered with liveoak trees, leads to the Nusbickel residence.

C. M. Warren, Nusbickel's partner, is well qualified to carry on the work of propagating pedigreed citrus trees such as these.

ORCHARD and FARM
SECTION OF THE SUNDAY EXAMINER
NOVEMBER 4, 1923

Vineyard Tillage Discussed by Noted Authority

Success in Grape Growing Depends Largely Upon Knowledge of Correct Cultural Practices—Timely and Practical Suggestions

By FREDERIC T. BIOLETTI
Professor of Viticulture and Fruit Products, University of California

[Editor's Note: This is one of a series of articles on grape production written especially for this magazine by Professor Bioletti, acknowledged one of the world's leading viticultural authorities.]

MUCH confusion exists in the minds and practices of farmers regarding the operations on the soil grouped under the general terms, cultivation and plowing. In some regions of the United States they plow with a cultivator, in others they cultivate with a plow. Among minor operations they harrow, clod-mash, float, spring-tooth, randle, roll, weed-cut, disk and sub-soil. There is little agreement regarding the meaning of these terms or the use of the operations.

But in general most fruit growers have believed that all these operations were good in themselves and therefore could not be practiced in excess. The formula of some grape growers was: "Commence cultivation every Monday morning and finish Saturday night." The reasons given for this activity were various. "It makes and preserves a deep soil mulch which prevents loss of water by evaporation," said one. "It brings the water up from the subsoil," said another, while still another believed that aeration and sunlight increased the fertility of the soil.

But in order to be able to discuss intelligently this subject and to inquire into the truth of these various opinions we must first define carefully the terms used and then classify them in a logical manner.

DEFINITIONS OF TERMS

TILLAGE—This is the most convenient and most generally accepted term to include all the various operations which have to do with working the soil for agricultural purposes. It covers all cases of moving, turning or pulverizing, whether by horse or motordrawn implements or by hand tools. Tillage can be divided conveniently into three types:

(1) Plowing—This means turning over the top soil to a depth of four inches or more. It is done usually by means of a mold-board or a disk plow. Its essential characteristic is that it inverts the upper layer of the soil, burying that part which was in contact with air and sun and exposing a part which has been below the surface. Trenching by hand, practiced by gardeners and orchardists in countries where labor is cheap, is of the same character.

(2) Subsoiling—This means the stirring or breaking up of the soil twelve inches or more down, but without changing the order of the superposed layers, and is done usually by means of a "subsoiler," consisting essentially of a long pointed steel hook or blade of various shapes. This implement is drawn through the soil at the required depth by means of several horses or a powerful tractor. A somewhat similar operation is performed by exploding a charge of blasting powder in holes about three feet deep at various regular intervals over the field.

(3) Cultivation—This means stirring or pulverizing the soil to a depth of less than twelve inches. It differs from plowing in that the soil is not inverted, and from subsoiling in that it is confined to a relatively shallow surface layer. It includes a large number of operations performed with divers horse or motor drawn implements and hand tools.

Each of these types is distinguished by special objects, although they have some objects in common and in some operations the special objects overlap. The general objects of all kinds of tillage are to improve the mechanical and chemical conditions of the soil and to prevent the growth of weeds. The following discussion of the special objects of the various types refers to orchards and vineyards, particularly in semi-arid climates.

(1) Plowing—The inversion of the upper layer places the fertile top soil in a position where it will be available for the use of the feeding roots of the trees and vines. It exposes lower layers to the ameliorating influence of weathering and gradually deepens the fertile top soil.

It buries cover crops and fertilizers, which are of no use to the crop until they reach the region of the feeding roots. It facilitates the penetration of rain and irrigation water.

The vineyard should be plowed as a rule only when the vines are dormant. Plowing while they are growing disturbs the feeding roots and causes the loss of soil moisture by evaporation.

It should be done as often as is necessary to accomplish its objects. In many soils this means every two or three years. In some heavy soils it may mean once or even twice every year to facilitate the special object of cultivation — destruction of weeds. When cover crops are grown, the vineyard must be plowed when it is necessary to bury them. Preparatory plowing for the planting of a new vineyard should be as deep as is practicable. The top soil stimulates the growth of roots and consequently of the whole vine. It should, therefore, be placed where the young rootlets from the base of the cutting or plant can utilize it from the beginning. This is at 10 to 15 inches below the surface.

OBJECTS OF SUBSOILING

(2) Subsoiling—The special objects of subsoiling are to break up hard layers, plow-sole and hardpan, and thus facilitate the penetration of water, air and roots, and to open up the subsoil and facilitate the washing down of plant food from the top soil by rain and irrigation. The cutting back of the conducting roots is believed to be beneficial in moderation, under some conditions, by promoting the spread of feeding roots throughout the available soil volume.

The depth of subsoiling is limited only by cost and mechanical difficulties. The deeper the subsoiler penetrates, the more effectively it accomplishes its objects. In practice the limits are from 18 to 36 inches.

The number of subsoil cuts is limited by the same factors. In preparatory subsoiling for the planting of a new vineyard, a cut every three feet in two directions usually is advisable. One cut along each line where vines are to be planted is the least that will do much good. In subsoiling an old vineyard, the subsoiler should not be run near enough to the vine to cut large, main roots. Subsoiling every three or four years is sufficient in most vineyards. In soils where hard layers form quickly, the intervals should be shorter. Subsoiling and cross-subsoiling the same year is inadvisable in old vineyards.

MAY BE DANGEROUS

Subsoiling is the more effective, the drier the soil when it is done. It is best done, therefore, in vineyards in early winter after the vines have become dormant. It is usually best, especially in heavy soils, to wait until the top six or eight inches of soil is softened by rain or by a light irrigation. This facilitates and cheapens the work and makes it possible to go to a greater depth.

Subsoiling while the vines are growing is danger- *(Continued on Page 19)*

General Rules for Tillage

FOLLOWING is a summary of the vineyard tillage practice recommended by Professor Bioletti:

In preparing the soil for planting, subsoil as deep as practicable while the ground is dry—at least 18 inches if possible, making furrows every four to six feet.

Then plow (turn over) the soil at least 12 inches deep if possible.

Cultivate twice during the winter to fine the soil and kill the weeds before planting.

Break up the soil thoroughly every year when the vines are dormant. This usually can be done at least expense by means of deep, chisel-toothed cultivators. Every two or three years plow in winter to invert the top soil and to bury cover crops and fertilizers; also subsoil to break up impervious layers and to aerate the lower soil.

During the spring, cultivate with harrow, disk or other implement suited to the condition of the soil to destroy weeds and to leave the surface smooth and well pulverized. This cultivation should be no deeper than is necessary to accomplish the object.

During summer cultivate often enough to prevent the growth of weeds, and as shallow as possible.

Good Outlook for Producers of Diversified Vegetable Crops

By R. G. RISSER

Despite Decrease in Mixed Carload Shipments, All Indications Point to Growing Demand

[Editor's Note: R. G. Risser, one of the best known vegetable specialists of the Pacific Coast, and now manager of the Crop Production Department of the California Vegetable Union, will write regularly for ORCHARD and FARM. In addition to discussing economic and marketing problems, he will offer timely suggestions to commercial and home gardeners, and answer questions of subscribers.]

A CAREFUL consideration of the facts suggests a very bright outlook for the producer of diversified vegetable crops in parts of California. This favorable prospect is brought about by a combination of conditions which are not generally recognized, but which appear significant when fully analyzed.

On the one hand there have been a number of factors contributing towards an increased demand for California vegetables. Leading sales organizations have done much to extend the market and to widen and systematize distribution. Improvement in quality and pack has been accomplished by concentrating production in districts well adapted to the crops and by adopting higher and more definite grading standards, thus popularizing the State's products.

IMPORTANT POPULATION MOVE

A large percentage of the population of the nation has been gathering within the confines of the big cities where they are dependent upon outside sources of supply for foods. There has been also a general westward movement of the population, which brings our market nearer home and a big increase in the number of inhabitants of this State itself, which opens a big outlet at our very doors.

Furthermore, in the present highly complex state of our civilization people are demanding as necessities things which they formerly considered as luxuries and require for their tables vegetables at all seasons of the year, even though during certain periods, the products must be refrigerated and subjected to transcontinental hauls. There is also a general increase in the consumption of vegetables, due largely to the new emphasis which is being placed upon their value by dietitians and others who recognize the benefits of the vitamins and other properties which they contain. There is actual statistical evidence to show an increase in the consumptive demand for California vegetables, due to these influences and others.

SUPPLY HAS DECREASED

But while this increase in demand has been developing, there has not been a proportionate increase in the supply of all these products. On the contrary, there has been an actual decrease in the acreage of certain crops and the output of some of the leading districts has been diminished. This failure of the production to keep pace with the demand along all lines also can be attributed to a number of causes.

In some vegetable districts (in Los Angeles County, for instance) there has been a serious reduction in acreage due to the operations of real estate men in subdividing the fields. In other places, orchards, vineyards and even strawberry plantings are crowding out vegetables to a certain extent and even the opening of new oil fields has encroached upon vegetable growing.

In one district, the extension of a manufacturing plant has driven out one of the largest American cauliflower growers, and in another locality the Chinese growers have grown old and have abandoned their work. The anti-alien land legislation also is having an important bearing on the situation and in one district a shortage of water has cut down the lettuce acreage to twenty-five per cent of last year's. Taken all together, these facts indicate that those growers who have been able to continue in good districts with a well balanced production program of diversified vegetable crops, should consider themselves fortunate.

MIXED SHIPMENTS IMPORTANT

Producers located in close proximity to a large market and an important assembling point for carlot shipments of mixed vegetables, are especially fortunate. With a well-chosen assortment of vegetables planted for timely maturity and shipment, such growers are in an enviable position; their chances for making money appear quite promising. One of the interesting features of the vegetable shipping industry has been the mixed car business. Markets which are not large enough to consume straight cars of each of these perishable commodities find it an advantage to have mixed cars made up to their own orders rather than to get their supplies reshipped in express lots from the nearest large city.

Records show that mixed cars of some sort now are shipped from California to all parts of the United States and there are so many small markets that the possibilities for the mixed car business seem very great.

Some of these cars are made up of two dozen different items so that these small markets can be assured of a wide variety, but no excessive amounts of any one vegetable. The future of such a business, providing adequate supplies are always available, would seem quite promising.

Yet records show the present trend of the mixed carlot business in Southern California to be on the decline. The data for the past six calendar years is as follows:

1917	3415 cars
1918	3685 cars
1919	4151 cars
1920	5657 cars
1921	3585 cars
1922	1574 cars

It is true that some of the markets which formerly ordered these mixed cars now take straight cars, but others could be developed if there are continuous supply and complete variety available with which to fill all orders precisely as they come in.

AVOIDING OVERPRODUCTION

It is possible that overspecialization in certain dstricts may make for periods of overproduction of certain products which must all go to the straight car markets for lack of other vegetables with which to combine them. But with a wider variety, a strong local demand, and a big outlet through numerous mixed car markets, a general overproduction of all lines is not at all probable, judging from indications at the time of writing this article.

Producers should consult with a marketing agency in planning their cropping programs, as its suggestions may prove a very helpful guide in connection with their special conditions and problems.

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Pithy Paragraphs

WHY COWS AND HENS WIN

The average farmer objects to dairy and poultry husbandry because they force him to stay "on the job" seven days in the week, 365 days in the year. Yet to this very fact, continuity of operation, is due in large measure the superior profits of these two branches of agriculture.

One reason why crop growing does not pay any better is because it requires attention for only a comparatively short season. During the remainder of the year it is difficult to provide profitable employment for the help and equipment used in crop production.

With the butter and egg business it is different. Cows and hens provide employment and income every day in the year, thus reducing overhead expenses to the minimum. The work is confining, but it pays.

TOO MANY BUTCHER SHOPS?

"There are twice as many butcher shops as needed," declares E. J. Bennett of the Woodward-Bennett Company, Los Angeles. "I am firmly convinced that high wages—clerks and cutters are paid $35 to $45 a week—high rents, high living and small volume of business are the real reasons for the high price of meat.

"There are too many men engaged in the retail meat business. During war times, retailers learned that it was possible to get good prices and it is human nature to be ambitious to make money when possible.

"If the consuming public would buy more of the plain or cheaper cuts of meat, the fancy cuts automatically would become much cheaper and the plain cuts somewhat higher, making a legitimate average."

TRACTORS WORK ON SIDE HILLS.

There is a mistaken idea held by many farmers that the tractor is not adapted to sidehills or rolling topography.

Even the wheel tractor, however, will work satfactorily on very uneven land, and as for the track-layer—well, as one rancher aptly put it, "She'll crawl on a hill like a fly on the wall."

George Roeding, speaking of a track-layer used in one of his orchards near Exeter, said, "The heavy soil and rolling contour of the land make plowing difficult, but we find this machine is adapted to side hill work and it has given satisfactory service." He has expressed the sentiment of many other power farmers.

Perhaps the most notable achievements of tractors under difficult sidehill conditions has taken place in Oregon and Washington, where not only tillage tools, but also giant harvesters are handled with ease in the rolling grain fields.

WHERE FARMERS WIN OUT

"Why is it?" asks the puzzled student of economics, "that farmers are pretty well fixed financially, as a rule, when so often they sell goods below the cost of production? Their investment earns only four per cent, yet each year many are able to retire and live on what they have made in tilling the soil."

This seeming paradox is explained by the fact that there is one commodity—land—which farmers generally sell at a very substantial profit. The reason is found in the fact that the supply of land never becomes greater, while the demand—represented by growth in population—constantly increases.

Possibly farmers have no more right to this "unearned increment" than other people. On the other hand, it is generally admitted that farmers, as a class, are the poorest paid workers in the country. Rising land values tend to even things up—when the land can be sold!

LET'S ALL FIGHT WEEDS

Only occasionally is it necessary for a horticultural commissioner to take into his own hands the work of cleaning up weed-infested farm land. As a rule the owner needs only to be reminded that he is harboring a "public nuisance," in order to carry out fully the instructions or suggestions of the officer in charge. Yet should legal action become necessary, the latter is empowered to have the work done, the expense becoming a lien on the property.

There is a woeful lack of understanding among land owners of the seriousness of this problem. It should not be necessary for any public official to undertake a "clean up." Weed seeds travel in so many different ways and there are so many dangerous kinds, that it behooves every one to prevent their spreading.

Aside from the fact that it is against the law to allow Johnson grass, Russian thistle, puncture vine and other noxious weeds to go to seed, it should be a matter of community pride to maintain clean fields, orchards and fence corners.

"What's New?"—Keeping Abreast of Agricultural Progress

Citrus Frost Insurance

THREE large insurance companies are insuring citrus crops against frost injury. The policies are written on the basis of a full crop, taking a ten-year average. The valuation is low—$1 per picking box of Navels and $1.50 for Valencias. Three field boxes make two packed boxes.

The rate varies from 8 to 14 per ecnt. No adjustments are made for less than 10 per cent loss.

Prizes for Apple Producers

THE Yakima Horticultural Union is distributing $1000 in prizes for the best-yielding and best-managed apple orchards in the Yakima Valley, Washington. Grimes Golden, one of the few popular yellow apples, as a leading variety. Yellow Newtown Pippins, Spitzenburg and Delicious also are produced in large quantities.

Discount Auto Repair Bills

A LINDSAY garage gives Farm Bureau members a discount of 15 per cent on all repair work and material. The garage also solicits Farm Bureau memberships at $5 each.

F. H. Heydenfeldt, vice president of the Tulare County Farm Bureau, secured from the garage owners a written contract covering the discount agreement, which is good for one year.

Market Reports by Radio

DAILY radio reports of the grape market were sent out by the State Department of Agriculture during the busy harvest season. Information was broadcasted at 6 o'clock in the evening from Sacramento and was designed to reach vineyardists living within 200 miles of the capital city.

The reports covered number of cars shipped from the four principal grape centers; demand and market price; leading varieties called for and the auction returns from Chicago and New York.

Argentine Wheat Increases

IN spite of the low price of wheat, Argentina this year increased her acreage of this cereal 1,100,000 acres. The total acreage available for the 1923-24 harvest is 17,038,000 acres.

The number of cattle in the Argentine Republic has increased 11,000,000 in the past eight years, which is more than 40 per cent. Forty per cent more cattle were slaughtered during the first half of 1923 than during the corresponding period last year, according to official reports.

Advertise Wenatchee Apples

A QUARTER of a million dollars is being spent this season to advertise Wenatchee apples nationally. They are produced in a small Washington valley bordering the Wenatchee River, which empties into the Columbia near where the latter is crossed by the Great Northern Railroad.

In this limited area more apples are grown than in the entire State of California. The Winesap is the leading variety grown in Wenatchee. Many other late winter sorts are raised.

New Mexican Homestead Law

THE new Mexican homestead law, recently signed by President Obregon, provides that every native born or naturalized citizen who has been unable to acquire a farm by any other means may obtain one free of charge from the national government. Title is to be issued after two years' residence and cultivation, or pasturage.

Each person may file on either 62 acres of irrigated land; 250 acres of non-irrigated land where there is good rainfall; 500 acres of semi-arid land; or 1250 acres of mountain pasture land.

This law is expected to produce important results in the development and stabilization of the southern republic, where the land question was the main cause of the recent revolutions.

Harding Grass Grows Well

"THE great enthusiasm shown in the results obtained with Harding grass in the tests made so far in the coast counties has developed from the fact that it remains green late in the spring; gets green again about October 15th; has high feed value, the young growth being about equal to young alfalfa; will seed itself and also spread slowly through expansion of root development," points out C. C. Staunton Ventura County farm adviser.

A small plot is now growing on the A. C. Hardison ranch at Santa Paula and although never irrigated has given heavy forage to stock pastured on it. A little plot also is growing in Lockwood Valley and giving great promise for future plantings.

"Reefer" Situation Improved

DUE largely to the co-operation of shippers, the Southern Pacific and other lines have succeeded in overcoming to a great extent the deplorable car shortage conditions of last year, according to G. W. Luce, Southern Pacific Freight Traffic Manager.

The greatest difficulty at present is said to be occasioned by delay in unloading at Eastern terminals. On one October day more than 400 cars of grapes were waiting unloading in Chicago with similar numbers at other markets.

As a result of the plan whereby empties have been sent West more prompt by Eastern lines, a surplus of 13,100 "reefers" was attained on September 1 by the Southern Pacific. Luce reports, but even with this condition, it was impossible to fill all orders promptly during the latter part of September, and October. With extra equipment ordered, however, the railroads expect to have the situation fully in hand by another year, according to executives of the various lines.

Adopt New Almond Package

THREE, five and ten-pound bags—"little burlap brothers of the 100-pound sacks"—have been adopted by the California Almond Growers' Exchange. The new bags were provided mainly to accommodate persons who wish to send small quantities of California nuts to Eastern friends and relatives.

Stop Fake Fertilizer Sale

RECENTLY a man named Swann was jailed in Sonoma County and fined $50 for selling Idaho rock as a chemical fertilizer testing 68 per cent phosphoric acid, which is three times as much as the best phosphate fertilizer now on the market contains.

This action was taken as a result of information filed with the State Board of Agriculture by Farm Adviser Weinland.

Argentine Government Packing

THE Argentine government recently purchased a meat packing establishment for 1,500,000 pounds sterling and plans to operate the factory. The plant covers 375 acres and is located near Buenos Aires. It is equipped to slaughter daily 1500 cattle and 1000 sheep, in addition to 100 cattle for canning. Stockmen and butchers will watch with interest this experiment in government meat packing.

Who Is Selling Cheap Milk

"WHO is distributing milk to the half-dozen Piggly Wiggly stores in San Francisco to sell at nine cents a quart, now that the Associated Milk Producers, who formerly supplied them, is closed down?" asks the Grocers' Advocate.

The Producers' plant recently was ordered closed by the State Board of Health as unsanitary. It was virtually a disturbing center for many of the dairies in the Bay counties.

New Livestock Co-operative

THE great growth of the new National Livestock Producers' Association is indicated by the large increase in the volume of business transacted by the concern during the past two years. Four thousand carloads of stock were handled during the first half of 1922 and 27,000 cars during the same period of the present year.

The net earnings of the association for the first six months of 1923 were $150,000 and the value of the livestock sold was $38,000,000.

Snails Invade San Gabriel

A SERIOUS infestation of snails recently occurred in the Sierra Madre section of the San Gabriel Valley. This is said to be the first time snails have been present in this district in injurious numbers. When moisture conditions are favorable, poison bran bait is recommended by the Extension Service.

Bordeaux paste has been found an excellent snail repellant. It may be used to paint the trunks of trees. San Diego County has tried fighting snails with "liquid fire."

Prohibit Poultry Medicine Sale

A REMEDY for poultry lice, manufactured by W. A. Terry, of the Quick Action Products Company, of Los Angeles, no longer can be legally sold in California, because the State Board of Agriculture recently canceled the registration of this economic poison, on the ground that it is seriously injurious.

This action was taken because inspectors Pierce and Avery testified that the medicine referred to, when sprayed upon poultry, caused blisters, which resulted in the death of the birds.

Utah Poultry Is Increasing

FIVE or six years ago Utah was importing a half million dollars' worth of poultry and eggs, according to Byron Alder of the Utah Agricultural Experiment Station. Since that time the industry has gone through a phenominal development and a considerable amount of both poultry and eggs are being exported.

During the present year at least nine cars of dressed turkeys, 15 cars of broilers and 90 cars of fresh eggs having a combined value of $450,000, will be sent to markets outside of the State.

Kill Orange Tortrix Worm

DURING recent years the orange tortrix worm gradually has increased in numbers until in some districts it causes a loss of 10 to 20 per cent of the crop, according to R. W. Hodgson, Los Angeles County farm adviser.

This insect pest can be controlled by the use of arsenical sprays, but such treatment has a deleterious effect upon the fruit. To M. V. Eyssager, a University of California entomologist whose specialty is beneficial insects, has been assigned the task of finding, if possible, predator insects which will control the tortrix. This work is being financed by a number of orange marketing associations.

Home Farm Happenings

By ONE OF US

PIGS ENJOY FORAGING

The pigs in the woods are picking up acorns. About every three or four years there is a big crop; this season it is only fair.

W. S. GUILFORD

After the fruit is harvested and the neighbors have picked their corn the pigs have a glorious time, ranging all over the place. They get some fruit and acorns; root for all kinds of things after the rains have softened thoroughly the ground, and eat all sorts of grass and other green feed.

When they are out this way an attempt is made to get them to come up to the barn to sleep—by feeding a little grain every day—but there are many, many nights when they prefer a bed of leaves under a big tree.

CONTROLLING RED SPIDER

There was just one spot of red spider in the prune orchard this season; about 20 trees were infested. There was not much sign of the pest until just about picking time and then some of the trees were partly defoliated.

We plan to spray these trees right away with dormant soluble oil emulsion. It is hoped that some spiders will be killed and the over-wintering eggs that must be on the tree, or on or in the ground, will be so soaked with oil as to be destroyed. Last winter's oil spray is credited with keeping the orchard comparatively free from spider this season.

SACRAMENTO VALLEY CORN

Antone Machado brought in a hill of Indian corn and set it up in front of Miller's store in Butte City a few days ago. The stalks were over sixteen feet high and there were two big ears on each stalk. He has a field of corn very much like this.

A conservative estimate of the tonnage is 25 to 30 tons of green corn, suitable for silage. This crop was raised on what is called in this district heavy land. The soil is a heavy clay loam, very rich, but not the easiest soil to work. Ask any real "old timer" if corn would grow on it and he would most emphatically answer "No."

Joe Shockley remarked: "Notice how high the ears are? That is different from Missouri or Kentucky corn. Back there the ears are where they are easy to pick, about three and a half or four feet high. The ears on this California corn are as high as you can reach. But it sure is big corn—as big as I ever saw."

And Joe knows good corn, being familiar with the crop on the Missouri river bottom and on other good land back East.

WILL SHIP FRESH FRUIT

At the last meeting of the Conora Farm Center, Glenn County, Farm Agent Torpen compiled a list of the fresh fruit that should be available for shipping from this district next season. Probably there will be between 400 and 500 tons of peaches, pears, apples, plums, apricots and cherries, with a few nectarines and other fruits.

At the next meeting Torpen will have present the representative of some shipping concern who will tell what can be done with this fruit.

Trainmaster Fisher of the Southern Pacific was at the meeting. He gave the assurance that it was the wish of the railroad to provide the best service possible and to co-operate in every way in making available for shipment a greater tonnage of local freight.

Fisher said that in order to encourage the fresh fruit industry in the Hamilton section he had hauled a single car of fresh apricots over the branch to connect with the main line train for Sacramento.

He also spoke of the "passenger time" service given the stockmen from this section, when lambs are moving to the Omaha and Chicago markets, and when the Sutter County peach crop is being shipped to the canneries.

It looks as though everything is moving very nicely in the fresh fruit districts.

SALT STOCK REGULARLY

Sheep, cattle and hogs will consume a considerable quantity of salt, if they have free access to it, especially on river land pasture, where there is no alkali. On the salt grass alkali pastures no salt at all need be furnished. This is one of the advantages of alkali land that should not be overlooked by land salesmen.

Some sheep and cattle now on pasture at a neighbor's are the reminder that salt seems to be a necessity that it is not well to overlook. This bunch of stock seems to be continually getting out of salt.

Dean W. L. Carlyle, now manager of the Canadian ranch of the Prince of Wales, conducted some experiments at one time, which proved conclusively that a salt-starved animal could not be made to make satisfactory gains nor to develop properly. The conclusion was that chlorine is one of the elements essential to animal life.

ELMER AND THE PONIES.

Elmer Hunt of Marysville had a couple of ponies this summer—breaking and riding them. And when he rode one of them home recently, 42 miles (the other pony following), and put him through his stunts, we nicknamed Elmer "Barnum." For he surely is a wonder with a pony.

He has "Dan," this roan 3-year-old gelding, trained so that he will shake hands, kiss him and lie down so that Elmer can mount.

There is nothing more delightful than to see a boy or a girl with a well-mannered pony and it is hard to tell which gets the most pleasure, the child or the animal.

DEHYDRATORS DOING WONDERFUL WORK.—Although this has been an almost ideal season for sun drying prunes, the new dehydrators in this section have made a lot of converts to this way of curing fruit.

It is almost uncanny the way they "consume" fruit—and it has taken the picking capacity of the crews in the orchards to keep the tunnels filled to capacity.

Of course, there was some trouble in getting the new ones running just right—one thing or another having to be adjusted or changed—as is to be expected with machinery—which prompts the suggestion that a dehydrator should be finished and tried out in July if it is to be used in August.

The constant 24-hour grind and the 24 or 28-hour turn out of cured fruit is what does the business. And dehydrators are especially comforting when the days are short and the nights cool, and there is a heavy dew.

RAM LAMBS GROW FAST.

The ram lambs are not exactly "in clover" now, but on feed that is better than that. They have the run of a part of the pear orchard—in which there is both green and dry feed—and come to the barn twice a day for a little grain.

In the grain mixture are bran, oats, a little oil cake meal, whole barley, rolled barley and a little rice.

The lambs stay in the big barn in which they are fed during the middle of the warmer days or when it rains. And you can almost see them grow.

Hog Auctions Success

SUCCESS of the Farm Bureau marketing plan for hog auctions has been clearly established in the San Joaquin Valley where the organization bearing that name reports the sale, since October, 1918, when it was formed, of 227,945 animals valued at $5,200,000. Last year's returns showed an average increase of 20 per cent, with Tulare County leading in the increase, having 25 per cent to its credit. In the year ending October, 1923, $717,000 worth of hogs were sold, checks going out to 3555 people represented at the auctions. The association sells throughout the San Joaquin Valley from Modesto to Bakersfield.—F. B.

Belted Cattle Doomed?

HAS the reader ever wondered what has become of the Dutch Belted breed of dairy cattle, so widely advertised and promoted twenty years ago?

The foot-and-mouth disease situation in Europe, which for years has prevented importations, accounts for the decline of this breed as well as the Brown Swiss, according to Frank Reed Saunders, of Phoenix, Ariz., at one time the leading Dutch Belted breeder of America.

Incestuous inbreeding brought about the virtual abandonment of the belted strain in the United States, asserts Saunders, who states few of these cattle of pure blood remain in this country.

He believes, however, they could have been made very valuable by the occasional use of a Holstein sire, to increase milk capacity and overcome the disadvantages of inbreeding, providing it were not deemed essential to maintain the pure strain.

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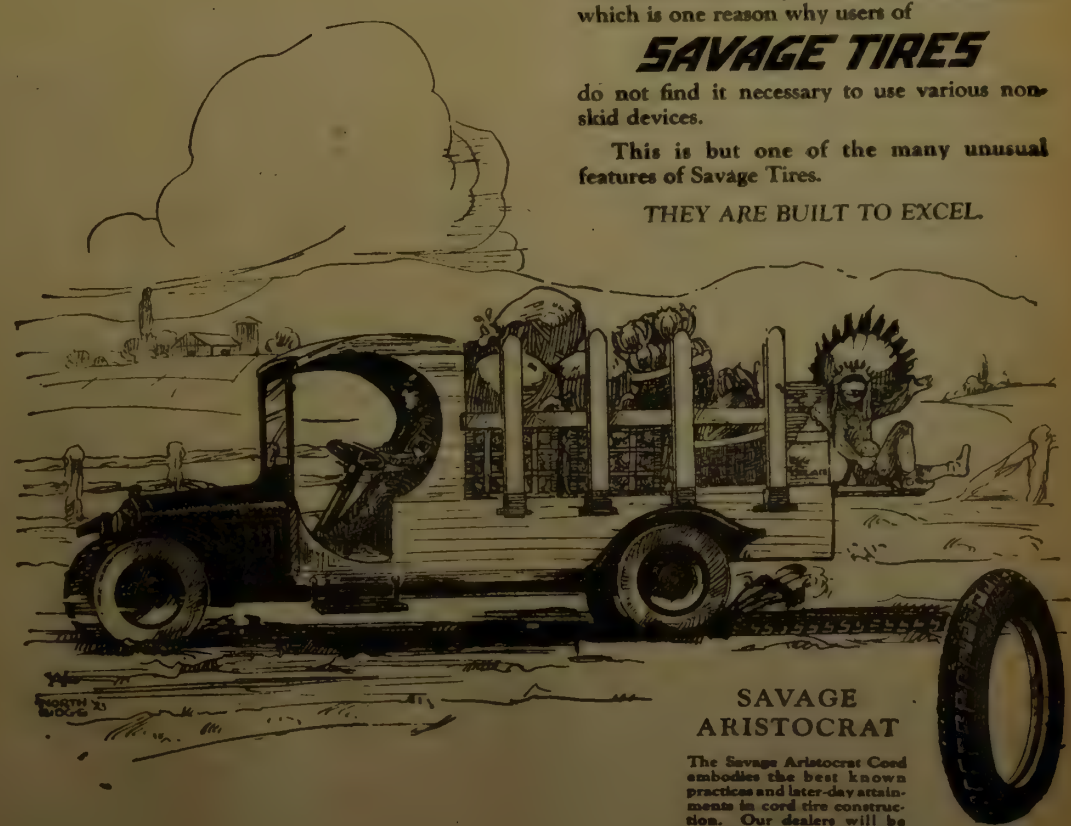

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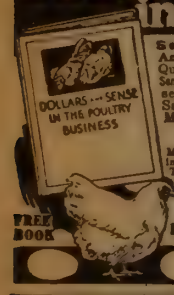

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Timely Tips for Deciduous Growers

By GEORGE P. WELDON

Pomologist, Chaffey Junior College of Agriculture, Contributing Editor of ORCHARD and FARM

FURROWS TO COLLECT LEAVES.

In order to prevent total loss to the orchard trees of plant food stored in the foliage, it is a very desirable practice in the fall of the year to plow furrows between the tree rows for the sole purpose of collecting drifting leaves.

PROFESSOR WELDON

When the fall winds begin to blow, the orchard in which there are no furrows will be swept clean.

If furrows are plowed so that the winds sweep across them, a worthwhile amount of the leaves will collect for plowing under in the spring. Leaves when decayed form humus and humus is one of the essentials of soil fertility.

ANTICIPATE SPRING DELAYS NOW

Every spring finds many an orchardist with his work undone; spraying becomes necessary before pruning has been finished, resulting in wastage of spray that could have been avoided.

Sometimes in desperation the grower simply lets his orchard go without any spraying, or perhaps pruning.

It is well right now in the fall to anticipate some of the things that may happen through delays. Pruning can be done as soon as the leaves drop, as well as any other time while the trees are dormant.

A STRIKING PRUNING EXPERIMENT

Whatever the enemies of long pruning may hold against it, there is certainty no one familiar with the facts who will contend that long pruning does not result in an increase in production.

This season, in one of the experimental plots pruned by the writer, there are 54 trees of the Lovell peach variety which were pruned short, and 54 trees of the same variety alongside which were pruned long, according to a system very close to the Whitten system.

An exact account was kept of the number of boxes of peaches taken from each row. The results are so striking as to be almost unbelievable. There were 6½ boxes of peaches picked from the 54 short-pruned trees and 38 boxes from the 54 long-pruned trees.

Nor does this tell the whole story. None of the 38 boxes had any fruit in them under 2 1-8 inches in diameter. It was finer fruit than that from the short-pruned trees and averaged fully as large.

As the trees were only three years old the crop was fairly good from those long-pruned. Each year these two rows will be compared as to their production so that eventually some very definite conclusions should be possible.

LESSONS FROM A BAD SEASON

Deciduous fruit growers, with some few exceptions, are going through a period of discouragement, and pessimism naturally crops out upon every hand. The reason is found in the generally low prices that have been received for the product of their toil during the season just closing.

The past season saw a phenomenally large crop of apricots on the trees. This crop followed a good crop. Not only is this true, but the fruit set upon trees that were greatly devitalized from heavy production and drought.

The natural thing happened—fruit would not size well and the market for a tremendous output of small inferior fruit was slow.

The peach season followed closely on the heels of the apricot season, with conditions only slightly better. There was not such a large crop of peaches and thinning had been done well enough to cause a good development in size, but the market was "off" and less than one-half of the previous season's prices was received, on an average.

Our dried fruits are mostly unsold; therefore it is not known how much this fruit will bring, but there has been nothing to point toward prices that will pay the grower at all well for his season's work; in fact, heavy losses are anticipated.

It is not the first time in the past decade when conditions have been bad in many branches of the deciduous industry, and as good years have followed bad years in the past, the same thing will happen in the future.

The lesson to be learned is one of great importance. I would summarize it as follows:

Successful fruit growing demands the careful selection of a tract well adapted to the growing of the fruit which is desired; purchase at a price based upon what one can expect in the way of production and prices throughout a series of at least ten years; the availability of water sufficient to care for the needs of the orchard throughout the year and, last but not least, most careful management.

Blight-Proof Pear Developed in Georgia

A NEW variety of pear, known as the "Pineapple," has created much interest in the East and South and recently has made its appearance in California.

It was developed by the Altamaha Nurseries of Ludowici (Ga.), and has for its greatest claim to popularity remarkable blight resistant qualities. In fact, it is said to be absolutley immune to this disease which has practically wiped out the pear industry of the East. As indicated by its name, it has a marked pineapple flavor and odor.

Is it likely, then, to be an important competitor of California pears? Local authorities believe not, because it is of the Kieffer type and therefore lacking in quality, being of very coarse texture. In California the tendency is to strive for quality and fight the blight if necessary rather than to plant blight-proof varieties which are lacking in flavor or fineness.

But the "Pineapple" tree is described as being very hardy and prolific, and the fruit has been highly praised in some quarters as a canning product. While it is not likely any extensive commercial plantings of this variety will be made in standard pear-growing districts of California, it is being received with much interest here because of its peculiar and intriguing flavor. Some fruit men believe it may prove valuable in the hotter districts, such as the Imperial Valley.

A plate of this variety was exhibited at the Berkeley fruit show a year ago and was awarded first prize on its merits of uniformity, size and condition for that variety.

The remarkable blight resisting quality of the Pineapple pear is described as follows by R. D. Rimes, its originator:

"The old original parent tree, now 43 years of age, today is in a vigorous and flourishing condition, and produces annually a heavy crop of beautiful pears. During all these years it has grown as close as 60 feet to other varieties, such as Leconte, Kieffer and others, and while these varieties have blighted very badly, the old Pineapple tree has never shown any evidence of infection.

"In several instances here (Georgia) where the Pineapple pear trees, of all ages, are growing in close proximity to other varieties badly infected with blight, the Pineapple pears maintain their complete resistance to the ravishes of this disease.

"For a number of years the Pineapple pear trees have been tested to determine their non-susceptibility. They have had budded and grafted into them the blighting wood from other varieties, and they have been tested many times by inoculating them with pure pear-blight cultures, but in every instance they came through unscathed.

"The Director of our State Experiment Station says: 'We have not been able to blight the Pineapple pear either naturally or artificially, and for orchard purposes, on any scale, it may be regarded as immune to blight.'"

R. D. Rimes of Ludowici, Ga., with tree of "Rimes Pinapple pear." Pear in comparison with fountain pen 4½ inches long shown in insert.

Real Fruit Drinks

JUICE extracting devices supplied to thousands of soda fountains by the California Fruit Growers' Exchange have been a big factor in increasing the sale of small-sized and cull oranges and lemons. Furthermore, they are doing much to revive the popularity of the two most popular "soft" drinks of twenty years ago—lemonade and orangeade.

Exchange officials do not blame "the trade" for having built up an enormous business in substitute or synthetic drinks, for it is pointed out, the time required for squeezing the juice and mixing the drinks by hand was a veritable brake on the fast working "machinery" of the modern busy soda fountain.

But now that inexpensive machines are available, soda dispensers report a tremendous increase in the demand for real fruit drinks. It doesn't take the consumer long to learn the difference between real citrus juice and the bogus concoctions, flavored with imitation extracts!

This development is right in line with the campaign now being carried on by Professor Cruess and other members of the University fruit products staff, to increase the manufacture and sale of real fruit beverages, reports of which have appeared from time to time in ORCHARD and FARM.

Pruning Injures Trees

LARGE pruning wounds usually mean more or less trouble. When they are made by cutting off a large branch to a stub, or when they are made horizontally or nearly so, there is generally severe drying out, cracking of the wood, and later rot from certain fungus organisms which enter at the wound.

Checks in the bark may be due to injury done the root system in moving a large tree. With proper care a tree may partially outgrow all of these troubles and produce good crops of fruit.

Whenever a tree is severely pruned it has a tendency to set little fruit, but what it does set usually is of a large size.—G. P. W.

PRESIDENT HEARS FARM BUREAU

At two important conferences recently held with representatives of the American Farm Bureau Federation, President Coolidge is reported to have shown a remarkable grasp of the agricultural situation and to have promised hearty support to any measures which might tend to improve the economic situation of the farmers.

Poultry Pointers

By W. J. DRYDEN

TURNING EGGS IN INCUBATOR

How many times a day should eggs in the incubator be turned?

If we could so regulate the incubator as to make the conditions the same as those involved in natural hatching, then all that would be necessary would be to watch the old reliable hen and see how often she turns the eggs.

Many successful poultrymen seem to secure good hatches by turning only once, while others turn two, three, four and even five or six times a day.

The setting hen turns her eggs as often as twelve times a day. If we had the same conditions in the incubator this would seem the best method. Labor, cooling of eggs and other elements must be considered, however. It would appear that under average conditions the poultryman would profit by turning his eggs two or three times a day at least.

HOW TO PREVENT DISEASE

Give the poultry clean quarters and runs, plenty of fresh air, a balanced ration and clean, fresh water, and keep out infected birds; then the problem of poultry diseases will become of little consideration. Under ideal conditions, of course, there is no disease. It is impossible for the poultryman to have ideal conditions, but he can strive toward this end.

UTILITY VS. FEATHER SHOWS

Poultry fanciers either must accept the utility standard of judging or step aside for the new utility shows. Several cities and counties in California started the movement and met with more success than did promotors of feather shows in the past.

There is little doubt but what the standard will be changed to make it possible for a high-producing bird to win the awards at the poultry shows of the near future. There is something wrong with our standard when it is impossible for our highest producers to win awards. The standards now set up are of such a nature that birds which could qualify would not have the capacity and vitality to produce the eggs.

DUAL PURPOSE FOWLS INCREASING

The dual purpose birds are beginning to come into their own. Any bird bred to lay can be developed to as high a point as the Leghorns have reached. The Barred Rocks have become a little smaller due to breeding for egg yield, but they still maintain their superior market qualities.

HENS KNOW HOW TO ADVERTISE

The California poultryman would do well to go out in his yards and watch the method of advertising carried on by his hens. If he would follow their example, the surplus in the State could soon be moved, he could demand more for his eggs, and his day-old chicks, hatching eggs and breeding stock could be sold at a fair figure.

When the hen lays an egg she tells the world about it. The hen is the best advertiser that the poultry industry has.

CULLING CHICKS IS IMPORTANT

While culling has become one of the most important functions of the poultryman, little consideration is given to the culling of chicks.

Much money could be saved, spread of disease prevented, and better chicks raised if the chicks were culled as soon as they are removed from the incubator and again every few days.

The runts, cripples and others which are weak and not up to standard should be killed. They will eat as much feed as the healthy birds and never will bring sufficient returns to pay for themselves. Many of these chicks may have inherited diseases which will spread to the entire flock, or at least they will be subject to any disease that may enter the brooding house.

Selling Fur Garments

IT is impossible for me to sell rabbit fur garments for others. But when I started in the fur garment business I had no market for my wares, yet soon found that one sale led to another and that if I did good, neat work and turned out fashionable garments there would be more demand for my goods than I could supply.—ELLEN S. GREEN.

Welding With the Farm Forge

Specific Directions for Performing an Important Operation in Repairing Farm Machinery

By W. L. ZINK

Agricultural Engineering Division, College of Agriculture, University of California.

FARMERS should get away from the idea that it is very difficult to do a good job of welding on ordinary soft steel. After two or three hours of careful practice, the average man should be able to make a good weld.

There are several essentials to consider when making a weld.

(1) Use good coal; (2) have a clean, deep fire; (3) upset the metal properly; (4) "scarf" the ends; (5) use the proper flux; (6) have the right amount of heat; (7) place the metal together correctly and stick the weld; (8) finish the job properly.

Special blacksmith coal always should be used for forging purposes. Any other kind of soft coal is apt to give a very dirty fire. It may also contain sulphur, which is a very troublesome impurity. Sulphur taken up by the hot iron makes the metal brittle —"hot short."

Test a lump of the coal by striking it with a hammer. It should crumble up into bright, shining grains, rather than split up into dull-colored layers.

The final test for a forging coal is to use some of it. Does it coke easily? Will it burn free of black smoke and heavy gases? Will it burn without leaving a great mass of slag and clinkers?

These are the things we should expect from a forging coal. Blacksmith coal can be bought from almost any local coal dealer. A 200-pound sack of it will last a long time.

FIRE IS IMPORTANT

A clean, deep fire is very important in the making of a good weld. Poor fires cause more trouble to beginners than any other one thing. In starting a fire, be certain that all the burned-over fuel has been removed from the fire box. The coal should be returned to the coal box.

The coke, which is a very light, grayish-black material, should be placed at the back of the forge. The clinkers and ashes have a brownish color and a jagged appearance. These should be discarded.

With the fire pot clean, and the "clean out" below the air line dumped, place a handful of wood shavings over the tuyers. Light the shavings and apply just a small amount of air. Slowly add some small particles of coke. Keep adding coke rather slowly until the shavings are covered and the coke is burning freely.

During this time the amount of air is increased gradually. Keep building up the center of the fire with coke until there is a bed of burning fuel about seven inches deep. Bank the sides of the fire with dampened coal.

This concentrates the heat at the center of the fire and also aids in the coking of the fresh coal. As the coal is worked to the center of the forge it is gradually changed to coke. Each time the sides of the fire are forced in, bring up more coal.

Fresh coal seldom, if ever, should be placed at the front or back part of the forge, as it would be continuously going into the center of the fire as the iron is being put into or pulled out of the fire.

To allow for the hammering during the welding, it is necessary to start with the cross section of the bar a trifle enlarged. The increasing of the cross section is called "upsetting" and is done by striking the end of the iron while at a white heat. Always keep the metal straightened during the upsetting operation.

On round stock the entire cross section for about one inch back from the weld should be enlarged about one-eighth of an inch. On flat bars about the same amount of upsetting should be done in thickness of the metal, but none in width.

SCARFING PROCESS EXPLAINED

The sloping or beveling off of the ends of the iron where the weld is to be made is known as "scarfing." Do not let this beveled or lapped section become too long. From one and one-half to two times the thickness of the bar is the correct length for the beveled section. The bevels should be slightly higher in the center, in order that during the welding the slag or oxides will tend to squeeze out.

A good flux or welding compound is a valuable aid in welding. Its use is to help in breaking down the oxide scale formed on hot iron and also to protect the scarfed-surface from air during the welding heat. Clean quartz sand is a cheap flux. Borax can be used to advantage. Several patent fluxes, which give very good results, are on the market.

The following is a recipe for a good flux: Copperas, 2 oz.; saltpeter, 1 oz.; common salt, 6 oz.; black oxide of manganese, 1 oz.; prussiate of potash, 1 oz.

Pulverize these ingredients and mix them with three pounds of clean white sand. In using the flux the scarfs are first made and fitted, and then the metal is heated to a cherry red and the welding compound sprinkled over the scarfed surface.

After the flux has been added to the iron it is placed back into the center of the fire with the scarfed sides up. Always place iron for heating on a level place with about five inches of fire below the metal and about two over it.

Just as soon as the welding compound begins to fuse, turn the scarfs down. Try to keep even heats on the two pieces. Use just enough air to get plenty of heat for the iron. Too much air will cause an excess of iron oxide on the metal, which may mean a doubtful weld.

As the bars approach the welding temperature, they will have a color very much like that of the hottest part of the fire. This is called a "white heat." The surface of the scarfs will have a plastic appearance.

Hold the metal in the fire for a short time after these characteristics appear, in order to give the entire cross section a chance to heat through to this temperature. Only a few sparks will have come off the metal up to this point. This is the best heat for starting to weld the pieces together. Further heating will burn the iron and very much weaken it.

RAPID HANDLING NECESSARY

The handling of the pieces during the welding must be rapid and accurate. On heavy *(Continued on Page 10)*

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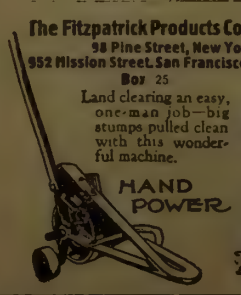

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MAMMOTH WILD BLOODED BREEDING TURKEYS. Imported stock. Toms, $5 and up. Hens $4 and up. JERSEY STOCK FARM, 11534 San Fernando Road, Route 3, [illegible]

WILD BLOODED BREEDING TURKEYS. Toms, according to age and size, $15 and $2 each; hens $8. Baby turks. JENKINS [illegible] Veteran, R. 3, Box 145, Burbank, Calif.

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OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil; complete irrigation with cheap water, thorough drainage, rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

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FRUIT TREES, BERRY and SMALL FRUIT PLANTS. Now booking orders for fall and spring delivery. Twenty-seven years of practical experience. Write for price list. Descriptive catalogue sent on request. M. J. MONIZ, Box 477, Sebastopol, Calif.

FRUIT AND ORNAMENTAL TREES. Most complete line offered Southwest. Buy direct from growers. Catalog free. Express paid. Consolidated Nurseries, Houston, Tex.

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KENTUCKY LEAF TOBACCO—5 lbs. chewing $1.75, 10 lbs. $3; 5 lbs. smoking $1.25, 10 lbs. $2. Pay when received. Pipe and recipe free. Co-operative Farmers, B3, Paducah, Ky.

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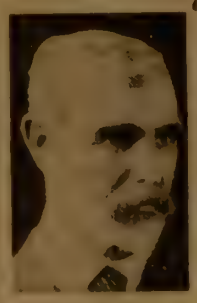
PERCY S. WEBSTER, Savings and Loan Bldg., Stockton, Calif., has a long established, efficient organization. Send for free book on patents.

Bee Notes

By J. D. BIXBY SR.

Contributing Editor



J. D. BIXBY SR.

"HOW DOTH THE BUSY BEE?" It requires about 55,000 round trips by bees to bring in one pound of honey. Then about one-tenth of this is consumed in making wax comb for its storage and for feeding the drones and young. It is estimated that more than 600,000 blossoms are visited to collect this pound.

SUGGESTION TO THE EPICURE.

If you really like honey and honey really like you—for there are a few individuals to whom the essential oils which constitute the "bee flavor" are not agreeable—try a saucer of fresh extracted orange honey with cream poured over it. Oh, Boy!

INTERMOUNTAIN HONEY SOLD HERE.

There is little native honey now for sale in Southern California. This is evidenced by the fact that nine carloads of "Intermountain" honey (from Utah, Idaho and Nevada) have already been sold out in Los Angeles. This is a most excellent honey, made from alsike, alfalfa and sweet clover.

LOCAL HONEY MISREPRESENTED

The fact that all the honey sold at the innumerable road-side stores of California is labeled either "sage" or "orange" doesn't alter the fact that many tons of it has been gathered from the cotton, tobacco and alfalfa fields of the Imperial Valley.

ATHEL TREE FURNISHES NECTAR.

An ornamental shrub called athel or tamarisk, reputed to have been brought originally from Egypt, has been planted quite extensively in Inyo County, for wind-breaks. It produces honey freely. Samples of comb honey were shown at the Riverside County Fair. The cappings are attractively white, the honey the most brilliant saffron yellow ever seen, and the flavor execrable. A variety of this plant has been naturalized in the San Gabriel wash, Los Angeles County, for twenty years, where its attractive pink blossoms can be sparingly seen in early Spring.

ATTRACTIVE FAIR EXHIBIT SHOWN.

The Riverside County Beekeepers' Club, laboring under the handicap of serious losses by fire and almost the poorest season ever known, staged a very attractive exhibit of honey at the County Fair at Riverside. The comb honey exhibit would have taken prizes anywhere, while the refined beeswax entries were excellent. The three booths, decorated in Egyptian design were novel and attractive.

WHAT OF THE FUTURE?

Heavy losses by starvation, running into hundreds in some individual instances, already have occurred among the apiaries of California. Disease too is being aggravated by these conditions. What are we going to do about it.

Sugar is so high in price that many think they cannot afford to buy it for feeding bees. Honey may be cheaper next season than sugar is now, they argue.

This is no time to get discouraged. Every colony carried through the winter will be an income producer next season. Only a small section of our country—the North Atlantic States has had a normal crop of honey this year, while the balance of our honey producing territory has scored an almost total failure. All this, following two years of very short honey crops, is bound to bring us to a destitute and sugar starved season. **Let's be ready for it.**

Select the best combs of the apiary, unite with them the stores of the weaker colonies, add all the sugar syrup they may need to go through to eucalyptus or other early bloom, and save all good combs for use next season.

USE SOFT WATER.

Use "soft" water, or rain water, if you can get it, for rendering wax. In case only "hard" water is available, use a tablespoonful of vinegar to each 10 gallons of water. This will neutralize the lime in the hard water and prevent its uniting with a portion of the wax and forming an insoluble lime-soap.

Do not use sulphuric or other strong acids or you will ruin the wax for making good foundation.

BOIL WAX MATERIAL THOROUGHLY.

Boil your wax material long enough to thoroughly get it completely boiled through. Soaking all old combs in water for twenty-four hours before rendering is a good plan. Almost any kind of a screw press will extract the wax if it is only properly boiled first.

No, This Isn't the Famous Chinese Wall

NOR does the view at the upper right of group illustrate an old cobblestone highway. The pictures were taken by the ORCHARD and FARM cameraman near Upland (San Bernardino County) and show an enormous wall of stones picked up from adjoining orchard lands.

The cost of clearing, preparing and planting the lands to citrus was considerable—as much as $800 per acre for one ten-acre tract. But this land now is valued at $2000 to $3000, and is yielding wonderful crops of high-quality lemons. Ten years ago the cost of clearing such land averaged about $200 per acre.

"Rocky soil," asserts Mayor F. C. Buffington of Upland, near whose ranch the photographs were taken, "has several advantages, not the least of which is its apparent ability to retain heat.

"I have observed carefully a strip of land west of here where in several instances the trees have escaped frost injury when surrounding territory was badly damaged. This I attribute partly to the fact that the stones absorb the heat of the sun and add a measure of protection by raising the temperature of the orchard on chilly nights.

Other advantages claimed for stony soils is that they are less likely to be sticky and hard to manage. Further more, they are more porous as a rule, easier to irrigate and less likely to be underlain with hardpan.

Such land often may be purchased at a comparatively low figure, and if surveying too large a percentage of large stones may be cleared to advantage even at present labor costs.

It is estimated by Mr. Buffington that the present cost of clearing the land from which the stones used in the wall were removed, would be at least $300 per acre. The work was done about [illegible] years ago.

The wall is more than 20 feet wide and eight feet high and extends the distance of one-half mile. While an orchardist would be likely to build it for exercise or as an ornament, it functions as a fence or boundary line and has at least one real virtue in that it helps prevent washing or erosion.

Power Milking Pointers

SOME cows that always have been milked by hand show a tendency to develop garget when a machine is used for this purpose. When such a condition occurs the cow should be milked by hand until the milk becomes normal. The hands should be washed after milking each cow. Usually the condition does not return after the cow has become accustomed to the machine.

Improper sterilization is the commonest cause of trouble with milking machines. After users learn how properly to care for the device, no trouble is experienced, as a rule. It requires a little time to take the machine apart and wash it thoroughly, but no work pays better.

Chemical solutions for sterilization should be made up fresh every day. Old sterilizing liquid is not only useless, but may become a source of contamination as well. A four-day-old chlorine solution was found to contain 3,000,000 bacteria per c. c.

It is possible to produce low-count, grade A milk by machinery as well as by hand, but proper precautions must be taken to prevent contamination.

CANNING MORE COAST FRUIT

During the past 13 years the amount of fruit canned in California, Oregon and Washington increased from 5,500,000 cases, valued at $13,000,000, to 19,000,000 cases, worth $118,000,000.

How to Kill Ants

THERE is a special formula, of which sodium arsenite is the principal ingredient, which is prepared for the destruction of Argentine ants. Where one is attempting to control these pests on a large scale it is, of course, desirable to secure the materials and prepare the insecticide according to this formula.—G. P. W.

The California White Leghorn Breeding Farms

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Write for mating list and learn why.

FALL CHICKS

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Agricultural Leaders of the Pacific West

J. W. LOGAN

Humboldt County Agricultural Agent.

THERE are farm advisers—and farm advisers. Some magnify their job and some do not. J. W. Logan belongs to the former class. When he came to Humboldt County three years ago his office was unpopular, due to an unfortunate combination of circumstances. Now the Extension Service work is considered one of the most important and highly esteemed in the county.

Three incidents serve to illustrate how the change was brought about.

"That man," related Logan, referring to a farmer with whom he had arranged to do some plant pest control work, "wouldn't speak to me when I first came to Eureka. I waited for a chance to be of service to him—now we are good friends."

By replacing ineffective pill dosing for blackleg with the modern aggressin serum treatment, Dr. Logan—he is a veterinary surgeon—was instrumental in bringing this serious cattle disease under complete control in Humboldt County.

Shortly after his arrival at Eureka, Logan was told a coarse joke about the farm adviser's office by a local resident.

"See here, my friend," warned the new official, "if any one repeats that remark in my hearing there will be two sounds—one when I hit him, and the other when he hits the ground." The slur never again was heard.

These incidents indicate three of Logan's characteristics: Knowledge, courage and a desire to serve. He also is a good "mixer" and likes his work.

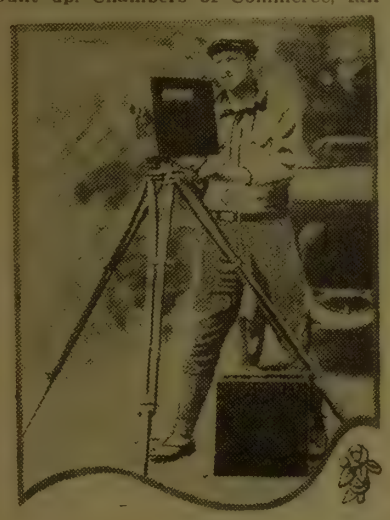
Raised on a Kansas farm, Logan was educated at the Kansas Agricultural College. He afterwards did extension work in contagious animal diseases for the Illinois Agricultural College, and later for the California College of Agriculture. Tiring of duties which kept him away from home so much of the time, Logan decided to settle down in the farm adviser work.

"In my former employment I had a good chance to get acquainted with all parts of California," relates Logan. "I chose Humboldt County because of its climatic advantages and other natural attractions—ocean, mountains, wonderful streams and redwood forests—being a great lover of nature 'as is.' Besides, I always wanted to go as far West as possible and Cape Mendocino is the farthest west land in the United States."

Leading better bull campaigns, which resulted in placing over 200 purebred sires in the dairy herds of Humboldt County and two carloads of registered Hereford bulls on the cattle ranges, is one of the outstanding achievements of Logan's official career in the coast county. Others are inducing Government to make a soil survey of Humboldt County, conducting extensive grain and fertilizer tests and aiding the boys' and girls' club work.

More important, perhaps, has been the co-ordination of the work of all the agricultural organizations of the county, including the Farm Bureau, Stockmen's, Wool Growers', Vetch Grower's, Dairymen's, Jersey and Guernsey Breeders' and Cow Testing Associations. These all "head up" at the farm adviser's office, where cattle and sheep men—old-time enemies—meet and work together for the common good.

A fine spirit of co-operation between town and county people also has been built up. Chambers of Commerce, fair



Here's "J. W." Himself, Taking Farm Movies.

associations and similar organizations labor in harmony for the common good.

At stockmen's rodeos, dairymen's picnics and similar gatherings the tall, commanding form of "Doc" Logan—as he is familiarly called—is a central figure. A hard, conscientious worker, a good "josher," interested in the work and welfare of every farmer and farmer's family, Logan is a fine type of the modern farm adviser.

"Get me a price on that piece of land, will you?" Logan requested a farmer whose fields he had visited, indicating a neighboring ranch. "When I retire from office I want to settle down on a farm right here in Humboldt County. I'd like to buy a place now and begin to fix up a real country home."—O. H. B.

Lilith Is South's First Fifteen-Ton Cow

By W. R. HARRIMAN

Superintendent Los Angeles County Farm

THE first 30,000-pound record ever made in Southern California was completed recently when Hollywood Lilith Palmyra Abbekerk, star performer of the Los Angeles County Farm herd, completed 11 months of her yearly semi-official test.

At that time she had produced 30,015 pounds of milk, containing 1128 pounds of fat, equivalent to 1410 pounds of butter.

This is also the first time that any Southern California cow has reached the 1400-pound mark for butter. This record bids fair to be not only the highest butter production ever completed on the Pacific Coast, but at least third highest in the entire United States. Of the 11 California cows that have previously completed 30,000-pound milk records, only one has made more than 1325 pounds of butter. In fact, no other 15-ton cow ever has made such a high butter record, it is said.

The blood of this wonderful producer is being conserved by the use of her sons in service at Hollywood Farms, Seattle and at the Los Angeles County Farm. The latter herd is using a son sired by the well-bred bull, King Korndyke Pontiac Mead, whose daughters are showing a uniform desirable type and excellent production as two-year olds.

This youngster, King Palmyra Mead, therefore, is possessed of one of the proudest pedigrees in Holsteins. He shows an average for his seven nearest dams of practically 1080 pounds of butter. He is of large size for his age and will make a bull of excellent dairy type, as would be expected from this lineage. Such a blending of producing strains is true constructive breeding, the results of which should be tremendously valuable to the breed in this part of the world.

Pointers on Preparing to Heat Orchards

"ANYTHING short of full protection against frost is a waste of time and effort in orchard heating," declared W. R. Schoonover, at the recent orchard heating demonstration in Riverside County.

"Devices which merely stir the air have not been shown to be of appreciable benefit and machines which attempt to distribute heated air from a central point have not yet been perfected.

"The only successful method of frost protection thus far demonstrated is the application of heat from a large number of small units distributed throughout the orchard. These small units may be heaters burning oil, briquets or coal. They should be of sufficient capacity to burn all night without refilling and should also burn at a steady heat without requiring frequent attention or regulation.

USE SMOKELESS HEATERS

"If oil heaters are used the residents of citrus communities will be better satisfied if the relatively smokeless types are used. Oil is the cheapest, most efficient fuel and also the quickest to restore a safe temperature.

"Briquets will be found satisfactory for small groves of oranges and for locations where the frost risk is relatively slight. The overhead investment for briquet heaters will be about one-third that required for oil and there is no storage problem.

"It is important to have sufficient fuel on each acre of ground to take care of the orchard during the worst possible freeze. If oil heaters are used, 40 to 80 of 7 to 9-gallon capacity will be required per acre.

PROVIDE PLENTY OF FUEL

"To be safe, one should always have about 500 gallons of oil per acre in pots in the field for the cold locations.

"If briquets are used, 1000 heaters per acre will be required and 2 tons of fuel per acre actually on the ground ready for rapid filling will be ample for a bad freeze of one night's duration.

"The fuel storage should be about three times the pot capacity. If community storage tanks are used the grower will find it best to have additional storage for at least one filling actually on the ranch.

REFILL POTS PROMPTLY

"The pots must be refilled after each night of firing, without fail. Any device, such as motor-driven oil pumps and large outlet valves on tank cars, which will facilitate rapid filling will be found to pay. In 1922 many growers found it impossible to get their filling done and not only started the second, third and fourth nights of the freeze with a reduced oil supply, but were entirely exhausted from working hard both night and day.

"One tank wagon with four helpers should take care of the pots on from ten to fifteen acres and also reset the drafts and arrange the wicks."

Pedigreed Citrus

(Continued From Page 2)

both for the purpose of selecting bud wood trees and for orchard improvement. But what is the use of "trap-nesting" an orchard where all the trees are good and well taken care of, uninjured by pests or diseases? Nusbickel was asked.

"Look at this chart," he requested. "Observe the coloring of the squares, each of which represents a tree. The bearing record is indicated by the way the square is marked.

WHAT THE MAP SHOWED

"By studying this map we found that in certain sections of the orchard the trees were not bearing their share of fruit. All conditions appeared to be the same as in other parts of the grove. A careful examination of the soil in these spots, however, showed that in many ways it was inferior, lacking fertility and moisture-absorbing capacity.

"These light producing areas were treated with extra applications of stable manure and spoiled alfalfa hay. Heavy cover crops were grown and in places where something more seemed to be needed, several loads of sand were hauled in and mixed with the soil, in order to make it looser.

"Extra lines of irrigation pipes were run to spots which were not getting enough water. Subsoil chisels were used to break up strata which were naturally hard or had been made so by tramping. The result speaks for itself. Growth and production are remarkably uniform over the entire grove."

The moisture-holding capacity of the soil is remarkable. At the time of my visit, August, the ground had been watered but twice and the trees were in the pink of condition.

In the nurseries a force of Mexicans were trimming and tying young trees, under the direction of C. M. Warren, who recently acquired a partnership in the business. Although raised on an adjoining citrus ranch, Warren was educated at Cornell University. Nusbickel got his training at Syracuse (N. Y.) University.

When one sees the immense amount of careful, painstaking work, extending over a period of four years, required to produce a citrus tree, the price—$1.50 to $2.00—does not seem excessive. The seedbed is covered with a lath shade and when the seedlings are a year old they are transplanted to the nursery row. A year later they are grafted.

The tender shoots are tied with raffia every few inches to waist-high redwood stakes. They are headed back to 27 inches, when the new shoot at that height is round and firm. Four of the top branches are left to form the framework of the tree, all others being removed.

"BALLING TREES" BAD BUSINESS

When the trees are dug up for transplanting, the roots either are "balled" or packed in spagnum moss. The former method, while common, is regarded with disfavor, because, as Nusbickel points out, the roots must be cut off short in order to get them inside a mud ball of reasonable size. Furthermore, the buyer cannot see what kind of roots a tree has, when they are covered with dirt and burlap bagging. Sometimes the tap root has a return bend or is misshapen in some other way, which often is responsible for gum disease and other ailments.

"How far can you ship trees packed in moss?" Nusbickel was asked.

"We send them in good condition to South Africa, China and Japan," he replied. "We have shipped a great many to Texas. Only today I booked an order for 20,000 trees to go to the Lone Star State. One of our customers has a five-year-old orange grove raised from our trees, for which she has been offered $3000 an acre."

Mr. Nusbickel credits much of his success to his wife, who has passed away, leaving two wide-awake boys in her husband's care. "She had vision," said he. "My plans and the way they been worked out were due largely to her foresight, good judgment and constant co-operation."

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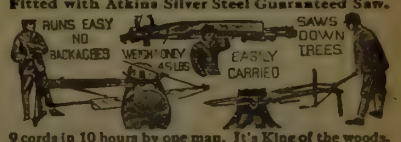

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Farm Shop Welding

(Continued From Page 7)

work a helper should handle one of the pieces and also help with the hammering. On small sizes one man can handle both pieces. He should have his hammer laid across the anvil about over the handle hole. The tongs, carried in the right hand, should open freely.

When the iron reaches the welding point, it is removed from the fire. The tongs should be rapped over each other to remove the slag from the scarfs.

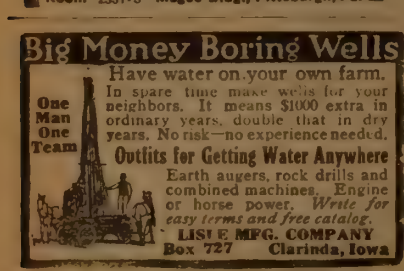
Place the bar being held by the right hand on the far side of the anvil, with the scarf turned up. With the left hand lay the other piece, scarf down, against the first one. Bear down slightly with the left hand and drop the tongs from the right.

Pick up the hammer and weld together with light, quick blows. Weld first from one side, then the other. Don't hammer too long from one side as the anvil may chill the thin edge of the scarf which is on the under side so that it will not weld in good shape.

Sometimes it is necessary to make a second heat to complete a weld. Don't continue trying to weld the iron together after the welding heat is lost, as this is a waste of time and often makes the cross section too small for the remainder of the bar.

After the welding is completed, finish the welded section as smoothly as possible. Use a cherry red for this work. On most jobs it is best to leave the metal slightly thick through the weld. It always improves the appearance on flat stock, however, if this extra material is left in thickness rather than width.

The most common failures in welding are due to a shallow fire, the use of too high an air blast, too long scarfs, having one or perhaps both of the bars not up to a welding temperature and loss of time in placing the scarfs together and sticking.



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Combination Building for Power Farmer

IN this age of power farming (many farms operating more than one tractor), concentration and general efficiency are the rule. Therefore the building illustrated in the accompanying diagrams should appeal to many producers.

The garage and engine shed should be also a shop, completely equipped with forge, anvil, vise, bench and tools to do all sorts of repair work on tractors, motors, automobiles and farm machinery. We have here a combination garage, shop, power house and water tower.

The building is lightly constructed of lumber, but the foundation wall is solid concrete and the concrete floor is made thick, with a smooth surface for easy cleaning.

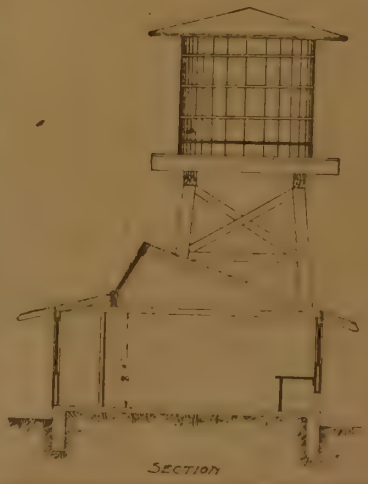
A good feature is the mansard roof with windows especially constructed to light the shop on dark, rainy days when most of the overhauling of farm machinery is done.

These windows should face to the north, for we never want the sun to shine directly down into the shop.

There are ten other windows in the sides and front of the building. It is a good plan to have plenty of openings. Farmers have always shied at windows, but the cost is little more than the same surface of lumber.

When tempted to reduce the number of windows in a farm shop go to the factory section of any city and see the amount of glass in the walls of the new buildings.

Use 3 by 4 feet double hung windows in the sides of the building and put greenhouse sash in the roof. The roof windows must have special water gutters to carry off the rains. It is very annoying to have water dripping down where machinery is being stored or repaired, and there is no need of it, for it costs no more to build the roof and the windows properly than to "job" the work off in a slipshod manner.



The water tank likewise should be made tight. It stands over one corner of the building where a little drip would fall on the roof and drain away without committing much nuisance, but it costs time and money to pump water and a constant drip falling steadily day and night amounts to a quantity in the course of a week.

It is customary in some communities to connect the stand pipe with the bottom of the big tank, but it is difficult to make a water tight joint. Most stand pipes erected in this way spring a leak the first year. A little power is saved when pumping into an empty tank, but it is better to run the stand pipe up the side of the tank with a round bend to empty in over the top.

The tank should have a tight cover to keep insects from contaminating the water. But there must be a ventilator screened with strainer cloth.

Principles of Vineyard Tillage

(Continued from Page 3)

ous, as it may cut off feeding roots just when they are most needed. In some cases where the nature of the soil opposes the penetration of irrigating water, however, it is a good practice to run a single subsoil cut down the middle of the row just before applying the water, even during the growing season. No deep cut should be made nearer the vine, however, at this season.

(3) Cultivation.—Plowing and subsoiling, as indicated, should be done for the most part during the part of the year when the vines are dormant. Cultivation on the other hand may be useful at almost any season. The objects of cultivation during the dormant season (winter) and during the growing season (summer) are somewhat different.

In soils and years when plowing is omitted, a deep winter cultivation is advisable. This accomplishes some of the objects of plowing; it breaks up hard layers near the surface and thus allows the penetration of water, and aids in the aeration of the soil. For this purpose heavy cultivators with narrow teeth should be used and they should penetrate nine or ten inches.

In all cases sufficient winter or spring cultivation should be given to leave the soil level, well pulverized and free from weeds before the starting of the vines in spring. If weeds are growing thickly in the vineyard when the shoots start, the danger of injury by spring frosts is much increased. In regions of limited rainfall and no irrigation a heavy growth of weeds even during the winter is harmful, as it takes a large amount of water and may waste a large part of the winter's rain which the vines need.

Where it is possible to grow a large crop of weeds (or cover crop) in the winter, to plow it under before the vines start and then by irrigation to replace the water the weeds have taken, the growth of weeds is a benefit.

IMPLEMENTS TO USE

The implements to use in winter cultivation will depend on the character of the soil and should be determined with reference to the objects to be attained. These are deep stirring of the soil when plowing is omitted and fining and leveling of the soil in preparation for summer cultivation.

Summer cultivation commences as soon as the vines start. Its principal object is to destroy weeds or, better, to prevent their development. A secondary object is to break up crusts which would oppose the penetration of rain or irrigation water.

Summer cultivation, therefore, should be as shallow as possible and as infrequent as possible while still preventing the growth of weeds or the formation of an impenetrable crust. Its object is the conservation of the water supply of the soil. This it accomplishes, not by any mystical drawing up of water from lower levels or even by the supposed protective influence of a dust mulch, which has lately been shown to be a fallacy, but simply by repressing weeds and facilitating the penetration of water from above.

The loss of water by evaporation from the surface of the soil recently has been shown to be a very small part of the total loss in soils where crops are growing and to be almost uninfluenced by the conditions of the surface—whether loose or hard.

The main loss is due to the action of plants which absorb water by their root hairs and evaporate it through their leaves. This is an essential part of the activities of the plant by which it grows and bears its crop. The water absorbed and evaporated by the vine therefore is utilized, that absorbed and evaporated by weeds is lost and abstracted from the supply which could have been used by the vine.

The implements to use in summer cultivation, as in winter cultivation, are determined by the character of the soil and by the object to be attained. When the ground is smooth and free from clods and large stones, a form of cultivator with large horizontal blades cutting just below the surface is often the best and most economical. Any cultivator which disturbs a large volume of soil is unsuited to summer use except perhaps where necessary for the extirpation of certain weeds which cannot be controlled otherwise. All soil moved by the cultivator becomes dry very rapidly and to cultivate deep in the summer simply diminishes the volume of the best soil (the top soil) available for the use of the growing vine.

Turkey Diseases

THERE is no disease of poultry that can be spread to human beings, therefore diphtheria in turkeys need cause no alarm.

Turkeys should be fed on a green ration and not on a mash. Feeding wheat and hulled oats, with perhaps a little corn, is advisable. Of course in addition turkeys should have plenty of green feed, grit, shell and charcoal. It would be well to give them sour skimmed milk, buttermilk or clabbered milk in the morning and water in the afternoon. This sour milk, while not a remedy for disease, often is a preventive and in many cases will build up the turkey so that it can throw off disease.

Sanitation and light feeding are important in the prevention and check of roup. As roup is very contagious, all infected birds should be isolated or the entire flock soon will have it.

Drafts and dampness usually cause roup. Any good antiseptic will be found satisfactory. It might be well to give undiluted hydrogen of peroxide for a change. Most birds will have to have mouth and nostrils washed out and any swelling under the eyes opened and the material forced squeezed out. The cavity then should be washed out.—W. J. DRYDEN.

Treating Chicken Roup

WHEN chickens have the roup the breathing is difficult, rapid, through the open mouth, wheezing and bubbling.

Remove all sick chickens at once and give the place a good cleaning. Always keep the sick chickens from the rest of the flock. Roup is caused by poor housing conditions or bad weather.

In taking care of sick chickens clean out the nostrils and cleft. Then apply a drop of iodine in each nostril and in the cleft. Repeat in a few days. In case of swelling, open it with a sharp knife, remove the cheesy material and place cotton saturated with iodine in swelling. Remove and put in clean cotton in a few days.

Place epsom salts in the drinking water. Remove the epsom salts after the second day and put potassium permanganate in the drinking water. Add enough to give a deep purple color.—W. J. D.

Non-Bearing Avocado

THE Harman avocado has been abandoned entirely by avocado growers as inferior and is no longer propagated. It does not bear very well and we now have much better fruit. The Puerto variety, which is hardy to cold and which cross pollinates with the Harman quite well, may be top-worked out of the latter sort, grafting one or two limbs.

The avocado requires about the same irrigation as citrus trees; that is to say, they should be irrigated five or six times during the summer.—J. M. COIT.

Eachus of Lake County Succeeds by Hard Work

By O. H. BARNHILL

AN immense amount of hard work is part of the price R. L. Eachus paid for his fine farm in Lake County. His experience—which agrees with that of most tillers of the soil—indicates that while toil alone will not win farming success, it cannot be avoided by those who would make substantial progress in agriculture. "It takes planning to make every lick count, but the licks must be struck hard and fast—don't forget that," warns Eachus.

For a hard hitter and one that can keep all six cylinders shooting in high gear, few farmers can equal this one. A big burly Westerner, with brawny arms, he gives the impression of a human dynamo possessing unlimited energy and power. He has worked and played so hard for a third of a century that inactivity is the one thing he cannot endure. If a fork is not handy when he wishes to dig a bucket of potatoes—"What's the matter with hands?" he asks, quickly scooping out the tubers. "Hands were made before forks."

But what has he to show for all his hard work? That is what interests farmers, as well as onlookers at the agricultural game. Well, let's take a look at Eachus' layout, where he produces food to feed the hungry in other walks of life. We find him located in best part of Scott's Valley, one of the garden spots of Lake County. The fertility of the soil and the ease with which it can be worked are most remarkable.

How about water? That important element, in addition to natural rainfall, is supplied by an 88-foot artesian well, which flows at the rate of 2,000,000 gallons a week. The water is conducted through three-inch underground pipes to various parts of an alfalfa field, thoroughly soaking the ground. Surface springs add their quota of the life-giving liquid, which is so abundant that at the end of a long, dry summer water was observed standing in a shallow ditch by the roadside.

Eachus gets five big cuttings of alfalfa a year. Red clover is mixed with the alfalfa, the former sometimes outyielding the latter.

Potatoes is another staple crop. In fact, Eachus has made more money out of this toothsome tuber than from anything else. Yields as high as 200 sacks per acre have been secured. Prices have sometimes been so low that the crop was hardly worth digging, but average returns have been very satisfactory.

For several years the local market has not dropped below $2.50 per hundredweight, while last year—when so many potatoes went to waste for want of a market—Eachus obtained $3 for his crop. In September $2.55 was being paid at Ukiah, 27 miles northwest. The charge for auto trucking to this market is 45 cents per hundredweight.

Burbank and White Rose are the main varieties grown. Certified seed, for which a high price is paid, is planted exclusively. The potato crop is rotated with hay and grain.

Three acres of pears are bearing such good crops of fine fruit that another orchard of seven acres was planted a year ago and more will be set out next spring.

A 35-cow dairy was maintained for several years, but was discontinued, because it was believed that at present more and easier money could be made in other kinds of farming. While it is true that Eachus is a glutton for work, there is a limit to his endurance and the hard, confining labor of dairying, in addition to the numerous other activities of the farm, finally "got his goat."

Eachus admits that hiring help would be satisfactory, providing the right kind of men could be obtained. This he has found impossible, at present. Indians are paid $4 a day and move so slowly that the energetic employer's patience is severly tried.

"I began work when I was five years old," relates Eachus. "Young? "Why, my nine-year-old boy here has been driving a mowing machine for three years. He can put on as good a load of alfalfa—3000 pounds—as any man. Yes, pitching hay is heavy work, but he doesn't do much of that. The men on the ground throw the hay in the right place, which leaves the boy little to do besides keeping on top of the load.

"Yes, I pay my children real money for the work they do on the farm. My little boy gets $2.50 a day and is able to own a fine radio outfit and many other things the average farm boy does not enjoy He is learning the value and use of money, also many other things not taught in schools.

"This was a different looking place when I bought it," explained Eachus. "The house and barn never had been painted and everything had gone to rack and ruin. It took lots of hard work and a pile of money to put it in its present productive condition.

"Thirteen years ago I paid $7200 for this 27 acres, which I now consider worth $20,000. I also own 21 acres, worth $12,000. Where did I get the money to stock the place and make improvements? Well, my gross income one year was $9000. Of this amount, the dairy earned $4000. No, all the spud money didn't come out of the soil. I have cleaned up a good deal of cash buying and selling neighbor's potato crops."

R. L. Eachus in his fifth alfalfa crop early in October. An abundance of moisture results in very large yields of clover and alfalfa.

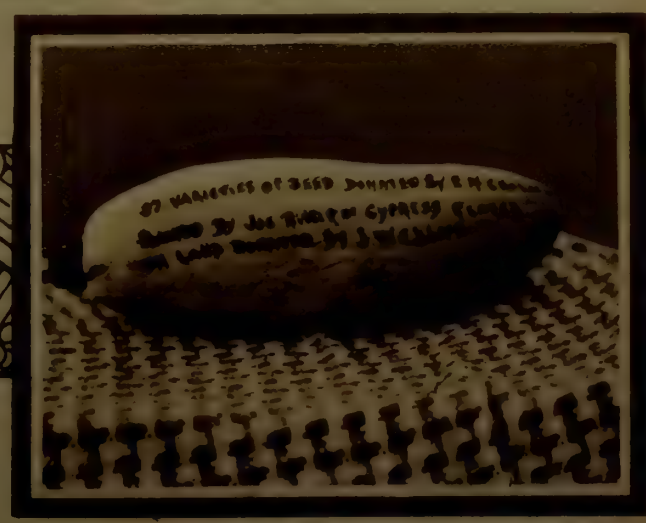
This artesian well flows each week 2,000,000 gallons of water, which runs through pipes to a nearby field.

Goat Milk Cheese Made in Oregon

THIS is Mrs. Jay Bronson and a tray of her newly-molded Roquefort cheese, which is made of goat milk. The cheese factory is located near Falls City, Oregon, and is operated by Albert Teal and Mr. and Mrs. Bronson. U. S. Department of Agriculture experts pronounce the cheese equal to the imported article. It has a green mold rich in pepsin and is used in a number of ways by chefs who cater to epicurean appetites.

In the heavy milking season the plant produces daily 60 pounds of cheese, which sells for 70 cents a pound. Teal worked for 15 years to perfect a method of making Roquefort cheese, which formerly was a French secret. It was Mrs. Bronson's ingenuity, however, that made the enterprise a success, Teal admits.

The cheese is ripened in a concrete storehouse, built around a natural spring on the farm of Teal's father, who is mayor of Falls City. The elder Teal formerly was a sufferer from asthma and improved his farm, which is located 1000 feet above the city, to provide a home where he could breathe easily. His place is a mecca for fishermen, who are attracted by the rainbow trout in his spring-fed reservoirs.
—A. C. CAGE.



Hand Lettered Pumpkin

WITH a ten-penny nail, Joseph Ritter of Buena Park inscrbed an approprate sentiment on a large pumpkin still on the vine. Nature, in healing the wound, "raised" the lettering so that even a blind man could read it. The pumpkin was an interesting exhibit at the Orange County Fair.

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ORCHARD *and* FARM

SECTION OF THE SUNDAY EXAMINER

NOVEMBER 11, 1923

Citrus Fruit Growers Are Turning to Livestock

Sheep, Geese, Hogs, Hens and Cattle Invade Sacred Precincts of Citrus Belt

MANY said it would never be done. But the fertilizer problem finally has become so acute that more and more producers of oranges and other tree fruits are turning to poultry and livestock. Here we describe the actual experiences of a Southern California orchardist who has been experimenting in this form of diversification.

By JAMES C. KNOLLIN
Editor of ORCHARD and FARM

WHEN I have to milk cows, tend sheep, slop hogs or feed chickens in order to stay in the citrus game, I'll get out," a prominent orange belt orchardist is reported to have stated.

He might have added: "I will not allow my business to interference with fishing, motoring or golf." Many citrus growers have held this attitude—which is perfectly all right if they are "agriculturists" and can afford to conduct their business in such a manner.

But the "dirt farmer," who is producing fruit for a living, and who is not afraid of work or odors, has seen the hand-writing on the wall. He realizes the citrus game is settling into a race for the survival of the fittest—and by the fittest is meant the man who produces the most good fruit at the least expense.

With Florida's production constantly increasing; with expense mounting; with the cost of fertilizers becoming almost prohibitive, and with the necessity for fertilization growing ever more evident, California growers are facing a new condition.

Perhaps the day of the "easy-going" citrus grower will be gone before he realizes it. It is a question of how long the consuming public can be made to pay for extravagant production costs, in the opinion of many authorities.

The fertility problem is extremely important. As L. E. Sheets, owner of a 10-acre grove near Pomona, has pointed out: "Fifteen years ago we bought barnyard manure at 3 cents a cubic foot. A few years later, when it had advanced to 4 cents a foot, we began to worry. But now a price of 12 cents is not unusual. I know of one grower who paid this price for fertilizer from Bishop, Inyo County—and this shipment meant handling the material three or four times before it reached his orchard."

Sheets decided about five years ago that cover crops alone were not sufficient and that the only solution was to keep livestock himself. He chose sheep because he felt they would produce a double crop each year in addition to the fertilizer, and also because in his estimation they might prove less objectionable than hogs or cattle in a citrus district.

FLOCK INCREASES RAPIDLY

Starting with a few common animals, he has increased his flock until it numbers 50 head of breeding ewes, more than half of which are registered Hampshires. The sheep enterprise, in fact, has developed to the point where it engages as much of his interest as the fruit.

Mr. Sheets, we predict, will be taking blue ribbons at the fairs, and selling high priced breeding stock all over the country before sheep circles are aware of what he is doing.

Sheets has become a keen judge of his favorite breed and is in the $50 to $75 class already when it comes to disposing of young rams. He has ewes for which he would not take $200, he asserts. It would be conservative to say this fruit and livestock producer has $2000 worth of stock on hand—all acquired at no expense for feed, as he can prove quite readily, and built up from a start with five common ewes.

"You see," Sheets points out, "I buy nothing for my sheep that other citrus growers do not use for fertilizer. They live principally on mill sweepings and screenings, costing $5 a ton; first cutting alfalfa at $13 a ton laid down at the ranch; bean straw and cull oranges.

"The oranges, in season, cut my feed bills 30 to 50 per cent. A mature animal will consume three or four dozen oranges daily—rinds, seeds and all. I get the discarded fruit from the packing house and let the sheep help themselves to it, eating all they want."

ORANGES AS SHEEP FEED

The oranges, according to this enterprising producer, seem to act as a tonic, not only keeping the animals in condition, but apparently improving the quality of wool as well. Certain it is that the Sheets "Hamps" possess unusually fine and heavy fleeces. The ewes shearing 12 pounds or more.

Much attention has been given the wool factor in selecting breeding stock. Sheets attaches considerable importance also to early maturity, large body capacity and prolificacy, in addition to Hampshire type.

No sickness due to confinement has developed, and losses have been negligible, despite the fact that the sheep are kept in pens most of the time. A few are allowed the freedom of the orchard, yet they seldom go away from the corrals and feed racks.

But what of damage to trees? Some of Mr. Sheets' neighbors think he has suffered serious loss because the sheep have nibbled the leaves from the lower limbs of perhaps a hundred trees near their pens.

But Sheets has an answer to these critics: "I get as much or more fruit from these trees," he asserts. "Is it reasonable, then, to say they have been damaged? True, they look a bit ragged and if I were going to sell my grove I would not permit such a condition to continue, but since the orchard is not on the market and the trees are bearing extra heavy crops, I cannot see that I am making any mistake."

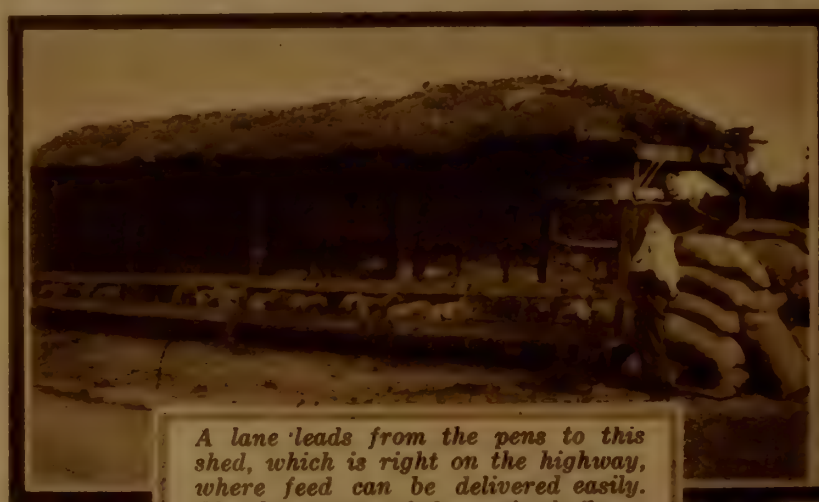
Mr. Sheets has reached the conclusion that orange trees may even thrive better when the ground is not shaded by the lower branches, more fruit being produced high up and in the interior of the tree. Therefore, he worries not a whit if the woolies partake of an occasional tidbit in the form of succulent green leaves. They do not damage the limbs or trunks, he asserts.

But if there is any loss of crop it is more than made up by the advantages of his plan, in Sheets' estimation. The sheds and corrals, which occupy very little space, are cleaned out every 25 days and the manure applied to the orchard. The owner believes the materials used for feed lose none of their fertilizing value in passing through the animals, even though they aid in producing a double crop of wool and lambs. The theory is that any constituents lost through the process of digestion are more than offset by the ready availability of the animal fertilizer.

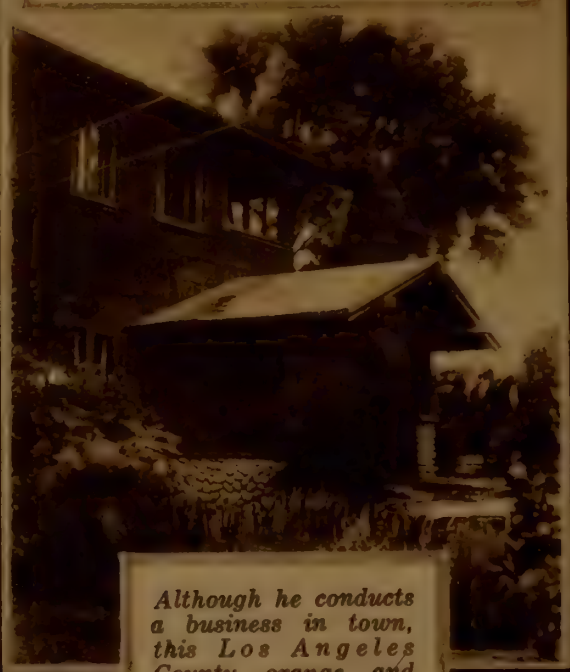
WOOL IS "VELVET"

But granting that there may be some loss and some additional labor, Sheets points out there is a valuable wool crop which is "velvet," more than sufficient to cover these items. The lambs represent clear profit, and a 100 per cent crop is not unusual.

The cover crop *(Continued on Page 9)*

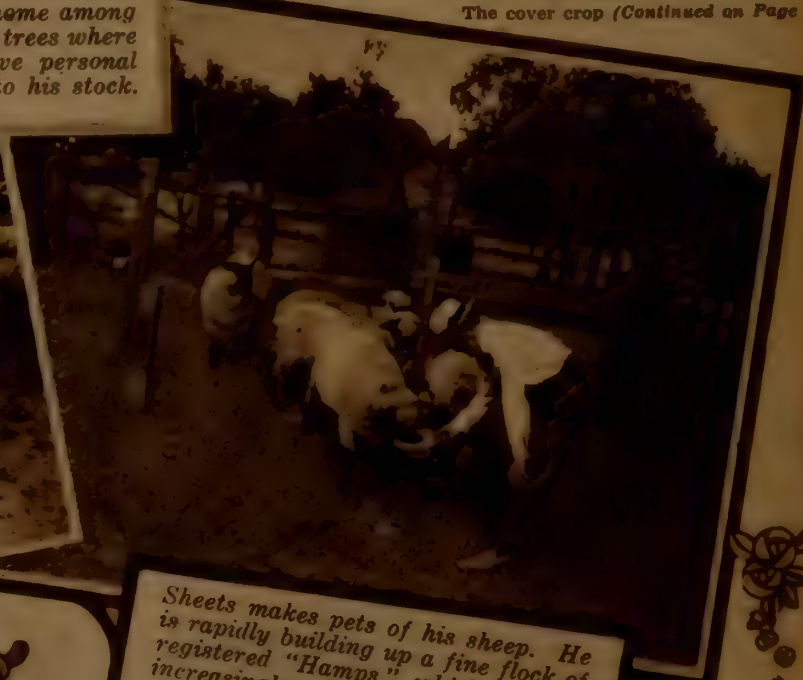


A lane leads from the pens to this shed, which is right on the highway, where feed can be delivered easily. The sheep get needed exercise in "navigating" the long lane.



Although he conducts a business in town, this Los Angeles County orange and wool producer maintains his home among the orange trees where he can give personal attention to his stock.

Oranges make the finest kind of sheep "fodder," asserts Sheets, who is shown here with one of his Hampshires, which won a ribbon at the recent L. A. County Fair.



Sheets makes pets of his sheep. He is rapidly building up a fine flock of registered "Hamps," which promise increasingly attractive cash returns at practically no cost for feed.

ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY
NOVEMBER 11, 1923

Making More Money Growing California Apples

Valuable Suggestions for Bringing the "King of Fruits" Up to the Standard of Other Horticultural Products—California's Big Opportunity

By F. W. ALLEN

Assistant Pomologist, College of Agriculture, University of California

THROUGHOUT the summer the cherry, apricot, plum, peach and pear have been satisfying and in great demand, but with the first chill of fall the crisp, juicy, red apple, equally attractive to the eye and to the appetite, becomes again the king of fruits. Being so widely known, the apple is consumed by more people than any other single fruit. Its economic importance, as compared with other fruits raised in the United States, is outstanding, the total value of the average crop being exceeded only by wheat, oats, cotton, corn, potatoes, barley, hay and tobacco.

California is the outstanding fruit State of the Union, growing fruits of many and various kinds. With this great diversity of fruits, however, the importance of the apple has apparently not been fully realized and its production in reality has been neglected.

To many, California is primarily a producer of citrus fruits. This of course is not true, the value of the leading deciduous fruits exceeding that of the citrus. Moreover, in comparing the number of apple trees with the number of orange trees in the State, the former outnumber the latter between three and four to one.

VARIOUS FRUITS COMPARED

In comparing the apple with the peach, the above proportion also holds for the bearing trees, while for the non-bearing trees the ratio is eight to one. In value the California apple is nearly equal to the apricot crop, of which the State produces 95 per cent of all of this kind of fruit grown in the United States.

It exceeds by some $4,000,000 the pear crop, of which California produces 30 per cent, and greatly outstrips the value of almonds, which, aside from importations, are grown almost exclusively in California.

California is known for its oranges, its apricots, peaches, pears and almonds. Why not for its apples? Oregon is widely and favorably known as an apple State. It does produce good apples and it advertises the fact, but in comparing its total or commercial production, it is only within the last two years that it has equaled California's crop. Until 1920, the latter State produced 33 per cent more apples than Oregon.

In the light of these facts, is it not pertinent to ask why the California apple has attracted so little attention? Is it not a fruit well adapted to this State, and should it not be given more consideration, especially as regards quality and improved methods of handling and marketing?

WHERE APPLES GROW BEST

From the standpoint of climate, the apple does not thrive in the low, interior valleys, where the largest area of most other fruits are found, but is adapted to the cooler regions of the State—sections either near the coast or those inland having an altitude ranging from 1500 to 3000 feet.

Watsonville is the largest and oldest apple section in the State but owing to the prevalence of fogs, the district is limited in the main to the production of Bellflower and Newtown, both yellow varieties. Higher altitudes, with clear skies and sharp, frosty nights, are essential for highly red color and finish.

Sebastopol, Sonoma County, has established quite a reputation for summer apples. This section is particularly adapted to the growing of the Gravenstein and very high quality fruit annually is shipped to the Eastern markets and to South America.

The third largest apple-producing section in California is the Yucaipa and Oak Glen district in San Bernardino County. Here, at an altitude of from 2500 to 4000 feet standard winter varieties attain a high degree of perfection.

DESIRABLE APPLE DISTRICTS

Owens River Valley in Inyo County now has a considerable acreage in apples, mainly of fall and winter varieties. Mendocino and Humboldt Counties produce large quantities of apples in certain sections. The Paradise district of Butte County is a small, but expanding apple region. A good irrigation system is in operation and planting is on the increase. Five thousand trees were planted in Tuolumne County last year.

Despite poor transportation facilities, apples for many years have been grown commercially in the Julian Mountains of San Diego County. Limited plantings are being made in Los Angeles, Kern and Stanislaus Counties. As these newer sections become better developed, especially as regards transportation facilities, their importance for this fruit will be better recognized.

Planting of apples in California has shown a healthy increase. According to the last census, there were, in 1919, 735,464 more trees than in 1909. On a percentage basis, the increase in planting is greater than for any other fruit, except the pear. This fact, together with the quality seen in much of the fruit annually exhibited, would seem to show that California has sections well adapted to apple growing.

Granting this to be true, why has this fruit maintained such a minor place in California, and is it destined to assume greater importance? An analysis of the present situation will answer at least the first part of this question.

POOR MARKETING METHODS

The apple-growing sections of the State are scattered and much of the fruit is sold either within the county or at least within the State. Only a small per cent goes to the Eastern markets, as do our peaches and pears and most other fruits. Local co-operative marketing agencies can be counted on the fingers of one hand, and as for a State-wide organization there is none.

Varieties are not properly standardized and in most instances are not advertised. Furthermore, much of the crop in at least one section of the State is sold to cash buyers several weeks or even months *(Continued on Page 8)*

Two County Fairs Compared—Which Type More Desirable?

Lessons Learned From Recent Exhibitions—Suggestions for Making Farm Shows of More Value

By O. H. BARNHILL

THIS fall I attended two county fairs. The exhibits did not differ materially, but in other respects the variation was most remarkable.

At the first show a thin scattering of visitors passed quickly from one display to another, stopping only when something unusual or unique attracted their attention.

"Why should we waste our time here?" countered a ticket holder, when asked why he did not spend more time examining the splendid showing of farm products. "We see the same articles in the city markets and department stores, displayed with equal taste and skill, and along country highways.

"Yes, I suppose there are a great many interesting facts connected with the production of the articles shown here," the visitor admitted, "but how can this information be obtained? Only in rare instances is the producer's name given. An occasional rudely-lettered card gives the city man the impression that farmers are ignorant rubes."

FARMERS DESERT EXHIBITS

"I was here this morning," continued the onlooker, "but very few farmers were present and most of them were busy helping the department superintendents with the judging of exhibits. Only in the afternoon is the grandstand crowded, for then most everybody is watching the races, except the children and young people, who congregate in the amusement zone.

"The stock barns are practically deserted, save for an occasional uniformed caretaker. The same is true in the tent which shelters the animals exhibited by boy or girl club workers. Very few persons who can give out information are found around the exhibits of orchard, farm and garden products, or displays of pantry stores and needlework.

"If farmers expect crowds to view their exhibits they should offer something of real interest—give the visitor a chance to learn something of actual value.

"I've been attending fairs for forty years," concluded the visitor, disgustedly. "Its the same old, antiquated, valueless show. Farmers ought to wake up and bring their exhibitions up to date. Farm Bureau members and the Extension Service workers are the only agencies that seem to have any grasp of the situation. They really have interesting and informative exhibits, pointing the way to the possibilities of a county fair."

FINDS DIFFERENT CONDITIONS

At the other fair things were so different I had to rub my eyes to make sure what I saw was fact, not fancy. Good-sized crowds were present in nearly all the exhibit buildings and stock barns. Groups of interested onlookers were clustered about the displays, listening to the attractive line of talk being handed out by the capable attendants.

But where were the sideshows and games of chance—the familiar "concessions."

"We cut out such things long ago," explained a prosperous looking farmer wearing a director's badge. "Of course, we have a merry-go-round for the children and refreshment stands, but sideshows, games and races proved poor bait for visitors. We made our exhibits so interesting that nothing else was needed, we found, to secure a big attendance."

At most county fairs merchants' and manufacturers' exhibits attract larger crowds than displays of farm products, but here the opposite was the case.

"The farmers decided to take a few lessons from the townman," explained the farm adviser. "Farm Bureau officials made a survey of the situation and found the rural exhibits lacked three things: Well-posted personal attendants, informative posters, literature, lectures and free samples.

"They supplied these requisites, with most gratifying results. Large cards of uniform size and a variety of pleasing colors were provided for all displays and each exhibitor requested to furnish the fair committee with facts of interest regarding the articles shown. This information was arranged in attractive form by an expert ad writer and lettered on the cards by a sign writer."

"But isn't there danger of influencing the judges by putting the exhibitor's name on each article?"

"Bunk—pure bunk," replied my informant. "Judges usually know who are the owners of purebred animals, don't they? That's where the largest prizes go; therefore, why be so careful about biasing the distributors of small premiums?

EXHIBITS WELL PLACARDED

"In addition to the name and location of the producer, the cards contain much additional information of interest, such as the conditions under which the animal or article was produced, its chief merit and uses, number or quantity for sale, prices and terms. A few catalogs and price lists are available, while one enterprising community prepared a small booster booklet for free distribution."

"Where did all the attendants come from?"

"The woods were full of them, we found. Each rural community has one or more good talkers—sometimes half a dozen. Such persons are natural publicity agents and enjoy nothing better than telling others about their district, its people and products.

"One of the conditions of livestock entry is the furnishing of an attendant to answer questions regarding the animals shown. In many cases neighbors co-operate in furnishing information about each other's stock, taking turns in acting as 'publicity agent' for a small bunch of animals of one breed.

CHILDREN ENJOY EXPERIENCE

"It is a rare experience for the members of boys' and girls' clubs to tell visitors about this important work in junior agriculture, explaining what the children have accomplished in farming, and how their exhibits were produced. The young folks like to work in teams, which are chosen from the various clubs.

"Agricultural educators have not overlooked the opportunity to show their pupils the best types of the various animals and products about which they have been studying and to give classes in judging some excellent practice with representative specimens.

"As you can see, the farmer's wife and daughter are right in their element in the domestic arts building, showing visitors the pantry supplies and needlework, explaining difficult stitches and telling what recipes were used in producing especially lucious eatables. Thrifty housewives book a good many orders for home cooking and spare time sewing."

DISTRIBUTE FREE SAMPLES

The free samples consisted of various good things to eat, fresh from the farm. "The proof of the pudding is in the eating thereof." A slice of apple, a swallow of cider, tidbit of cheese, drink of milk, handful of grapes or other eatables, appetizingly served by rosy-cheeked country girls, proved very effective arguments in convincing visitors of the value of various products.

Country communities, breed associations and land companies furnished most of the materials for the free samples, considering it cheap advertising. Escondido, by the way, gives away 20,000 pounds of *(Continued on Page 10)*

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FRIENDLY PHILOSOPHY
By THE EDITOR

BROWSING through the articles of a famous agricultural writer of the early fifties, we ran across this:

"Farmers are apt to rely wholly upon their own experience and to despise science. Book men are apt to rely upon scientific theories and nothing upon practice. If these two tendencies would only court and marry each othe what a hopeful family they would rear! How nice it would look to see in the papers

"MARRIED—By Philosophical Wisdom, Esq., Mr. Practical Experience and Miss Sober Science.'

"We will stand Godfather to all the children," concluded the old-time farm editor.

TWO SIDES TO THE QUESTION.

Although the two interested parties, we regret to say, are not yet living together in peace and harmony, the affair has progressed considerably in the 60 years since the above was written.

At least Mr. Experience has learned to respect the suggestions of Sober Science. The unfortunate part of it is that Science has not been as willing to learn. It should be almost a fifty-fifty proposition.

NO SUBSTITUTE FOR WORK.

ORCHARD and FARM publishes many articles about farmers who have achieved success. An important factor that stands out clearly in every one of these "stories" is WORK—muscle work or brain work, but in either case HARD work.

Nothing really worth while is produced without effort, whether in farming, manufacturing, advertising, banking, retailing, publishing, buying, selling, or transportation.

The effort may be in the form of muscular labor or deep thought, either of which to achieve success, must be CONCENTRATED upon a definite objective. Here's the most important discovery announced by many great men: "There is no substitute for work."

HOT AIR NEVER BUILT BUSINESS.

Politics is a poor substitute for constructive achievement. Hot air will support a bubble or a balloon UNTIL IT COOLS, but no longer. Worth while achievements don't HAPPEN.

The fellow who is delivering the goods may be temporarily and apparently eclipsed by the man who has a smooth line of talk. But in the long run brains being equal, HARD WORK will produce results where PROMISES produce regrets.

BOOST COW TESTING ASSOCIATIONS.

Any dairyman who has had experience with efficient cow testing is not likely ever to return to the hit-and-miss method of handling his herd. The surprising thing, however, is that a larger percentage of milk producers do not avail themselves of this modern aid to greater profits.

One Southern California producer, owner of one of the highest-yielding grade herds in the State, said recently: "If every dairyman in Los Angeles County would have his cows tested, there would be no overproduction and better prices would be obtained. Many dairymen would be better off with one-half the number of cows they are now milking."

And this despite the fact that Los Angeles County is said to have the largest cow testing association in the United States. For it is believed not more than 20 per cent of the total number of cows in the county are represented in the association. This situation is typical of that obtaining in other counties and other States. Much progress made, but plenty of room for improvement.

REGISTERED STOCK NOT ALWAYS BEST.

Many inexperienced stockmen and investors have suffered loss as a result of the belief that any animal which is purebred and registered, "just naturally must be superior." Similarly, the magic term "Imp" (Imported) has been used to foist upon producers inferior animals not as valuable as those obtainable at home at less expense!

As a matter of fact a registered sire may be a "scrub." In the case of dairy animals, particularly, a prebred sire may be practically valueless unless it comes from a "family" or strain of high producers.

As pointed out by livestock authorities, there is more danger from the scrub registered bull than from the common scrub, because any one can tell the common scrub is not worth keeping, while many do not realize the registered scrub does the industry harm.

"What's New?"—Keeping Abreast of Agricultural Progress

Pool Fertilizer Orders

THE Farm Bureau is planning to pool fertilizer orders in Orange County, where 50,000 tons of bean and alfalfa straw are used by citrus growers annually, in addition to large quantities of stable manure and chemical fertilizers. By ordering large quantities of these materials, some of which can be obtained direct from producers, it is hoped materially to reduce fertilizer costs.

Marking Pedigreed Birds

WILLIAM F. CULVER, the Montebello (Los Angeles County) rabbit fancier and tattooing specialist, has developed a safe system of marking pedigreed fowls. With a tattooing needle figures and letters are pricked into the skin on the under side of the web of skin near the body, with indelible ink. At the Pomona fair Culver exhibited a hen marked in this manner.

Buttermilk Brings Eggs

HENS fed on semi-solid buttermilk and a daily ration of green stuff, during a recent experiment, made the best production record at the Pomona egg laying contest, while hens fed meat, milk and sprouted barley in their mash laid the fewest eggs.

The blue ribbon for pen production in August was won by Fontana Farms White Leghorns, while Hoover Brothers' White Leghorns made the second best record.

Iceless Grape Shipping

TESTS conducted by the University of California indicate that grapes can be shipped without refrigeration in ordinary temperatures, if lightly sulphured and packed in airtight 10-gallon kegs. The fruit will keep perfectly in this condition for a month, but acquires a stale taste, and will spoil much sooner than fresh-picked grapes. If, however, the fruit is crushed within a day or two after the package is opened, the juice has little or no stale flavor.

Bonding Raisin Warehouses

THE securing of a large loan from the Federal Government by the Sunmaid Raisin Growers was made possible by the recent licensing of 30 warehouses used by the organization for storage purposes. The money is being used to finance the operations of the company.

"There's very noticeable tendency on the part of leading California bankers," notes G. M. Hecke, "to recognize the advantages of handling bonded warehouse receipts, and there is already evidence of united action on their part to bring about a general bonding of warehouses which are handling agricultural products within the State.

Selling Rabbits for Meat

J. C. SPENCER of Los Angeles, one of the biggest rabbit meat dealers in the United States, sounds a note of caution to prospective rabbit raisers, who so often are told that large hotels and restaurants will buy large numbers of rabbits for meat, if they can be assured of a regular weekly supply.

"I never have been able to sell any considerable quantity of rabbits to hotels or restaurants," relates Spencer, "even by assuring a regular supply. Such buyers sometimes contract for a certain number of animals per week, but refuse to take the specified quantity in the summer, when boarders eat little rabbit meat."

New Egg-Laying Contest

TEN pens of White Leghorn hens are being used in the 1923-4 Farm Bureau Egg Laying Contest at Pomona, which started Oct. 1, 1923, and will close Sept. 30, 1924

Birds will be given the following rations, in addition to green and liquid feed: A grain mixture consisting of two-fifths recleaned whole barley and one-fifth each of wheat, cracked Indian corn and milo maize; and a mash composed of wheat, 35 per cent: low grade flour, 20; cornmeal, 20; meat scrap, 12; soy bean meal, 5; linseed meal, 5; fine charcoal, 2½; fine salt, one-half of one per cent.

Rabbit Skins Slow Sale

SIX tons of dried rabbit skins recently were sold for eight cents a pound by J. C. Spencer, Los Angeles rabbit butcher. The hides were accumulated during the past three years, ever since the price dropped from 15 and 20 cents a pound to the present low prices.

It is true, says Spencer, that large numbers of rabbit skins are used to make fur garments, many of which are sold for other and costlier furs. These skins, however, are imported from Australia and other colder localities, where rabbit fur grows thicker and of better quality than in Southern California.

Pittsburg Fruit Auction

"CALIFORNIA isn't yet satisfied with what she is doing in the Eastern markets and has a new scheme on foot that promises to jar the East," relates a Maryland commission merchant, in the Baltimore Sun.

"It now is proposed to make Pittsburg a selling center for Coast products, an auction to be held every day.

"Every car leaving the Coast is to be graded under Government inspection, so that every buyer will know just what he is bidding for, although he has never seen his prospective purchase. It is put up at auction when it starts from the Far West and is routed to the man who buys. Under this method the buyer knows what to expect and the seller on the Coast has his money in less than a week."

Inspect Poultry Remedies

THE State Department of Agriculture desires to analyze and test all poultry remedies sold within the State, for the purpose of acquainting poultrymen with the actual value of such preparations. The Division of Chemistry welcomes reports of any new poultry remedies offered for sale. Carbolic acid and nicotine preparations are to be tested for strength and purity.

From Producer to Consumer

AN effort to solve the problem of bringing producers and consumers of food products into closer trade relations is being made by an Eastern publisher, who proposes to print a weekly periodical, composed entirely of advertisements of and for eatables.

In order to save expense, each article is to be given a key number, which is all that will appear in the ad, in addition to name and address.

Rain Reduces Raisin Crop

COOL, damp weather during the past summer resulted in much mildew, which injured the raisin crop materially. An unusually large percentage of the crop is lacking in sugar, which was expected to result in a shrinkage in weight during curing of 21,000 tons.

E. E. Kaufman, agricultural statistician of the State Department of Agriculture, estimates that 35,000 tons of raisins will be substandard in quality. The total crop is placed at 235,000 tons, compared to 237,000 tons last year.

Testing Hungarian Vetch

THREE and one-half acres of Hungarian vetch is being tested in Nevada County. One plot is located in Grass Valley, one in Chicago Park and one in the Clear Creek section.

"As a hay crop, Oregon growers expect two and one-half tons of Hungarian vetch per acre," states H. I. Graser, Nevada County farm advisor. "It is expected to yield 12 tons of silage, or 1500 pounds of clean seed. It is very hardy, withstanding zero temperatures without protection. Other good qualities are its aphis-resistance, adaptation to adverse soil conditions and the excellent bee pasture afforded by its blossoms."

Ben Gonnadooit Says

I SURE do regret th' day my wife got th' idea o' beautifyin' our yard. Now ef I ain't pullin' weeds, I'm spadin' flower beds. She says it will make a thousand dollars difference in th' value of our place, but ef I don't get some relief it'll take a thousand dollars t' pay fer liniment an' doctor bills t' treat my sore muscles an' rheumatiz!

Fool notion, I calls it! She could put that same energy into makin' over some of her old clothes, while, as fer me, I should be conservin' my strength fer th' heavy work next spring!

Th' President of our cow testin' association was tellin' me if I'd jine up with 'em an' have my cows tested, I c'd increase th' milk production 50 per cent. But, shucks, that don't appeal t' me. It's all I kin do to git th' milkin' done now, much less handlin' twicet as much. Dang these new fangled notions, anyway!

Why kaint people let well enough alone? We bin gettin' along first rate with dirt roads ever since this country was first opened up, but now some o' my neighbors has got th' boulevard bug, an' nothin' will do but we must have a bond issue an pave every cow path from Sycamore Hill t' Jenkins Corners! What'll be the result? Th' country 'll be filled with auto tourists that'll kill ev'ry hog or chicken that gets onto th' highway, an' I'll have t' fix all my fences. Furthermore, I won't have any more chances t' make money pullin' autos out o' the mudholes along my south fence.

I ain't never had enough cash or credit t' buy a car anyway, an' if I have t' pay more taxes, it's a cinch I won't ever own one. That's always th' way. A pore man gits it comin' or goin'.

I bin havin' a little trouble with my neighbor. I reckon he'd sue me only the knows I ain't got nothin' but what's attached already.

It was thisaway—I borried his hay loader, thinkin' t' save work in puttin' up my crop. Then just when we was in th' midst of hayin', th' blame thing broke. Now he thinks, jest because it happened t' go to pieces on my place instead of his, I ought'a pay for it!

Talk about nerve! Ef I wasn't of a peace-lovin' nature, I'd make him pay fer th' hay that spoiled on account of havin' t' finish by hand. Come a rain before we got through, an' ruined half my crop, or three tons altogether.

Ef I hadn't depended on his old broken-down loader I could 'a started a few days sooner an' had it all up by hand before th' bad weather!

Oh, well, it takes a man t' admit when he's at fault, an' if he aint man enough t' square it, guess I'll have t' worry along without th' hay or th' money. A feller kaint choose his neighbors; worse luck!

What Draws Crowds to Fairs?

Interesting Comparisons and Conditions From Personal Experience of Dairy Show Manager

By ROBERT E. JONES
Contributing Editor Orchard and Farm

THE question of what pulls a crowd is a serious question these days with all agricultural fair or show managers.

There is a decided tendency, and a good one to get away from the cheap entertainment which one finds at amusement parks. In a general way it may be said that anything in which an entire community can have a personal interest will get a crowd. This applies more to a small community than a large one, due to the fact that it is difficult to reach every one in a large community — interests are so diverse.

ROBERT JONES

P. T. Barnum probably would advise that we try to lure the children; it is certain that anything which draws children will draw older people, too. Parents attend many shows for the sake of the children, if for nothing else.

The popularity of our "funny papers," originally intended for children, is ample evidence that the same appeal which gets the attention of a child also will draw the adult, and we all know how father jumps at the excuse of taking little Johnny to see the circus!

These days we want to promote a closer understanding between city and country people. Therefore, we desire to get city people into our agricultural shows. Closer understanding is needed because so many knotty problems of agriculture are caused by lack of understanding by the city man of the farmers' difficulties. We feel if we can get the city man into an agricultural show, he'll learn something that will make him realize how much the prosperity of agriculture means to him. All difficulties disappear with the coming of understanding.

At the Pacific Slope Dairy Show last year we held service club luncheons in the main building. Each service club brought into the auditorium a cross section of the city's business life—brought in the sort of people who do things and should know how closely tied up with their success is the prosperity of agriculture.

The service clubs put on a "dairy" program, heard a talk on dairying and, after lunch, viewed the exhibits. If they had not been pulled in by the luncheon probably they would have missed the show. The Dairy Show is repeating the feature this year at Oakland.

CONTESTS AND SPORTS

I've seen a number of fairs cluttered up with cheap entertainment; there are as many managers groping for an idea of what else to do to pull the crowd. With the Dairy Show we are planning a number of contests in which many persons will participate. Most of them are old contests—not new ideas—and they are being put on with a hope—that is all.

One affair will be a band concert for school boy bands. We know this will bring school children to the show and we feel it will bring parents, too. It probably is a better feature for a city the size of Oakland, with some 300,000 population and a score of school bands, than for smaller places where there would not be so much local interest and competition.

We are holding also a horseshoe contest for dairymen—not at all new, but always popular. Dr. E. V. McCollum, the noted benefactor of dairymen, lost his audience at the Loleta picnic of Humboldt dairymen, when the horseshoe contest started. It's a common game which everyone can play—therefore one of universal interest. We shall have also a milkmaid's contest for business and professional women—"girl stuff," as the newspaper boys would say.

"Girl Stuff"—the term is borrowed from the press—is of great variety and I deal with it only as it affects the agricultural show. A cow milking contest between girls as an entertainment feature for a show has many times the drawing power of one between men or boys. I suppose the psycho-analyist can tell why. There is nothing new about this contest at the dairy show—silver tea service and silk stockings for prizes and open to the world.

We hope it will go over big and pull a tremendous crowd. We do know this—that it will get into the papers, because it is "girl stuff." The boys of the press demand "girl stuff" if you want picture publicity now-a-days, and their city editors are hammering them constantly for girl pictures. You must tie up the cow, the churn, the ice cream freezer and even a wheel of cheese to smiling feminine face or a pair of silk stockings to get 'em across in the newspapers. It makes these "dead" things "live" as news.

The boys of the press are doing just what we do—first they catch the eye with something easy to look at and then serve the educational pill. And we who are bidding for newspaper help to put over our agricultural shows all must play the game as is.

THE HORSE SHOW

This is the big paying feature of an agricultural fair. But first there must be provded a place to hold it and a sizable purse for the participants. Horse shows draw for two reasons and I'm not going to say which one I believe to be the stronger for fear of being called a cynic.

The horse show is active and exciting; it appeals to love of beauty, refinement and the spirit of contest. It draws those who admire fine stock those who envy the owners of fine animals and those who like to watch the crowd. Then there are those who like the sensation of remarking casually "Oh, yes, we took in the horse show last night," or "Musical Chairs was simply thrilling at the Horse Show last night."

It is fashionable to go to the horse show. Perhaps the psycho-analyist would call that the "inferiority complex." In any event, the horse show is a big paying feature and it is possible to get extra admission money to help pay the bills—neat sums for the boxes down front where the newest things in gowns can be exhibited to advantage.

SOMETHING FOR NOTHING

Shows at which the visitor gets something for nothing are popular. But the things given away are quite a nuisance to the janitor. He has to sweep up the leavings and it is difficult to keep the place presentable.

All exhibitors at shows know that the "something for nothing" appeal is one of the deep-seated human traits. Nor is it confined to any particular class or financial rating.

Just a few stray thoughts and observations on the problem of the agricultural show manager. It is the same problem that is being worked out daily with new wrinkles and shadings by the ad writer, the movie magnate, the news writer and the novelist, with this difference: The manager of the agricultural show desires to put over a message, as well as to entertain. The ad writer, too, has something to sell and the news writer something to tell; the movie man and the fiction weaver may or may not desire to instruct as well as amuse.

In California the local fair, sponsored by the farm bureau, is becoming popular. Several successful ones have been held this year; may their kind increase. They thrive on local interest and enthusiasm and typify, in a larger way, the backyard gardener exhibiting his new lettuce and explaining how to his neighbor over the fence of a Sunday morning.

The regional agricultural show, which must draw people of the industry from long distances, and city people close at hand to put over its story and pay expenses, has a somewhat different problem. Let's have some ideas on the subject—they'll be welcome.

AMERICANS LIKE MILK

One-fourth of the world's milk and butter is produced and consumed in the United States, although only one sixteenth of the people live here, where there are 23,000,000 cows.

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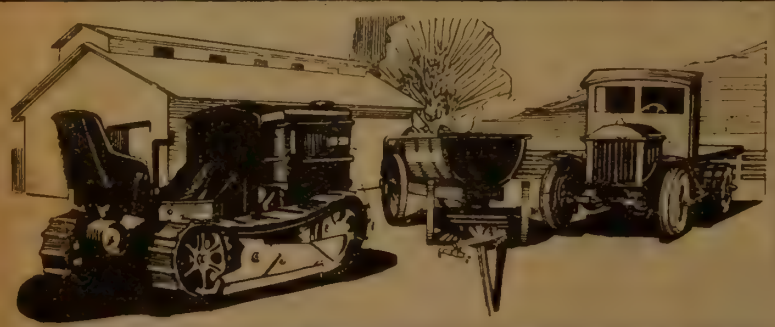

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Irrigating Foothill Orchards

By J. B. BROWN

Extension Specialist in Irrigation

NUMEROUS investigations of soil moisture conditions in the foothill counties by members of the Agricultural Extension Service and the staff of the College of Agriculture have led to the general conclusion that better results can be obtained by modification of present irrigation practices.

In El Dorado, Placer and Nevada Counties the common practice is the use of one or two furrows. Often only one furrow is used and that down the steepest slope of the hillside.

A more usual practice is the use of two furrows, one on either side of the tree row.

The system of rectangular planting in use does not, in general, permit of running furrows on flat grades around the hillside. With steep slopes, and consequent high velocity, there is considerable washing of soil and poor penetration of water.

The expectation that water spreads between the furrows and properly moistens the soil between the tree rows is sometimes realized on the shallower soils, where there is a tight subsoil of decomposed bed rock or where the bed rock is relatively close to the surface.

On deeper soils the water has an opportunity to penetrate vertically and most certainly it does, with very little lateral percolation. A simple investigation will show the behavior of water in the soil.

A most illuminating investigation of behavior of irrigation water may be made by cross-trenching the furrows between two tree rows. The trench should be dug at a right angle to the direction of flow in the furrows and at a point half way from the head of the furrow to the end and should be long enough to extend through the area wetted by the furrow system of one row. The depth of the trench should be sufficient to show the vertical penetration of water under furrows and to show the penetration of roots of the trees.

In a number of investigations in the foothill counties where there was sufficient depth of soil the roots have been found down to depths of six feet and in mature orchards they extend to and past the middle of the rows. In a recent demonstration in El Dorado County with two and four furrows to the row it was shown that the lateral percolation had not been sufficient to wet the whole root zone, nor had water penetrated to the full depth of the zone.

If roots extend into the whole area they should be functioning properly, but they cannot contribute to the support of a tree if there is no available moisture in the soil. Certainly in the late season the soil is dried out and if water is not replaced by proper methods of irrigation the roots in the dry areas are not helping the tree carry its load.

The use of one or two furrows is only serving to wet a limited root area and that means that a limited portion of the root system of the tree is carrying its burden.

If investigation shows the above conditions, the remedy is to increase the number of furrows in the tree rows and to continue to run the water in the furrows until it has penetrated to the depth of the root zone.

A little study on the part of the orchardist by cross-trenching, and use of soil auger or steel probe, will soon demonstrate the needs of a particular orchard and will lead to better irrigation practices.

Boost Citrus Turnover

IN order to prevent profiteering or losses in handling oranges and lemons, through failure of the retail dealer to figure his sales margin carefully; also to increase the consumption of oranges by stabilizing prices, the California Fruit Growers' Exchange has prepared a helpful folder for distribution to "the trade."

A table, included in this folder, tells the dealer at a glance what price he should charge per dozen for fruits of different sizes purchased at different prices in order to receive a fair margin of profit.

The dealer is shown that, by charging fair and uniform prices and planning to sell out his stock weekly, he can realize nearly 350 per cent per year net profit on his money invested in orange even though the net profit per dozen is small. The folder is aptly entitled "Putting the Turnover in Oranges."

Dehydration Saves Raisins

DEHYDRATION of raisins, given up as ruined by reason of the rains and poor drying weather recently experienced in the San Joaquin Valley, is saving much of the crop in Tulare County, where a dozen dehydrating plants were erected this summer to care for the big prune yield. Owners of these plants have thrown them open to the raisin men and excellent results have been obtained. In more than one instance raisins, moldy and given up as a total loss, unfit even for hog feed, were dehydrated and accepted by the Sun-Maid Raisin Growers. F. B.

Peak Pear Production

THE 1923 pear crop of the Rogue River Valley, Southern Oregon, amounted to 1690 carloads, which is by far the largest amount of this fruit ever produced in that section. Bartlett, Anjou, Bosc, Howell and Nelis are leading varieties.

During the past few years the favorite pear with planters has been the Bosc, which is a rank grower, and heavy, consistent bearer and brings top prices.

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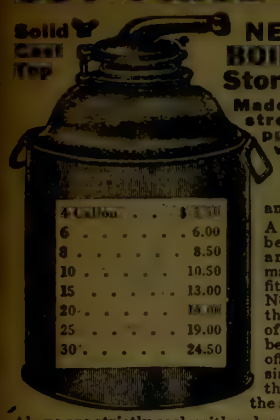

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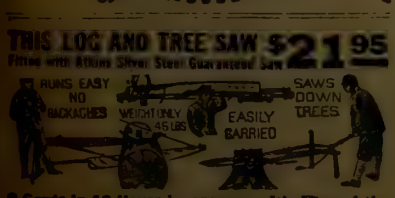

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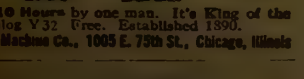

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Milk for Calves

THE United States Department of Agriculture gives some figures on the quantities of milk that may be fed to calves at different ages. At birth a 50-pound calf needs about 8 pounds a day, while a 100-pound calf will use 12 pounds.

Underfeeding at the start is better than overfeeding. Some beginners make the mistake of giving the calf all it wants. This probably would be a good practice if the calf were fed every two or three hours, as is the case when it runs with the cow. When a young calf, however, has been without feed for from eight to twelve hours, there is danger that it will gorge itself if allowed to consume all it wants, which may cause digestive trouble.

A uniform temperature of about 90 degrees is necessary if the milk is to agree with the calf and produce the best results. Some feeders attempt to make up for any lack in quality of the milk by increasing the quantity.

They will feed much more skim milk than whole milk, in the belief that the increased quantity will make up for the lack of butter fat. This is wrong as the same rule about overfeeding holds good with skim milk as with whole milk.

If, on account of age, souring, or dirt, the quality of milk is poor, the quantity should be reduced rather than increased. The calf will not lose as much in development through a reduction in feed as from digestive disorders.

A calf often can take a relatively small quantity of bad milk for long periods and hold its own and even make small gains, when a large portion would cause digestive trouble and even endanger the animal's life.

Feed Range Cattle

MOST Nevada County cattle go on to the market in a half-fat condition, according to a local Farm Bureau worker. Much the same condition is true throughout the State, where the feeding of cattle for market is the exception, rather than the rule.

This situation became serious during the latter part of last summer and still persists, to some extent. The identical condition has been noted.

When grass-fed cattle are being shown on the market a temporary glut ensues and prices drop accordingly. The solution would seem to be a brief feeding period for some of the cattle, following their removal from the ranges.

There is a change in demand for better beef, which California packers must necessarily consider. A few years ago packers would take 90 per cent of the average California herd for beef, whereas they now take only about 40 per cent.

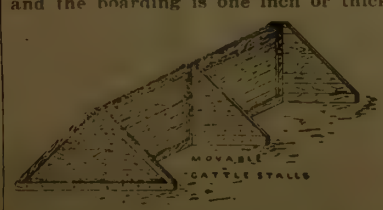
The Nevada County agent has endeavored to inaugurate some definite feeding trials, to determine whether or not the feeding of cattle after their removal from the ranges for a brief period would not be profitable.

Such feeding would not only bring the cattle into better condition with increased weight, but would throw them upon a better market.

Movable Cattle Stalls

THERE are times on a stock ranch when more stalls are needed. The illustration shows a good way to make them. This is a temporary set of stalls made heavy and strong to hold two animals together in each compartment.

The frame is made of 2x6-inch pieces and the boarding is one inch or thicker, according to the size of the animals to be stabled.



Double stalls should be six feet wide and four feet high. The partitions extend out six feet from the center so the structure is twelve feet wide and twelve feet long. This size is heavy enough to remain in place on a concrete floor without being braced.

Cattle stalls made in this way are used in some of the storage buildings during the week of the International Livestock Show in Chicago.

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HAZARD & MILLER, Herman Miller, formerly eight years member examining corps, U. S. Patent Office. Hazard's Book on Patents free. CENTRAL BLDG., Sixth and Main, Los Angeles, Calif.

PERCY S. WEBSTER, Savings and Loan Bldg., Stockton, Calif., has a long established, efficient organization. Send for free book on patents.

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FAMOUS NEVADA HONEY with delicious wild flavor you will always like. Produced in crisp, clear mountain air and sunshine of Nevada. One of the best table honeys produced in the United States. Delivered: 2d zone, 10-lb. pail, $2.00; 60-lb. can, $8.00; 3d zone, 10-lb. pail, $2.10; 60-lb. can, $8.75. C. E. ANDREWS, Box F334, Fallon, Nev.

LIVESTOCK

REGISTERED Holstein calves. Tuberculosis-free herd. Send for breeding information. Buy the best. Get them young at small cost. Either sex, $65. L. N. IRWIN, Davis, Calif.

AUTO TRAILERS

AUTO TRAILERS, rubber tires, timken bearings, with flare board body and drop end gate with hitch, $62.50. BIRDSELL MFG. CO., Kansas City, Mo.

Subsoiling Grapefruit

ROLAND REED, extensive grower of Barbara Worth grapefruit, raised leguminous cover crops in his pomelo orchard near El Centro, Imperial Valley, covered the ground, both with chemical fertilizers and barnyard manure and irrigated liberally. The soil and climate are well suited to grapefruit production and all conditions seemed favorable for big production. And yet, the trees bore only small crops.

"Instead of seven boxes per tree, which I should have been getting, I picked less than one-third this amount," relates Reed. "I thought I had done everything for the trees that was humanly possible, when it finally occurred to me to examine the subsoil.

"Here I found the seat of the trouble. Although our soil is sandy and does not pack readily, the subsoil was compacted like hardpan, seriously interfering with root growth and the entrance of moisture. A good job of subsoiling has given the trees a new lease on life and we are expecting, confidently, to harvest heavy crops of fine fruit."

The California White Leghorn Breeding Farms

SUPERIOR ENGLISH LEGHORNS—INTERNATIONALLY KNOWN

The World's Best

Write for mating list and learn why.

FALL CHICKS

ECKMAN & MILLIGAN, Lankershim, Cal.

Apple Opportunities in California

(Continued from Page 4)

before the fruit is harvested from the

Although California has large State-wide co-operative marketing organizations for most of its leading fruits, the apple does not enjoy this advantage. Since the apple districts are widely separated, such an organization might not seem practical. However, it should be remembered that all of our most successful co-operative organizations now existing are built upon a commodity basis, rather than a community basis.

Almonds, for example, are grown in as widely scattered sections as the apple. With or without a large central organization, there is no good reason why more local organizations, such as those operating in the Sebastopol section, should not be of the greatest aid toward more profitable marketing.

SEBASTOPOL'S GOOD EXAMPLE

In this district the fruit of all members is packed in a skillful and uniform manner and the label of the Fruit Growers' Union has come to stand for a certain standard of quality and pack. Other associations are operating in several other sections at the present time, but the most of these lack strength on account of the limited tonnage which they control.

Lack of a hearty and more thorough co-operation among the growers is the one thing responsible for many failures. The real spirit of co-operation is necessary for the greatest success. In some instances, small districts may have simply a community packing house and use the California Fruit Exchange as a marketing agency. Up to the present time, however, only a very small percentage of the apple crop has been marketed by this organization.

Selling one's crop to cash buyers may, in some years, prove profitable to certain individuals. The logical conclusion of this practice, however—especially in years of a good crop—is the flooding of certain California markets and receipt of a ruinous price for the fruit.

This is the situation in which the apple grower has found himself more than once during the past few years. It is, in fact, the condition in some sections at the present time where many growers, all anxious to sell to buyers for the Los Angeles market, have themselves forced the price down to such a point that the returns do not pay the cost of production.

DON'T SELL FRUIT ON TREES

The practice of selling the crop on the trees is an exceedingly bad one. If the grower is not interested in seeing that the fruit from his district is graded in strict conformity to grade rules, that the quality of the package is what it should be and that the reputation of the district is built up and maintained, he can scarcely expect the buyer to do so.

The credit or discredit of a box or car of fruit comes back to the district and eventually to the individual grower, rather than to the packer or buyer. The latter can easily move to another section and purchase fruit, but for the owner of the orchard it is not so easy. Establishing a trade-mark and having this trade-mark represent a standard, uniform quality is an asset which can scarcely be overestimated.

For home use and local markets a large number of miscellaneous varieties may be desirable, but if fruit is to be grown for the general markets each district should determine its two or three most profitable varieties and grow these, very largely to the exclusion of all others.

For the strictly commercial orchard, old family favorites have no place. Such trees should either be top-worked or removed. No district can hope to receive favorable recognition for growing the "largest collection."

PLANT ONLY BEST SORTS

In attempting to standardize varieties, only those well adapted to the section should be chosen. Unless the yields are good and the fruit of good appearance and finish, free, from defects or markings which lower the sale price, such a variety should be discarded.

The mere fact that any variety has long been grown in a district is not necessarily proof that it is a profitable sort to maintain. Its ultimate value must be measured by the price it brings upon the market.

A variety like the Yellow Bellflower, which for a number of years at least has retailed on the market for less than $1 per box, is, to say the least, a questionable variety to grow for commercial purposes. Good yields, quality, attractive appearance and the ability to stand shipping are primary characteristics of a good commercial apple. Where these attributes cannot be attained, extensive commercial planting should not be attempted.

Some of California's fruits meet little competition on the large wholesale markets, but this is not true with the apple. If the California apple is to assume its proper place on the market, it must be of the same quality as these other fruits sold under the California label. It must also be able to compete with the high standard set for apples by Washington and Oregon.

OREGON APPLES OUTSELL OURS

The ability of the Oregon grower to ship his apples into California and to sell them on the same market as ours at a substantial premium over our own is a condition which should be corrected. When the home-grown product measures up in quality and appearance it will surely sell for as much as the imported article.

For higher quality, more attention must necessarily be given to pruning, spraying and thinning. Irrigation would be of material help in some sections which have really prided themselves on the fact that irrigation is not necessary.

The attractiveness of fruit on the market depends to no small extent upon the container and the manner in which it is packed. This State originated the apple box; it allowed the Northwest to develop it. The result is the Northwest standard apple box, which has been adopted not only by the Northwest States, but also by California.

Despite this fact, however, many California apples are sold in the original old style, off-size box. It is not attractive on the market. It must be conspicuously labeled "irregular container," and there is no logical reason for its continued use.

ADVERTISE NORTHWEST APPLES

The apple growers of the Northwest have for a number of years taxed themselves from two to three cents per box for carrying on a national advertising campaign. In this they again have followed the lead of California. Large sums are spent annually in advertising California oranges, prunes, raisins and almonds, but certainly a very meager sum is spent advertising the apple.

Trade papers carry page after page of Northwest advertising matter, while only occasionally is there a small section devoted to the California apple. Especially attractive window signs often are seen, calling attention to California prunes, pears and peaches; but along with these signs are those from Washington and Oregon appealing to the consumer to buy apples.

The central feature in the center of the square on the fine wholesale market of Los Angeles is a tower telling the buyers from its four sides about Hood River apples. It is certainly a fine advertising feature for the Hood River Apple Growers' Union, but not for California.

With a mere mention of some of these most vital factors, it would seem that the question of the future of the apple in this State is very largely what we care to make it. The fruit is grown in quantity, quality can be obtained in suitable sections and by following the progressive marketing methods of Northwest apple growers and our own growers of other fruits, it is difficult to see why the California apple cannot become more favorably known and return a greater profit to the grower.

A high grade product, well standardized and marketed by the growers as a unit, is essential for a better condition of the apple industry.

About the Papaya

THAT the "pawpaw" of Central North America and the "papaya" of the tropics are not one and the same fruit is the contention of Leslie Burr of Willits (Mendocino County) who, in a letter to the editor of ORCHARD AND FARM, gives the following information:

"I grew up in Illinois and know all about the native pawpaw. It is a deciduous shrub, bearing a fruit that tastes something like an over-ripe banana.

"The skin is smooth and the seeds flat, about three-fourths of an inch in length, and when opened are seen to be filled with cross segments.

"Now, as to the papaya, I will state first that I lived four years in the West Indies and seven years in the Hawaiian Islands, where papayas were to be had every day. I never heard a papaya called a pawpaw, although it is true that Webster's dictionary states the word papaya is sometimes written 'pawpaw' or 'powpow.'

"The papaya, both in fruit and plant, is very different from the pawpaw, the papaya being a melon that grows on a stalk. The stalk has a number of large leaves at the top, the fruit being attached below these leaves.

"Pawpaw I have always understood to be a North American Indian name for the native fruit, while papaya is a Spanish name."

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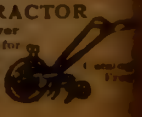

American Farm Machine Co. 2639 Uni Ave S.E. Minneapolis, Minn.

Selling Tons of Dates by Parcel Post

ONE of the biggest stunts ever pulled off in California in the line of marketing farm produce by mail was Roland Reed's accomplishment in shipping 28 tons of 1923 crop dates by parcel post. The dates were grown in the Imperial Valley, near El Centro, where Reed, together with his father and brother, have 2200 acres of land. Date palms cover 20 acres. Within the next few months the date acreage is to be increased to 140.

"No, we didn't advertise our dates," explained Reed. "Finding buyers was the easiest part of our work. The growth of our mail order business has been largely the result of customers recommending our goods to friends and acquaintances. The great trouble has been to grow enough fruit to supply the demand.

"The prices we received varied from 35 cents to $1.25 per pound. This seems high, compared to the 15-cent retail value of imported dates. Quality and pack make the difference. Our best dates are put up in fancy one-pound packages, very much like fine chocolates, with which they compare very favorably in quality.

"Instead of the sticky, messy, scale-infested foreign dates, our fruit is dry, clean and of the highest quality. We grow several sorts, which range from the dry, bread date to the soft, caramel kinds. By this means we are enabled to suit all tastes."

When Reed began raising dates nine years ago he estimated the future profits of the business. These estimates seemed to the skeptical as unreasonably high, yet were only 50 per cent of what has since been accomplished. Eight-year-old trees have yielded $1800 per acre.

The entire cost of producing, processing and packing dates is about 17 cents a pound, leaving $500 a ton net at present prices. E. L. Garthwaite, Imperial County farm adviser, estimates that from the fifth to the tenth year date trees each will bear 40 to 100 pounds of fruit. Counting 48 trees to the acre indicates a yield of 1920 to 4800 pounds per acre.

Date Eaters Find Bugs

IMPORTED DATES contain more or less scale, which appears upon the fruit something like fly specks, according to Roland Reed, prominent Imperial Valley date grower, who explains that the unsanitary condition of foreign dates and the unattractive manner in which they are packed account for the low price which they bring, compared to the domestic article.

"Scale infests most foreign date palms," states Reed. "It is to prevent the entrance of this pest that the United States Government has prohibited the importation of African and Asiatic date off shoots. This accounts for the high prices which home-grown trees of the best varieties command" began, except what he had learned as a boy on his father's corn-belt farm.

It has taken considerable courage for him to carry out his own ideas in the face of the criticism and, yes, ridicule of friends and neighbors. But his experiments have attracted so much attention that other orange growers from Redlands, Riverside and more distant points have called to see for themselves.

No doubt a number of growers have been influenced by his success to follow his example. Others have adopted poultry or livestock raising on their own account. Unquestionably these will be more and more of this interesting kind of "double cropping" in California.

Citrus and Livestock

(Continued from Page 2)

of barley, rye and melilotus or melilotus and small-seeded horse beans is pastured or "soiled," only the stubble being turned under. The orchard is not exactly clean cultivated, being plowed only in one direction, across the slope. Two advantages are claimed for this method: Erosion during heavy rains is lessened and some growth is left around the trees to form a mulch and additional "picking" for the sheep. When "lotus" and beans are used the latter, which require irrigation, are sown with the furrows, and the former is sown crosswise.

All this pasture feed costs nothing, of course. As in the case of the cheap roughage, Sheets figures the cover crop is more available and more valuable when applied as manure, while considerable humus remains in the stubble and roots. The sheep are turned out between November 15 and December 15, and are allowed to run until February or March.

What is the possible revenue from such a "side issue"? From $1000 to $2000 a year, Mr. Sheets estimates, provided good animals are kept. Figure it yourself: Fifty lambs averaging even $46 each would bring $2000, and this is a low estimate for registered stock. (Sheets believes there will be a good local market for rams). On 10 acres 50 or more breeding ewes can be maintained, which means that during several months out of each year, 100 head or more would be on hand. This size flock, in Mr. Sheets' estimation, is just about right to produce all the manure required on a 10-acre orchard.

GEESE PROVE PROFITABLE

But not satisfied with his attractive sheep profits, this grower is developing another sideline which likewise is self-supporting: a flock of geese.

"I shall keep all my geese, selling only the ganders, until I have a flock of 500 of these fowls," asserts Sheets. I have sold them alive during the holidays at from $3.50 to $5 each. They seem to be free from lice, mites and disease, and find plenty to eat around the sheep corrals or under the trees.

"Beyond a little special attention at hatching time, they require no care. It is necessary to sprinkle the eggs if they are hatched under a hen, or to provide a tub of water for the goose if they are hatched in the natural way. Furthermore, it is necessary to watch the hatching date, and help the little fellows in breaking the shell. But for profit and ease of handling I believe they may surpass the sheep."

Mr. Sheets for years has maintained a mercantile business in Pomona, operating his ranch as a hobby or sideline. He knew nothing about sheep when he

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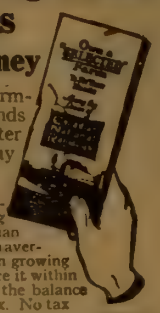

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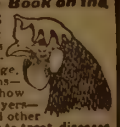

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Tree Varieties for California

Forestry Official Gives Observations and Suggestions Based on Travels Through Valleys and Foothills

WRITING from Camp Coert DuBois, Northfork (Cal.), Charles H. Shinn, United States District Forester, gives some interesting observations on trees and the lack of them in Central and Northern California.

Plant TREES Protect

"On my way here from San Francisco and on a trip to Ukiah, I studied each farm, village, town and the general effect. It is far worse than I have ever before realized. There is very little harmony, feeling for beauty, right use of trees or true understanding of what must be done in California to give us the exquisite combinations of homes, farms, villages, lanes, hedges, trees, which are in Holland, England, and once were all over France and Belgium. Study it in the famous paintings and etchings.

"I give you now some practical thoughts from my years of experience:

"First, every man that I ever knew or heard of will learn to love and care for the forests and mountains if he grows and looks after some trees of his own. So will his family.

"Second, the best trees for farmers to plant are deciduous, because leafless in winter and because so cheaply and easily grown from cuttings or seeds. Roadside trees should always be deciduous species. I name poplars, golden in autumn, and grown from cuttings without expense by any farmer.

"I also name ashes, hickories, pecans, walnuts, acacias and yellow locusts, all cheaply grown from seed. I would myself plant the seeds where the trees are to stand, because it is a great thing to have the taproot intact. All yield valuable timber for home use. The objection to the locust is that it sometimes throws up so many sprouts, but this is only when the roots are wounded by spade or plow.

RECOMMENDS SEEDING FRUITS

"I would like to see thousands of seeding wild cherry trees and crab apple trees along our highways. Not only would birds and children get some fruit, but farmers would use the surplus and the timber of both species has value.

"To the above list of cheaply grown trees fifty more easily could be added, such as maples, lindens, hackberries, deciduous magnolias, etc.

"Coming up the San Joaquin Valley and studying the farms I observed many with no trees at all near the buildings and none to shelter the livestock from the fervid midsummer sun. Nearly all the trees planted were eucalypti. The roadsides were practically treeless. The farm buildings looked dull, isolated and lonesome. Many had well-kept orchards and vineyards, but this only emphasized the lack of forest trees.

"Thirdly, the place to begin is with the ladies' clubs, the teachers' conventions, the newspaper men's associations, and the slogans must be such as these: 'Home Improvement Means More Trees.' 'California must be made the most beautiful region in the whole world.'

"Fourth, we must compile statistics showing how many trees it will take to plant every road in the State; also to line our water ditches and furnish windbreaks; also to give every owner of a quarter section five acres of woodlot; and, lastly, showing the total values of such plantings. This survey would cover all our valleys and the foothills up to the National Forests. The State Forester, if he can get the means, could do this in good shape. Some counties would help. Farm advisers, nurserymen and real estate dealers would see the value of this move."

Candied Figs Promise Pleasing Profits

NEIGHBORS, who have been candying figs this year, have developed a delicious product, attractive in appearance that ought to take well with the trade.

Being a fig producer and a member of the California Peach and Fig Growers, I decided to investigate opportunities for manufacturing this product; and thus developing an outlet for more figs. Other growers should be interested in the results.

The home process is to stew the figs for an hour, several times, a day or more apart, putting them out to dry between times. The product is a smooth, velvety fruit that is delicious in the highest degree.

Unfortunately, however, this process is so slow and would require so much space and labor that unless a short cut could be devised, the manufacture of more than a small amount would be impossible, and high prices would have to be secured.

Encouragement is offered by Professor Cruess of the food products laboratory of the University of California, who states that gluecose could be substituted for part of the sugar, speeding up the manufacture and improving the product.

Next, instead of natural air drying, a dehydrator would remove the moisture quickly and so enable the whole process to be completed without requiring much time or space.

DEHYDRATION IS ADVISED

The cost of a good, small dehydrator would be only $1000, and of a large one, such as would be required when the industry was going well, about $5000. The canneries and preserving plants have all other equipment already available.

If there were a rush of fruit, it could be stewed in sugar in the usual way and set aside until the picking season was over, then dehydrated without extra expense or loss in quality. The labor season therefore could be extended as desired.

One or two confectionery concerns in Southern California now treat figs with great success, but the ordinary candied fig found in boxes of mixed fruits, according to Professor Cruess, is a poor product. The figs are kept in sulphurous acid until processed. All this is removed in processing and the fig looks fine. Yet the flavor is killed. But when the fresh fig is preserved in sugar and then candied, the real fig flavor is not only retained, but also developed.

Another interesting thing is the saving in material. When the fruit is preserved, five pounds of sugar are needed to five pounds of figs. When they are candied the same quantity would require only a small cup of sugar. It looks like a fine opening for one of the big fig concerns.

Kadotas make the best candied white fig. The black also candies well and has pleasing appearance and flavor.—TULARE FARMER.

Early Pomegranates Sold

RETURNS from the first shipment of pomegranates going out from Springville, Tulare County, this season, recently received, showed a price of $2.85 paid for 35-pound boxes.

These pomegranates were of the "Wonderful" variety and were sent from the August Millinghausen grove through the Lindsay-Strathmore Pomegranate Association.

The foothill crop ripens considerably in advance of the valley crop, owing to the absence of late frosts, which permits an earlier blooming period.—S. W. W.

Two Kinds of Fairs

(Continued from Page 3)

grapes every autumn. Manufacturers of food products do a great deal of this kind of advertising in store demonstrations and at fairs—why not the farmer?

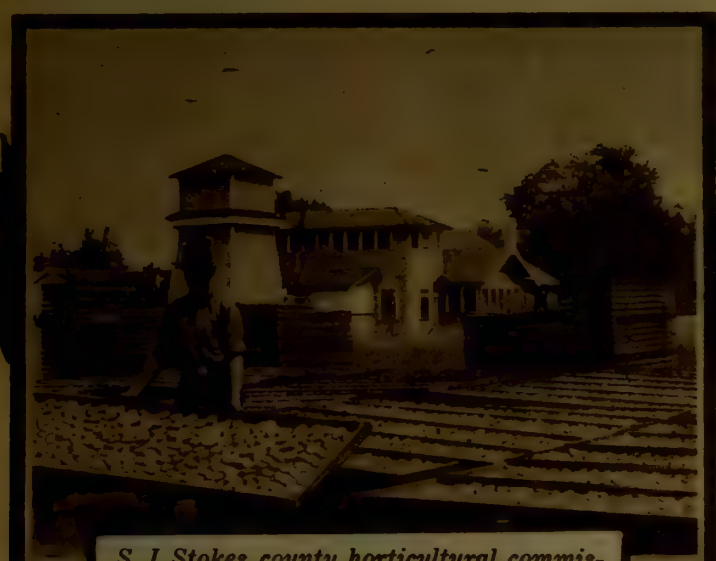
"We have made our fair a business enterprise, in fact as well as name," explained a prominent exhibitor. "We make it pay in dollars and cents, as well as in the facilities it affords for having a good time socially and for gratifying our pride by showing others what fine things we can produce.

ADOPT BUSINESS METHODS

"A farm is a commercial enterprise, as well a home; therefore its products should be advertised and sold, in much the same manner as those of the store and factory. Our county fair offers us an excellent place to tell people about our products and the advantages of the district in which we live, as well as our individual farms. Anything that helps a neighborhood helps each farmer living there, no matter what kind of farming he is doing or whether or not he wants to sell his place.

The farm show first described is a type of the American county fair; the second is the ideal, which as yet never has been entirely fulfilled. The Los Angeles County fair, held at Pomona this year, more nearly approximates the latter than any other the writer has ever seen, although, of course, few fair managers have yet reached the point of abandoning amusement features entirely.

Annette of Lake County Makes Pears Profitable



S. J. Stokes, county horticultural commissioner, examining Annette's dried pears.

J. W. and J. L. Annette, father and son, and a sample of their prize pears.

By O. H. BARNHILL

WHEN J. W. Annette, a baker of Bakersfield, heard of the princely pear profits his father was pulling down away up in Lake County, he became weary of his hard, hot job and longed for the cool breezes of that "Switzerland of America." He decided to cure an incipient case of nostalgia by shaking the baker's dust from his feet and returning to the old farm home.

Instead of baking "pies like Mother used to make," Annette is now producing pears like Father used to grow. He hasn't been in the game long enough to get rich, but holds a winning hand and expects to make some real money when the twenty-seven-acre young orchard gets into full bearing.

The elder Annette bases his faith in pears upon an old five-acre orchard which has proved a big money-maker. Like many other Lake County growers, his only regret is that he did not make extensive pear plantings at an earlier date.

HEAVY FRUIT YIELD

"We picked an even hundred tons of fruit from that five-acre orchard last year," relates Annette. "It netted us something over $50 a ton. Of course that was a bumper crop, followed by a small one this year, only four or five tons per acre. But why worry about a light crop when you have just harvested a $1000-per-acre one?

"Yes, we have pear crop failures here, but in twenty-seven years I have had but three, which is a pretty good record considering we never fight frost."

Annette's cultural methods are very simple—he just cultivates. The ground is so rich and well watered that growing cover crops, applying manure and irrigating seem unnecessary. Undoubtedly these things would increase the crops materially, but would it pay? he asks.

In answering this question, local conditions must be considered. Manure is scarce and commercial fertilizers expensive, while fall rains come so late that cover crops do not start early enough to make any considerable growth before the first of March, when the ground must be plowed to conserve moisture for the fruit crop.

QUESTION OF IRRIGATION

A pumping plant would cost a good deal of money and although it would increase the yield, the fruit would be of poorer quality and a greater tonnage would be required to produce a given amount of dried product. The present drying ratio is four to one.

Like most Lake County growers Annette spreads straw beneath pear trees just before harvest time, in order to prevent windfalls from bruising. This straw is plowed under the following spring, adding humus to the soil. Long pruning is practiced.

Thirty to $35 a ton were the going prices for dried pears in ante bellum days, with $40 to $45 for extra fine stock. During the period of peak prices, as high as $75 a ton was paid for fancy pears. Growers last year received $50 to $55.

Owing to the fact that driers offered only $30 for the 1923 pear crop, orchardists shipped a large share of their fruit fresh, in which form it netted about the same price they received last year. Annette shipped sixteen tons of boxed pears.

The Bartlett is the principal variety grown. A few Winter Nelis were planted in the young orchard.

Commercial pear driers charge 4½c per pound for dehydrating fruit, sunshine being utilized to remove surplus moisture. As S. J. Stokes, Lake County horticultural commissioner, suggests, it is an open question if there is not more money in drying pears at the price mentioned than in growing them, considering current market values and the risk of shipping to distant consuming centers.

Annette, therefore, dries his own fruit, having one of the best equipped individual dry yards in the State. The pears are received in a spacious cutting shed, where they are kept a week or ten days to ripen, before being halved.

NEXT COMES SULPHURING

After cutting, the pears are transported in cars over a miniature railroad to the sulphuring house. The latter has concrete walls and partitions. There are six compartments, each holding a ton of fruit. Before being subjected to the fumes of burning sulphur, the fruit is thoroughly wetted and water poured into trenches in the dirt floor of the sulphur house.

The pears are sulphured from thirty to fifty hours, although some growers in districts where an inferior product is turned out leave their fruit in the sulphur house only over night. Sulphur which is imported from Italy is preferred to the local product.

Sulphur fumes not only bleach the pears to a beautifully white color—which later turns to translucent gold—but softens the fruit to such an extent that it dries much more rapidly than that which has not been treated. In fact, without sulphuring there is danger of the fruit spoiling.

The pears then are spread upon trays eight feet long and thirty inches wide, which cost $1 each. When sufficiently dry for packing first-grade Lake County pears are very delicious and fine looking, quite different from the little, dark-colored, hard and wrinkled dried pears of commerce.

To sell to driers or ship fresh is one of the questions which is vexing Lake County pear growers. Very attractive prices have been received for some of the boxed fruit sent to the New York market, while other consignments netted the orchardist nothing but nice, red ink.

"The advantage of a local cash market is not to be despised," points out the elder Annette, "while the risks of consignment shipping are great.

"Another thing: In comparing ton prices of fruit sold for boxing and drying, growers often overlook the fact that pears intended for shipping fresh must be picked before they have reached anything near their maximum size. The same crop, therefore, will net a much greater tonnage when turned over to driers than when consigned to packers."

Beefsteaks!

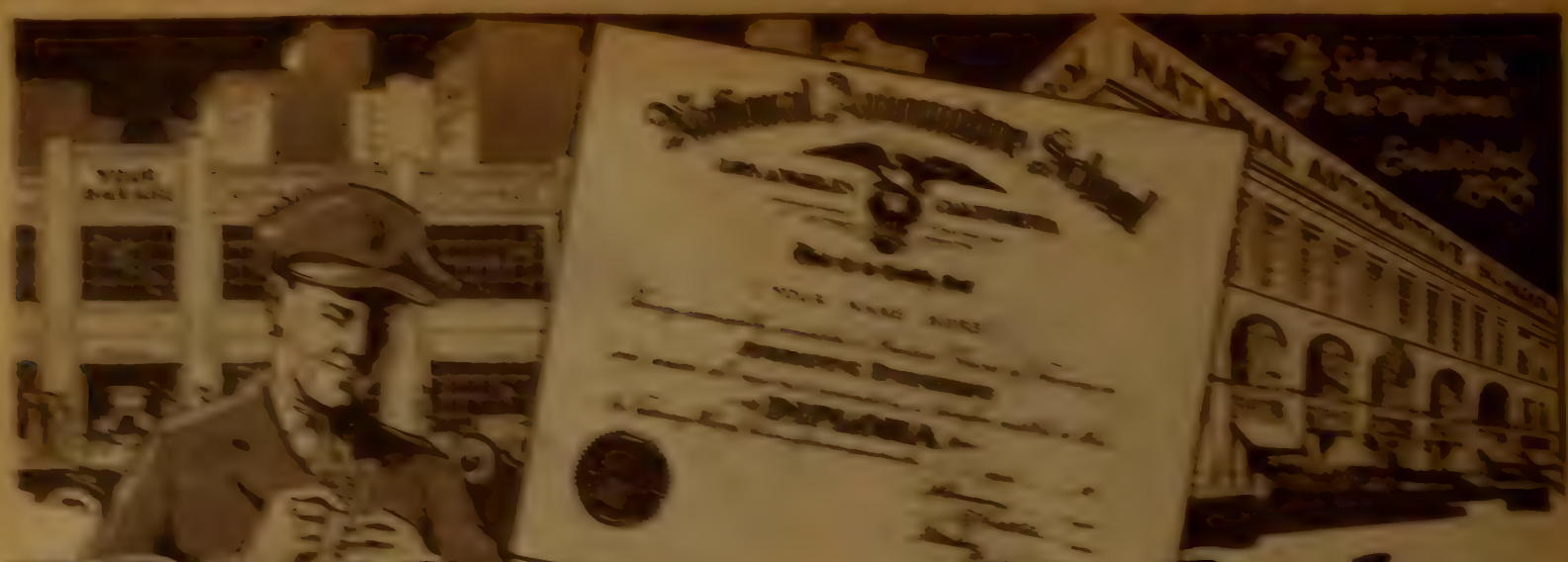
THIS remarkable snow picture was taken in the intermountain range country by Charles J. Belden, stockman-photographer.

We Californians are not apt to think of such scenes in connection with our orange groves, sunkissed beaches, smiling vineyards and perpetual summer. Yet in the high Sierras and on the windswept plateaus where the cowboy still holds sway, just such a winter view may be seen.

No, the Old West is not gone—only changed a little, and in the real cow country there have not been so many changes, either. The automobile and telephone, perhaps, have done most to annihilate distance; the daily newspaper now is delivered at the gate. But the "puncher's" work is much the same, except that now he works with better animals.

Milk Made the Difference

THE puppies shown above and the chickens at the right afford striking evidence of the value of milk in the diet. The larger dog and chicken received milk in addition to other food; the smaller in each case received the same food except that the milk was withheld.



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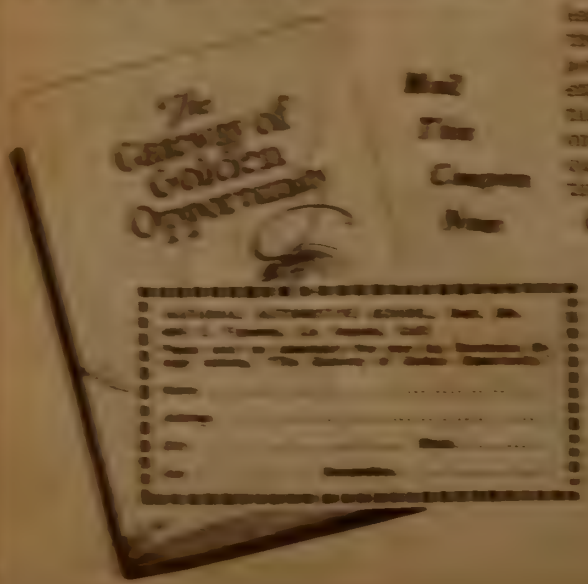

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LOS ANGELES — ESTABLISHED 1905

ORCHARD and FARM

NOVEMBER 18, 1923

Lake County Pear Growers Solving Big Problems

Everybody's Planting Pears

LAKE COUNTY, long known as one of the leading "Switzerlands of America," is finding fruit more profitable than tourists. Lack of transportation formerly was the big stumbling block in the path of the pear grower. But a splendid State highway over the mountains to Hopland, on the Northwestern Pacific, 20 miles distant, and modern motor trucks, removed this obstacle—or at least provided a good detour—with the result that pear planting now is the popular pursuit in Lake County. Over a thousand acres of orchards were set out last spring. —*The Editor.*

By O. H. BARNHILL
Assistant Editor ORCHARD and FARM

DID you ever have the "pear fever?" If not, visit Lake County and you'll get it. You may go to fish, hunt or drink mineral water—as most people do—but the chances are you will remain to plant a pear orchard

The visitors' attention first is favorably attracted by beautiful groves of pear trees, which already cover many thousands of acres of the best land in the vicinity of Clear Lake. The largest pear drying yard in the world next causes the outsider to sit up and take notice of the horticultural possibilities of this secluded mountain valley.

But seeing and eating the fruit itself is what firmly fixes the pear fever bacilli in the system of the unsuspecting outsider. If the Bible did not specially mention an apple, one would be convinced that Eve tempted Adam with fruit like unto Lake County pears.

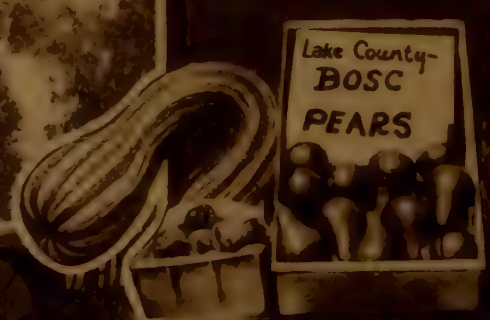
Eaten either fresh or dried, they are a gastronomical delight that leaves no bad effect the morning after. Lake County Barletts are meatier and sweeter than those grown in most places and do not have a rank, musty odor.

The dried product is a revelation to the average individual, who associates evaporated pears with the wrinkled, dark-colored little fruit chips which go by that name in most groceries. Large, light-colored and lucious, describes dried Lake pears. Age turns them to a beautiful amber—translucent gold.

"Enough!" cries the patient reader. "Lay off the booster stuff and give us practical facts." Fair enough—only the independently rich can afford to ignore the dollars-and-cents side of an industry. But when it comes to large net profits the Lake fruitmen also are there with the goods. They're not all getting rich, of course, but some of them are and many others have bright financial futures.

This fine country home of L. P. Glendennin is typical and tangible evidence of the pear prosperity Lake County orchardists enjoy.

A 36-year-old Winter Nelis pear tree bearing a 40-box crop



The Bosc is one of the best shipping pears. It grows well in Lake County.

Prof. E. B. Healton, Lakeport High School, and one of his "Ag" students.

PEARS SUPPLANT OTHER CROPS

Originally, Lake County was a livestock and grain country and general farming still looms large there. A few old pear orchards, however, pointed the way to a better paying crop, with the result that commercial orcharding now is the most prominent feature of Lake farming. Land suitable for pears changes hands at $300 to $400 per acre.

The experience of L. P. Glendennin of Scott's Valley furnishes a good example of the evolution of Lake County agriculture. Some pear trees which his father planted in the family orchard nearly a half century ago, led to the setting out of a five-acre orchard in 1887. Last year the trees bore a 30-ton-per-acre crop, most of which was sold at $50 a ton—$1500 an acre. Other remarkable crops were harvested.

"That little pear orchard made me more money than all the rest of my 65-acre farm," admitted Glendennin. "And yet, it was not until about 15 years ago that I began planting pears in earnest. Now my entire farm is one big pear orchard. My great mistake was in not getting into the game sooner."

A spacious, modern farm home, six-cylinder touring car and the things that go with them attest Glendennin's pear prosperity. His daughter and son-in-law live in a nearby bungalow and assist in caring for the large orchard.

ORCHARDISTS MAKE MONEY

"The pear growers are the farmers who are making money," declares S. J. Stokes, Lake County horticultural commissioner. "They are the ones who are building modern houses and buying high-priced autos. When a good pear orchard is offered for sale the buyer is most likely to be one of these old orchardists, rather than a newcomer."

Now let us take a long, hard look at the seamy side of this seductive occupation. Like most fruit growers in a new district, Lake County pear growers at first kidded themselves into believing that climatic peculiarities would prevent the entrance of insect and fungus pests into their favored region. But the pests finally came and now make so much trouble that spray dealers find rich picking in Lake County.

As soon as the pear crop is harvested spray dope drummers descend upon this peaceful valley and solicit orders from leading growers. One firm will ship two carloads of spray material into Lake County next season.

Spraying, however, is not very extensive, nor are the pests hard to control. Two codling moth sprays of arsenic of lead and one of lime-sulphur—to which nicotine sometimes is added for aphis—are the rule. The fungicide kills scab spores and controls the blister mite, if applied in the fall.

FROSTS DO LITTLE DAMAGE

Orchard heating is not practiced, as there have been but two destructive frosts in 30 years, according to Glendennin. One of these came three years ago and not only cut the crop painfully short, but destroyed some small trees, freezing temperatures following an early warm spell.

"Fertilization and irrigation are unnecessary," is the siren song which has lulled most Lake pear growers into the false security of moderate crops. But with rising land values and labor costs there comes the necessity of heavy production, made possible only by watering and manuring.

"But how about the Glendennin orchard?" ask arid soil robbers. That particular grove is subirrigated, as are several others in the county. Lack of fertilizing is not so easily explained. For the past few years manure has been hauled onto a portion of the orchard and the common practice of spreading straw under the trees before harvest has been followed. How an orchard, with no other fertilization than this can for 30 years bear heavy crops, with no apparent diminution in production, is a phenomenon which seems to set aside the natural laws of supply and demand.

EXPERTS SOLVING PROBLEMS

The explanation and solution of the fertility problem safely may be left with such local farming experts as Stokes and Prof. E. B. Healton. The latter teaches farming in the Lakeport high school. Both are firm believers in the necessity and profitableness of more water and fertility for most Lake pear orchards.

Of course, all the straw and manure available should be used, but on account of the high cost of chemicals, the extensive employment of commercial fertilizers at present is considered impracticable. So is leguminous cover cropping, because of the lack of early autumn moisture.

"The fall rains come so late," explains Stokes, "that there is not much green growth in the orchards until Christmas. After that time the weather is so cold that cover crops do not make much growth before March 1, when it is necessary to plow the ground, in order to conserve moisture for the trees.

"A small native clover and lupines volunteer in many orchards, but do not make sufficient growth to furnish needed fertility and humus. Vetch could and should be grown, by wetting the ground in September, in order to start growth early. This necessitates irrigation, of course, but there is plenty of water *(Continued on Page 9)*

ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY
NOVEMBER 18, 1923

How Shall We Prune Deciduous Trees This Year?

Growers Warned Against Reverting to Old System—Long Pruning Should Not Be Blamed for Past Season's Difficulties—Specific Suggestions

By GEORGE P. WELDON

Pomologist, Chaffey Junior College of Agriculture. Contributing Editor of ORCHARD and FARM.

EXCESSIVE fruit production, "devitalized" trees and in some cases black scale injury, rather than pruning methods, are the factors responsible for the unsatisfactory condition of the apricot crop the past season. This is apparent to those who have made extensive observations in different sections.

In some districts soil moisture was insufficient to mature a crop of good sized fruit and permit of adequate tree growth at the same time.

PROFESSOR WELDON

There may have been little encouragement for growers to give their orchards the proper care with the price situation as it was, and in many cases little attempt was made to produce a crop of real good, marketable fruit. This, however, opens up an angle of the question that will not be discussed in this article; it is written with the intention of emphasizing the point that pruning cannot rightfully be given the blame for the poor apricots and certain other fruits of the past season.

Any reaction toward a former system of short pruning is not justified on the basis of last season's crop.

The average fruit grower is honest; when he makes a statement he does so believing that it is true, and I would not question the motive back of the large body of fruit growers who claim that the long system of pruning is wrong. Yet there is no question in my mind that they need to be cautioned against expecting too much of pruning.

The pruning of the orchard is only one of six operations, each one of which is essential at times at least to successful management. Three of these operations apply to the tree and three of them apply to the soil; they are: pruning, spraying, thinning, cultivating, irrigating and fertilizing.

DON'T EXPECT TOO MUCH

Why is it that someone will expect everything of pruning when perhaps spraying is much more important in his orchard? Or why will another blame a system of pruning for his failure to get a crop of marketable fruit, when the trees are dry even to the wilting point, long before picking time has arrived.

Pruning is one of the essential orchard practices; it should be done annually for the best results, but pruning alone will not insure a crop of good fruit, for quite frequently there are more important considerations.

After five years of observations and experiments in Southern California my mind has been fully made up regarding some things in connection with pruning. Yet it must be admitted that the last word has not been said on the subject nor has the last valuable experiment been performed.

It will be many years before pruning practices can be reduced to a basis of scientific accuracy. There are too many kinds of fruits varying in their bearing characteristics, and too many conditions under which they are grown, to justify definite conclusions.

One conclusion, however, seems justifiable on the basis of experiments and observations generally, and that is: fruit fullness is encouraged by light pruning, while heavy pruning results in extreme wood growth at the expense of fruit.

This being the case, any system of pruning which has for one of its prime objects the encouragement of heavy production must be a system that is not overly severe. There are in general two types of severe pruning. One type is the so-called short pruning by which is meant the cutting back of the main leaders either by stubbing or by cutting to laterals. The other type of heavy pruning is done when the thinning-out process, by the removal of entire branches, is carried to the extreme, and so much wood is removed that the same tendency toward rank succulent growth that results from short pruning is apparent.

LARGE FRUIT DEMAND

Neither of these systems is satisfactory from the standpoint of production, yet either may result in production of small quantities of large-sized fruit. Since large fruit is prized by the canners it is sometimes more profitable to have a small crop of large-sized fruit than it is to have a large crop of small sized fruit. On the other hand production must reach a certain point, else fruit growing is unprofitable and the orchardist must learn how much fruit of a marketable size his trees are capable of producing.

Pruning is one of the chief means of regulating production but must be supplemented with many of our fruits, by most careful thinning. This is true especially of peaches. A certain pruning system may result in such heavy production that the trees cannot possibly mature the crop to a marketable size, and unless thinning is done the crop is apt to be a financial failure.

Is it fair in such a case to condemn the pruning system when it resulted in the setting of an excellent crop of fruit? This is just what is being done in some places today. Long pruning without any doubt has resulted in increased production; in some cases a production so heavy that there has been no possible chance for the fruit to size.

Without heavy thinning such a crop may be worthless, and even with thinning, there must be enough moisture in the soil and enough vitality in the trees to produce the desirable sizes.

Before beginning the work of pruning this season would it not be well to stop long enough to consider the reasons for pruning? If pruning is necessary each year there must be some good reasons for doing the work.

In the first place, our trees are pruned for shape. This is not as important a consideration as are some of the other things that pruning is expected to do. Yet it is very desirable to grow a shapely tree and every pruner keeps in mind as he works, the shape of tree that will ultimately result from his work.

DON'T OVERLOOK UTILITY

In pruning for shape, however, the utility side of the question must not be overlooked and if shape be sacrificed for production there should be no hesitancy about destroying the shape.

In Southern California there is a marked tendency for trees to grow heaviest toward the northeast, on account of the constant summer winds from the southwest. This tendency can be overcome to a certain extent, by careful pruning, but the importance of trying to straighten the tree by pruning may be overestimated. The leaning tendency is extreme when trees are from two to four years old, after which they tend to straighten themselves to a great extent.

Pruning for size is of far more importance than pruning for shape. Maximum size in trees is correllated with maximum production.

In defense of the long system of pruning it may be said that it will result in maximum tree growth. Whenever the main leaders of a tree are reduced in length, as in the short system of pruning, there is interference with diameter growth. Whitten and Tufts have shown this repeatedly and personal work has proved the truth of their contentions.

Young trees with no topping between the ages of two *(Continued on Page 8)*

Heavier yields of better quality fruit resulted from long pruning in Professor Weldon's experimental orchard.

Southern California Is Poultryman's Paradise, Says Stanley

Asserts Los Angeles Best Egg Market on Pacific Coast—How About It, Petaluma?

By O. H. BARNHILL

"YES, there are poultrymen who complain they are not getting enough for their eggs," admitted H. W. Stanley, manager of Poultry Producers of Southern California, hanging up the phone receiver, after quoting a 60-cent-a-dozen price to a hungry customer.

"Some people, however, would kick if they received a legacy. If any egg man ought to be satisfied with his lot it is the one who is doing business in Southern California. He works in the best climate in the world, under conditions which approximate the ideal, and sells his product on the highest market on the Pacific Coast.

"Our excellent egg market is not entirely due to a fortunate combination of circumstances, but is largely the result of excellent organization and intelligent advertising. The producers now are conducting their second annual "Eat More Storage Eggs" campaign, with some assistance from other egg dealers.

IMPROVING STORAGE EGGS

"This work is costing $8000 and is designed to acquaint the public with the superiority of modern processed eggs over the ordinary storage product. By coating eggs with a film of hot oil, combined with other chemicals, they may be preserved in almost perfect purity and freshness. The public is learning the proof of this egg pudding by the eating thereof, as indicated by an increasing demand for processed eggs at profitable prices.

"Feed costs average approximately the same as in other parts of the Far West, while we have the world beaten on transportation, with our network of paved highways and fleets of fast motor trucks. Many less fortunate poultrymen ship eggs a thousand miles or more to the high Los Anegels market, entailing delay and expense which local producers avoid.

"Already this year a quarter of a million cases of eggs have been sent to Los Angeles from outside points—Petaluma, Portland, Seattle, Idaho and Utah. Population in Southern California is increasing much faster than egg production. Out of every dozen eggs eaten here, about five are laid elsewhere.

MANY EGGS IMPORTED

"We even get eggs from China—tons of them. They are not altogether bad, either. In fact, this Oriental hen fruit is in some respects superior to what is produced in California, although this statement may sound like treason.

"Chinese eggs are laid by free range hens, like those of the Middle West. Being compelled to forage for their food causes chickens to lay eggs with whites which are unusually thick and solid, a characteristic appreciated by bakers.

"Eggs from the Orient reach America in every conceivable condition—except fresh. Some are dried, others frozen. Before congealing, the eggs are taken from the shell and the white separated from the yolk, the two kinds of meat being packed in different cans for shipment. Many tons are forwarded at one consignment and stored in bonded warehouses at San Francisco and New York, from which the eggs are taken out as needed by dealers, who then pay the duty.

MANUFACTURERS BUY EGGS

"Ice cream makers use a great many Chinese yolks and candy manufacturers employ dried Chines egg albumin extensively in the making of sweets.

Nebraska and Kansas eggs were shipped into Los Angeles last summer, when the Eastern market was unusually weak. They were poorly graded colored stock and—like most Corn Belt eggs—were not refrigerated until two or three weeks after they were laid."

Stanley was asked what would be the result of population pushing poultrymen off land desired for residential purposes.

"Chicken men will have to find cheaper land," he replied. "Already a good many of them have had to abandon property which became too valuable for poultry farming. There is, however, an egg plant on Alameda street located on lots which could be sold for $24,000. The owners are not making interest on their investment, but they do not wish to sell their real estate and consider it good business to earn an egg income until ready to dispose of their property.

HOUSES REPLACE HEN COOPS

"Gardena formerly was one of the leading poultry centers of Southern California, but houses have replaced hen coops and kitchen gardens now occupy the sites of former poultry yards. Spouting oil wells drove thousands of hens from Signal Hill. At Inglewood, San Gabriel and many other places near Los Angeles, land has become too high-priced for hen homes.

"But there is plenty of poultry land left in Southern California, where enough eggs could be produced to supply a dozen cities the size of Los Angeles. An acre will support 2000 to 3000 chickens and much suitable land, convenient to transportation, can be purchased for less than $1000 an acre.

"Our members deliver practically all their eggs by auto truck. Large quantities are brought in from Escondido, 110 miles south of Los Angeles. The cost of transportation from that point is little more than one cent a dozen—40 cents a case, while nearly half that amount is charged for bringing in eggs from the nearby village of San Gabriel.

"Egg prices have averaged higher this year than last. The population of Southern California is increasing faster than the number of hens—why should the poultryman worry?"

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O. H. BARNHILL, Assistant Editor

IN addition to publishing many articles by specialists of the State Agricultural Experiment Stations and Extension Service, ORCHARD and FARM maintains an eminent staff of associate and contributing editors, including such widely-known authorities as

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Pithy Paragraphs

ADVISING AGAINST AGRICULTURE.

One reason why more young men do not study agriculture is because high school and college instructors sometimes advise students to educate themselves for other professions, according to a prominent member of the Extension Service. In support of this theory, the recent closing of the agricultural department of a country high school in the center of a rich farming district upon the recommendation of the principal is cited.

Another California farm adviser who recently returned from a trip to Europe reports that Denmark is the only country where the farming profession is regarded as equal to others. It is significant that the Danes are enjoying greater and more general prosperity than any other European country.

LEARN FROM YOUR NEIGHBORS.

It is nothing unusual to see successful and unsuccessful farmers working side by side, growing the same crops and keeping the same kind of animals. Conditions are practically identical; why, then, should one man fail while his neighbor makes a great success?

In most cases the cause of failure is mismanagement. It would seem that the farmer who is losing out would take lessons from his successful neighbor and learn how to win in the production game.

When asked why he does not copy the money-making methods of those who have risen rapidly in the farming profession, the rural failure will offer all kinds of excuses, having too much false pride to admit that the cause lies with his own poor methods.

Willingness to admit mistakes and learn from successful neighbors has enabled many a farmer to forge to the front in his profession.

BANKERS WANT TO CO-OPERATE.

One of the most promising recent developments, so far as farmers are concerned, is the growing tendency of bankers to reach out a friendly and helpful hand to farmers.

Heretofore, we regret to say, the attitude of many bankers has been expressed by such sentiments as, "The farmer needs help; therefore, let him help himself."

A hopeful note was sounded in a recent address by D. H. Otis, director of the Agricultural Commission, American Bankers' Association.

"The banker," asserted this authority, "may properly be considered the team-mate of the farmer. * * * Economic conditions demand it. * * * The inter-dependence of the banker and the farmer is so close that self-preservation demands they pull together."

IS THIS THE SILVER LINING?

Another leading financial authority, President Puelicher of the same organization, expressed a sentiment that should be equally encouraging to producers:

"Banks have ceased to be mere money changing institutions; they are public service stations that expect to pay in service for what they secure in profits. Agriculture at the present time is going through a serious crisis. There are many problems in production and marketing to be solved. There is a call for close and sympathetic co-operation."

Of course, we cannot overlook the fact that we heard few such declarations until AFTER the farmers themselves, through the American Farm Bureau Federation, literally FORCED Congress to pass agricultural credit legislation. The banker who can discount his agricultural paper under the patronage of the Government is much more readily influenced to work for and with the farmer.

But at least let us give the financiers credit for being willing to help the fellow who has proved his ability to help himself.

Producers don't want patronage from financiers; all they want is team-work, and it looks as though at least they will get what they want. Proving that even a financial cloud may have a silver lining!

What's New? — Keeping Abreast of Agricultural Progress

Persimmons Selling Well

RECENT Eastern shipments of Placer persimmons have brought as high as $4 per 20-pound box—20 cents a pound. New York auction sales of 25-pound boxes reached $6 a box in October.

Most of this fruit is included with apple shipments, the production not yet warranting straight car lots. In former years considerable quantities were sent to Hawaii. San Francisco furnishes a good market for Placer persimmons. Hachiya is the leading variety.

Measuring Crops From Air

LOUISANA cotton, corn and hay crops recently were measured by taking pictures from airplanes by the U. S. Department of Agriculture. Photographs were taken by an automatic camera from a height of 7000 feet, while the plane was traveling at 30 to 90 miles an hour.

Each picture covers a section of land. In three hours it is possible to map 250 square miles. The exact acreage shown in the photographs is measued by a special intrument.

Certified Potatoes Plentiful

CERTIFIED seed potatoes are plentiful, according to W. V. Shear, State potato specialist, who recently has inspected spuds in the following counties:

Marin, Sonoma, Lake, Mendocino, Humboldt, Shasta, Siskiyou, Lassen, Inyo and Kern.

These counties have produced large quantities of first class seed potatoes, for which a heavy demand is anticipated. Spuds now are certified in practically every potato growing district of the State.

Testing Seeds for Purity

DURING the month of October W. S. Wilkinson, seed specialist of the State Department of Agriculture, tested 435 samples of seeds, which is more than were inspected by the Department in any other month.

Most of the large seed houses of the State do their own testing, but nearly all of them call upon Wilkinson to check up on their purchases. This has resulted in keeping out of the State large quantities of seeds containing weed seeds and other undesirable material.

Bonding Rice Warehouses

THE recent bonding of California rice warehouses will enable growers to borrow money from the Federal Intermediate Credit Bank at a low rate of interest. It is estimated that as a result between $1,000,000 and $2,000,000 of government money soon will find its way into the Sacramento Valley, benefiting not only farmers but the community in general.

Other California grain warehouses are being bonded by C. L. Dutcher, whose headquarters is at Portland, and L. M. Jeffers of the State Department of Agriculture.

Nematode Menaces Alfalfa

AN alfalfa field three years old was completely destroyed by the alfalfa nematode, or eelworm, according to the U. S. Department of Agriculture, which is making an effort to check the spread of this dangerous pest.

In other parts of the world the nematode has caused serious injury to alfalfa fields and in parts of this country its presence has occasioned general alarm. Infected plants are brown and swollen at the base, the stems being brittle and easily broken off. Spring is the best time to look for this pest.

Eelworms are spread by irrigation, infested hay, implements, wind and birds. Infected fields should be plowed up and planted to other crops for three years, say department scientists.

Chickens Eat Devil Grass

KNOWING that chickens are fond of Bermuda grass, a Southern California orchardist who keeps hens, has constructed a moveable fence with which he confines the poultry to a small area at a time.

He believes the hens will keep the grass cut down to the surface of the ground so that the roots eventually will die and the pest will be eliminated from his orchard.

He has been successful in destroying the grass in a rose bed by laying heavy building paper on the ground close about the base of the bushes, and weighting it down with stones to smother the plants.

Large areas of Bermuda, morning glories and other weed pests are said to have been controlled successfully by the smothering method.

Making Crystal Flowers

EDIBLE, crystallized flowers, used for cake trimming, are manufactured extensively in Europe and might be made by California farm women at home, furnishing a pleasant means of earning pin money or of adding to the family income.

Extreme patience and skillful fingers are necessary for this work. The blossoms first are dried, then placed in a sulphur chamber to remove impurities and destroy insect life. The flowers afterwards are painted all over with a sticky preparation, which enables them to retain their shape; then placed on trays in a crystallizing mixture and afterwards dried. Then they are stored in air-tight jars, where they keep indefinitely.

Some of the principal flowers used for this purpose are acacia, mimosa, orange, rose, lavender, peppermint, lilac, carnation and violet. Laboratory tests each year indicate additional flowers which may be crystallized successfully.

Additional information regarding this interesting industry may be obtained from the U. S. Department of Agriculture.

Buys High-Priced Guernseys

R. W. KROBITZSCH of San Francisco, owner of Troutmere Farm, La Honda, paid $2300 for Lima of Mountain View, at the recent Guernsey Sale held at Mabton, Washington. He also purchased Chicons Lover Bold for $1315, and nine other animals.

Mung Beans for Rice Land

SOY beans and mung beans were tried out on adobe rice lands in Butte County last summer, under the direction of the Extension Service. The beans made an excellent growth and are considered a promising crop, especially for summer green manuring.

Birds Pick Lodi Grapes

FOR the first time in the history of Lodi viticulture, birds the past season did considerable damage to the grape crop by picking the berries. The vineyard of W. E. Riggs, near Brack's Station, was seriously injured by feathered marauders. A small species of blackbird, similar to those which frequent rice fields, was the chief offender.

Test Yeast for Poultry

THE value of yeast as a poultry food is being tested at the Southern California Farm Bureau Egg Laying Contest. The experiment began October 1 and will continue one year.

Various other feeding tests are being conducted to ascertain the value and of sprouted barley and oats, semi-solid buttermilk, and soy bean meal, and the effect of barley on the size of eggs.

Results of Fertilizer Tests

FERTILIZER tests conducted during the past year by the Extension Service in Tulare County showed that ten tons of manure applied to an acre of peach trees returned a net profit per tree of only 15 cents, while 300 pounds of sulphate of ammonia, in two applications, paid 84 cents per tree.

Ten tons of manure and 300 pounds of ammonia paid 77 cents per tree, while half as much ammonia alone showed a profit of but 19 cents.

The soil was Foster sandy loam, and the peach varieties Tuscan, Peak and Sims cling.

Pushing the Pomegranate

THE Lindsay Chamber of Commerce recently distributed 10,000 printed slips, showing the many ways in which pomegranates can be used for food. These slips were distributed to grape packers, who put them in packages which were later shipped East. It is believed that this advertising will result in opening up many new markets for this little-known fruit.

Pomegranates are valuable for juice and jelly and for decoration purposes, both the fruit and juice being of a beautiful red color.

Bug Bites Bean Beetle

FREQUENT shipments of a tachinid parasite, which feeds upon immature Mexican bean beetles, are being made by a special agent of the U. S. Department of Agriculture from Mexico to the United States.

The bean beetle has spread over 250 square miles in Thomas County (Ga.), although a year ago it covered only 16 square miles. Infestations have been reported in Ohio, Tennessee and other States.

Practical field tests show that spraying with magnesium arsenate will control this troublesome insect pest.

Likes Tane-nashi Persimmon

GREAT things are predicted for the Tane-nashi persimmon by Fred W. Kelsey, Los Angeles County nurseryman, who believes the right strain for Southern California will be developed and that it may become even more popular than the Hachiya.

"The Tane-nashi," says Kelsey, "bears a mealy type of fruit, more pleasant to eat than the Hachiya; it stands up well and is a good shipper. Those who have eaten it with cream and sugar pronounce it delicious.

"Of course, there has been some criticism of this variety and it is possible we have not yet developed just the right type, but many who have made a study of the question predict increased planting of the Tane-nashi even in its present form."

Poultryman Drops Alfalfa

AN experienced poultryman operating on high priced land in Southern California, where the water problem is acute, has abandoned alfalfa in favor of kale, barley and other plants as a source of green feed for his fowls. For years he advocated alfalfa as the ideal green feed plant.

But the lucerne, he asserts, required increasing quantities of water as it grew larger, until he reached the point where he felt the irrigation expense no longer justified maintaining it.

He believes he will secure just as satisfactory results with the annual crops and that the expense and labor of planting will be justified by cash savings.

Kikuyu Grass—the New African Forage Plant

Discovery of Big Game Hunter Possesses Great Value for California Farmers and Stockmen, Asserts Forage Crop Specialist.

By DR. P. B. KENNEDY
Agricultural Experiment Station, University of California

SOUTH AFRICA seems to be a region that in many respects resembles California, as we are finding a number of grasses that have been successfully grown there also showing much promise in this State. Rhodes grass hails from South Africa and is valuable under irrigation on alkali lands of the Imperial Valley and to a lesser extent in the Sacramento and San Joaquin Valleys.

Teff, a native annual of Abyssinia, long has been known in that country as a cereal crop. It first came into prominence as a forage crop in South Africa when used as bedding material for stock. The farmer noticed that the animals preferred the Teff bedding to the hay in the manger and decided to look into the matter. His observations resulted in the introduction of Teff as a hay grass in South Africa. It may find a useful place here when we know more about its requirements.

Napier fodder, or Elephant grass, also comes from South Africa. The well-known Sudan grass comes from northern Africa and now we have the Kikuyu grass, a native of tropical Africa.

HUNTER FINDS NEW GRASS

The taming of a wild grass and bringing it into cultivation is always of interest and the origin of Kikuyu is particularly so, from the fact that it was due to the observations of a hunter that it was introduced. David Forbes of Athole, Transvaal, while out hunting on the shores of Lake Naivasha, Kikuyu, in 1911, was attracted by a grass to which wild game seemed particularly partial.

He brought home with him a single root in a milk tin and presented it to J. Burtt-Daly, a botanist and former Californian, who had it transplanted in one of the plots of the Botanical Station at Groenkloof, Pretoria, where it soon established itself. It multiplied so rapidly that in a few years it produced a considerable revenue for the station by the distribution of the roots, 2000 sacks being sent out in 1917.

Kikuyu is a perennial grass with runners both above and below the surface. It is essentially a summer plant, the top growth, but not the roots, being killed by frost. When once established it is quite tolerant of drought, but needs moisture to make a luxuriant growth. The plant establishes a sod with great rapidity and may reach a height of two to three feet or more.

LEAVES ARE SUCCULENT

The leafage is tender and succulent and of a brilliant green color. Unless one knows where and how to look for the flowers, one will not be likely to find them, as they are hidden by the dense growth of barren, leafy shoots. The flowering shoots are very short and located at the base; they are not fertile and, therefore, do not produce seed.

The fact that Kikuyu grass does not produce seed indicates that propagation must be by means of rooted runners or pieces of the roots. If these pieces are planted 3 by 3 feet on fairly good soil, the plant will cover the ground in a single season. Planting should be in late spring or early summer.

Kikuyu makes the most growth during the hot summer months and will thrive on light as well as heavy soils, either sandy or gravely loam, silt clay or adobe. The soil does not need to be rich, but it is evident that the largest growth will be obtained on rich land with abundant moisture. Under optimum conditions it may be cut or pastured several times during the season.

Kikuyu Grass is characterized by its dense mass of leafy growth. The leafage is tender and succulent.

SUCCEEDS ON SALINE LAND

Through the courtesy of J. W. Mills, county agent at Fairfield (Solano County), I am able to give the following information concerning the tolerance of Kikuyu grass when grown on saline peat land:

"I had very good success with the plants which I received from you last year, which were planted on the Alexander Ranch," writes Mills. "They were set in three-foot squares on March 28 and irrigated a few days later. About June they were irrigated again, for the last time.

"By the first of August the plants had formed a complete mat and the tops were from 18 inches to 2 feet high. The underground rootstocks were growing in land which was so salty there was an incrustation on the surface. I had stock turned on the grass shortly before the first freeze and the milk cows ate it ravenously, in preference to any other grass in the ten or twelve plots adjoining."

This tolerance of Kikuyu to saline conditions has not been reported from either South Africa or Australia, where the grass is well-known.

As to drouth tolerance, we may gather some idea from the following circumstances: *(Continued on Page 10)*

Planting the Forty-Foot Lot

Suggested Landscaping Arrangement, With Suitable Trees and Shrubs, for a Small Home

By RALPH D. CORNELL
Master in Landscape Architecture

THE landscape treatment of a small town lot is a difficult problem, due to the extreme limitations of space and to the additional fact that everything must be designed on the human scale; that is, structures must be high enough to permit of human use, while seats, walks and other features must be in scale with the human creatures who will frequent them.

RALPH D. CORNELL

The accompanying plan illustrates a good arrangement for a forty-foot lot on which there is a medium size house of the plan and size shown. The property belongs to a city or suburban worker who does not care for a vegetable garden or fruit trees, but prefers to enjoy the restfulness of a secluded yard, where there are flowers and green grass.

In adapting this plan to the needs of other home owners changes must, of course, be made. A garage would necessitate a driveway coming in at one side of the lot. Some owners might desire a vegetable garden or fruit trees, preferably at the rear of the lot. The sidewalk might be brought straight down from the front step, as is customary.

The general scheme of planting is indicated by alphabetical lettering on the plan, the explanation and description of which follows:

A—Cotoneaster panosa, one of the berried shrubs with a gray-green foliage, black stems and scarlet berries which appear in the fall. The shrub is upright with recurving branches that give it a graceful, pendant appearance.

B—Crataegus crenulata one of the hawthorn family, a thorny shrub with white flowers and scarlet berries. This is not so tall as the first named shrub, but blends well with it.

C—A single specimen of Pittosporum crassifolium, an upright shrub with gray-green foliage, black stems and deep red flowers. Being placed at the corner of the house, its height and upright character give a frame effect to the building.

D—A native California lilac, a plant of bright green stems and foliage that bears a profusion of blue flower plumes in the springtime. It is hardy and drought-resistent and prefers little water.

E—A single specimen of the California slippery elm. It bears large, yellow flowers in great profusion, but is killed by an excess of water.

F—Another planting of California lilac, Ceanothus arboreus. This form has a large leaf and a very deep blue flower. It also thrives on a minimum of water.

G—A hedge surrounding the rear of the lot, composed of Nepal Privit. This is a fine-leaved shrub with white flowers, hardy and amenable to formative pruning.

H—Two high trees, to give setting to the pergola and terminus to the lot. Preferably of an upright, spreading habit, such as the California sycamore.

I—A columnar and dwarf form of the English yew. It grows to 8 or 10 feet in height and in this position will give accent to the form of the garden. There are four plants.

K—Coprosma baueri, a dwarf foliage plant with bright, glossy-green leaves. It would be kept low about the foundation of the front porch.

L—A still lower shrub, Raphiolepis ovata, which has dark-green, leathery leaves, umbels of white flowers and purple berries. Its height and character fit well into the composition and harmonize with other planting.

M—A shrub or two of English laurel, which grows fairly tall and is valued for its excellent foliage of rich green.

N—A single shrub of Crataegus pyracantha lelandi, another of the hawthorn family that carries a wealth of orange berries in the fall. Its habit of growth is open and its branching angular.

O—Evergreen bush honeysuckle, which is excellent of foliage and quite compact in habit. It is low, therefore would not interfere with house windows.

P—Another Cotoneaster panosa, here grown against a wall between two windows.

Q—A Chinese hawthorn of rather low and spreading habit. It has a bright green leaf and white flowers that are followed by vermillion berries in the autumn.

R—California Christmas berries, well known native shrub of unusual merit, both for foliage and fruit. All the planting on this side of the house is made with the intention of screening a neighbor's garage and diveway next door.

S—A group of native lemonade berry which is hardy, robust and of good foliage. Flowers are pinkish-white in clusters.

T—A near relative to the foregoing plant, red mahogany. It has beautiful, large leaves of brilliant green, with flowers and fruit similar to the lemonade berry.

U—Another English laurel.

V—Pittosporum tobira, pruned to low size. This shrub bears fragrant white flowers and excellent deep green foliage. It is very hardy.

W—A group of Grataegus pyracantha lelandi.

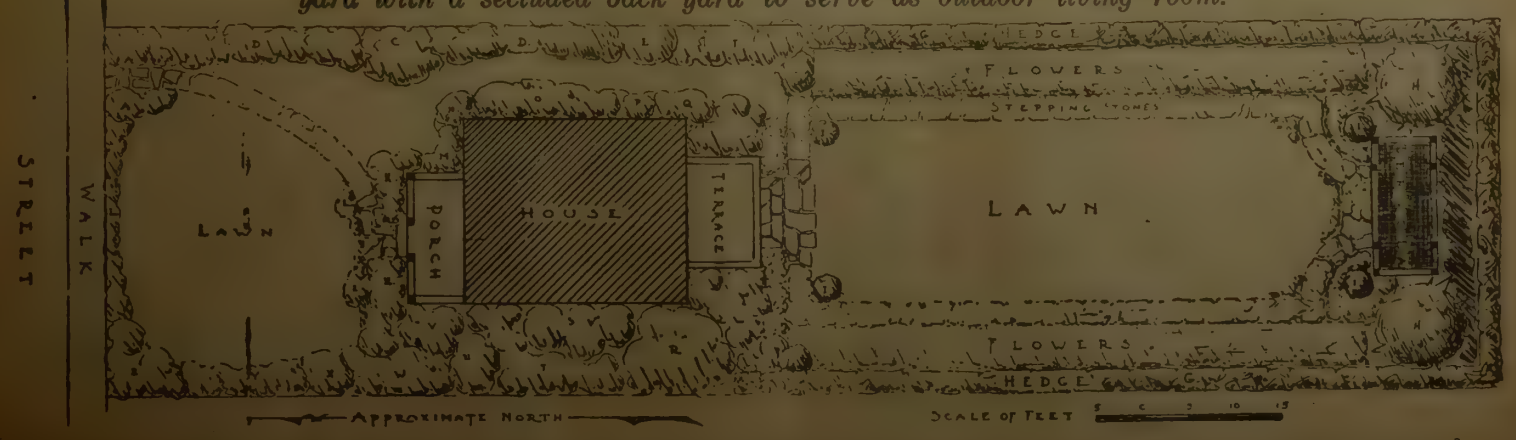
X—A repetition of "C," planted as a balance in accent.

Y—A group of Roman myrtle which is a shrub of fine texture, pungent odor, dark green foliage and white flowers. It grows to 5 or 6 feet in height and is thoroughly hardy.

Z—Three plants of the Australian tea, a large shrub with fine leaves, gray foliage and white flowers. In habit and appearance it will balance the planting of gray foliage on the opposite corner.

This planting plan has been made with thought for harmonies in foliage color, texture and mass, allowing sufficient contrast to avoid monotony and to create interest. The plants were also chosen for their hardiness.

Planting plan for a 40-foot lot with a small house or bungalow. Developed to give an informal front yard with a secluded back yard to serve as outdoor living room.



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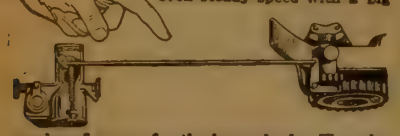

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Humboldt Revives Wool Trade

Ferndale Sheep Show Stimulates Interest in Wool Production—Valuable Educational Features

By O. H. BARNHILL

THE big sheep and wool show, housed in a great white tent, at the Ferndale (Humboldt County) Fair, in some respects resembled a summer camp meeting, where interest in spiritual work is revived. Instead, however, of exhorting visitors to save their souls, sheep enthusiasts discoursed upon the money to be made by turning cheap feed into high-priced wool and mutton.

Among the most active "wool missionaries," who preached the gospel of more sheep, were William Perrott, president of the Humboldt County Wool Growers' Association; J. W. Logan, farm adviser; Chester Rubel, livestock specialist of the Extension Service, and R. F. Miller, instructor in sheep husbandry, University of California, who judged the exhibit.

Professor Miller highly complimented the Humboldt wool growers upon their splendid exhibit, which he said was one of the best he had ever seen in California. There were 150 animals in the show pens. A vast quantity of wool, wool specimens and woolen goods were displayed by the Eureka Woolen Mills and the University of California.

The "big top" which sheltered the wool and sheep show was the most popular place at the Ferndale Fair.

SHOW PROVES POPULAR

At every county fair one department stands out above all others, attracting the greatest amount of attention and the most favorable comment. At the Ferndale Fair the sheep and wool show occupied this position, although dairying is the chief agricultural industry of that district.

Humboldt County possesses great natural advantages for dairying, but labor conditions are so unsatisfactory that many farmers are replacing cows with sheep. William Perrott of Loleta is one who has made this change, while John Hanson of Ferndale is making the turn.

One reason why sheep are returning to California ranges is the success of the coyote poisoning campaign being carried on by Government specialists, assisted by local stockmen. C. G. Poole, who is in charge of this work, and R. K. Stewart, his able assistant, were present at the Ferndale fair, handing out poison and coyote killing instructions. Angora goat breeders, as well as sheepmen, are much encouraged by the way their natural enemy is being exterminated.

Time was when stock judges did their work in Sphinx-like silence, mystifying many with the way premiums were placed. Professor Miller is a fine type of the modern stock judge, who conceals no secrets of his trade, but takes the onlookers into his confidence and gives reasons for every decision in the placing of prizes.

Miller went much further than this in his work at the Ferndale Fair, giving brief lectures on the various breeds of sheep and demonstrating each point with typical animals. In addition to this he separated 100 ewes in groups and classified them according to age, size and breeding. Rams were then selected to go with each lot of ewes, reasons being given for the sorting and mating.

Because there is a great variety of climate and grazing land in Humboldt County, ranging from the dry, hot mountains of the interior to the low, moist coast lands, special attention was given to the adaptation of the various breeds to certain types of farm and grazing lands. The mutton breeds are preferred for the bottom lands near the ocean, where spring lambs make remarkable growth, while the fine wool types are the favorites on the mountain ranges.

The University sheep specialist was accorded the closest of attention during this part of the program. Many questions were asked and at the conclusion of the work the appreciation of the woolgrowers was expressed by hand-clapping and hand-shaking. It is such fine educational features as this that point the way to making the modern county fair a vast improvement upon its old-time predecessor.

An intelligent understanding of the way his product is used helps the farmer in the growing and selling of his crops. With this principle in view, arrangements were made with F. E. McGee, manager of the Eureka Woolen Mills, to give a talk on wool grades and the processes of wool manufacture, illustrating his lecture with samples of wool and woolen cloth.

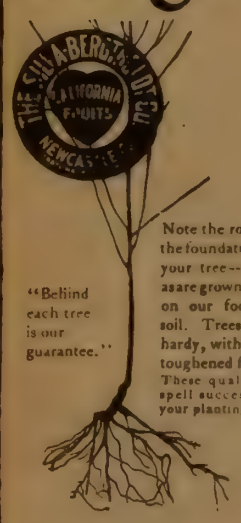
One important point brought out was that when a sheep is suffering from disease or lack of food, a weak place is made in the wool, seriously impairing the value of the fleece.

A demonstration in power sheep shearing, staged in front of the grandstand, was observed with interest by the spectators. J. S. Heston of Bridgeville clipped an animal in a minute and a half, his dexterous speed eliciting enthusiastic applause.

Sheep breeders from interior points sent a carload of ewes and rams to the Ferndale show, which was greatly improved in size and interest by this outside consignment.

Hampshires, Romneys and Romendales, the latter a cross between Rambouillet and Romney—were sent by A. T. Spencer, Cranmore; Romneys, Eugene C. Tribble, Lodi; Rambouillets, Frank Bullard, G. N. Merrit and Son and Carl Lindheimer, Woodland; English and Border Leicesters, Corriedales and Shropshires, Corriedale Sheep Company, Hollister; Shropshires, C. K. Swingle, Davis; American Merinos, A. A. McInnes, Red Bluff.

Bergtholdt Trees



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A MYSTERIOUS AILMENT.

"What do you suppose is the matter with that four-year-old ewe?" I asked John one day recently when we were looking over the sheep.

W. S. GUILFORD

"I can't figure it out," he said. "She has been sort of ailing for some time, and there is no reason why she should be. She has had plenty of feed, lots of salt and good water. Dogs and coyotes haven't been worrying the sheep lately. Anyway she should be as good as the rest and they are all right."

"Well, let's take her in, anyway and give her a little alfalfa and grain. That may be just the kind of a change she needs to put new life into her."

But the change didn't seem to do her much good. She did not seem to care whether she got up to eat or not and each day her ears dropped a little lower.

SHEEP'S EAR, HEALTH BAROMETER.

A sheep's ear is a pretty fair barometer for indicating how it feels. An active, alert ear denotes health. The lower the ear drops the worse off the animal is.

So with a pig's tail. A tightly curled tail is an indicaton of health and contentment, while a straight, drooping tail means that something is wrong.

After the sick ewe had been in the pen a few days we had occasion to call a veterinarian to see a cow.

After the job on the cow was finished I said, "Take a look at this ewe, Doc, and tell us what is the matter with her."

DEATH AND A POST-MORTEM.

When we went to look at the ewe she was dead. Apparently she had died within the hour, for she had been alive at feeding time three hours before and was still warm.

"Well, here's a fine chance for a post-mortem," said John. So we started in at the head and went all through.

The lungs were all right—no sign of tuberculosis. "But then sheep hardly ever have lung trouble in this country," commented the doctor.

The heart was plenty large, but nothing was diseased about it. The spleen was normal, no sign of anthrox, indicated by a "blackberry jam" condition.

Kidneys were all right. The liver was rather hard, but hardly in bad enough condition to cause death.

There was plenty of feed in the stomach and it was in good condition.

TROUBLE FINALLY LOCATED.

And then we came to the trouble. At the outlet from the first stomach was a kidney-shaped substance, black in color, about five inches long, an inch or so in diameter, not quite round, but sort of crescent shaped.

There was inflammation in the tissues surrounding this obstruction. The obstruction itself was made up of hairs and dirt, a little small gravel, bits of woody fiber, like foxtail and other similar things.

It was moist and firm, but not hard like a rock, and it stopped almost entirely this passage in the alimentary canal.

BUT NO REMEDY FOUND.

How long this had been in the stomach there was no way of telling. It had grown gradually by the addition of small bits at a time.

"Well now, Doc, suppose we had known this thing was there, what could have been done?"

"Nothing but try to loosen it with a big dose of epsom salts or castor oil, which probably would have done no good. But there was no way of telling that this was what ailed this sheep," he concluded.

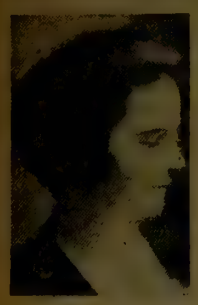
Anyway, one mysterious death is accounted for. Some animals seem naturally inclined to eat dirt, no matter what their ration; and some of these seem to pass it off. Apparently, however, this ewe was foreordained to death, because of her depraved appetite.

Your Garden of Flowers

By HELEN TEMPLE

THE BACK YARD GARDEN.

"What shall we plant in the back yard? Shall the yard be planted formally? Do you think we are doing wrong to use our back yard for flowers instead of vegetables?" So come the questions.



HELEN TEMPLE

I can scarcely think of planning a back yard without looking back a few years and recalling the ideal place we had planned. We expected to have a wonderful display of roses, a riot of colorful annuals and an informal border of mixed shrubbery, with a pond and a bird-bath and a pergola at the edge of a rolling lawn. It certainly was to be a wonderful garden.

But I must hasten to add that we did not attain our ideal. We planted a homely plot of lippia grass, a row of old fashioned cannas and some hardy shrubs around the fence and then prayed fervently that they would survive the onslaughts of our children, our neighbor's children, our dog and our neighbor's dog. And, strange as it may seem, we scarcely ever think now of the ideal back yard that we had planned; we are humbly grateful to the inhabitants of our back yard for allowing any of the plants to grow!

"Shall a back yard be planted formally?" No, indeed. Plant your lawn in lines to follow an irregular line of shrubbery, if you are planting lawns and shrubbery. If your yard is small, however, plant only one or two tall shrubs or small trees and a group of low-growing shrubs in the background, and have the flowers near the kitchen windows. Plant the tall flowers next to the shrubbery and against the house, and sow the lawn where the clothesline or dryer will be.

A collection of things one can not plant "out front" and selection of plants dictated by fancy is quite the thing in the back yard gardens of today. While we realize that we must be conventional in our front yards with their plantings of square and round lawns and precise shrubbery, we certainly should be privileged to do as we please around in back.

And last but not least, a flower garden never is a waste of space in the back yard. A riot of colorful annuals and perennials certainly is more inspiring than rows of pudgy cabbages and wooly tomatoes. If we feel that we must plant a vegetable garden in the back yard we should trim it up with a row of flowers here and there, and use a background of shrubs as a permanent outline.

START ROSES AT THIS TIME.

While the majority of us start our roses from cuttings, a few like to try grafting and budding. At any rate, this is an excellent time of the year to start cuttings of roses, which must be taken from well-ripened wood.

Make the cuttings six or seven inches long and strip the foliage. Do not bruise the cutting and be sure to make a clean cut. Ragged edges soon decay. Bury the cuttings about four fifths of their length in the soil. Use sandy loam in the cutting boxes, which must be kept moist. The cuttings usually produce an average of 80 per cent small plants at the end of three months, when they may be set out if the weather is favorable. There is a certain joy in growing one's own roses, and one should not forfeit that joy unless quicker effects are desired. In this case we should use two or three-year-old plants, which may be purchased from your nursery.

Do not send East for your rose plants, but get them from our California growers. Experience has taught me that our growers have the finest as well as the cheapest roses. Advertisers often lure us into the Eastern houses for roses. Perhaps, they guarantee to send us ten fine, live roses for one dollar. But when our roses arrive from their journey we find ten tiny rose plants; so tiny, in fact, that we are compelled to plant them in pots or a flat for several months before setting them out.

We gain nothing from our "guaranteed dollar," so we may just as well start the roses from cuttings. Immediate effects, however, are always obtainable from the large rose plants sold by any of our reliable local advertisers.

DAHLIAS AT THIS SEASON.

Dahlias should be cut back within four inches of the soil at this time of the year, and as soon as the stalks become tough and brown, the clumps should be lifted and stored. Leave the stumps and the earth attached to the clumps of bulbs and store them in a dry place. Being our best-natured bulb, the dahlia doesn't mind a bit if it is thrown into a barley sack and swung from the rafters in the woodshed until spring. Protect dahlia tubers from dampness and mice.

OXALIS HARBORS SLUGS.

On the trail of an elusive slug that had played havoc in the pansy bed, we found his hiding place under a clump of oxalis. It was then that we remembered the advice of a flower grower with years of experience. She suggested the planting of oxalis borders and clumps throughout the garden as hiding places for the slugs and snails, where securely hidden under the thick clumps, they can be discovered and destroyed.

I have used a variety of remedies for the discouragement of snails and slugs, but there is just one effective method to rid the garden of them. That method calls for direct action with the "beasts" themselves, which may be with a contact solution or the sprinkling of lime.

SOUTHERN CALIFORNIA GARDEN WORK.

In the semi-tropical regions where we have little or no frosts, the sowing of seeds, although slightly limited, goes on through the list of all hardy annuals and perennials, as well as the transplanting of seedlings of all kinds.

Sweet peas, pansies, shasta daisies, painted daisies, columbine, digitalis, marigolds, delphiniums, violets, corn flowers, snapdragon and stocks are going into our gardens in one form and another. We have used seedlings when it was possible to get them, but have resorted to seed sowing in some cases.

While we realize that our little plants will grow rather slowly for a time, we also realize that early spring will bring forth blossoms of all kinds. And I must not forget to mention to our Southern California readers that we must not fail to plant a row of watsonia bulbs with the rest of our bulbs. I have been surprised to learn of many flower lovers who have had no knowledge whatever of the beautiful watsonias. They begin blooming in February and are as lasting as their cousins, the gladioli. Set them out this month.

THE INTERIOR THIS MONTH.

Planting in the valleys is rather limited at this time of the year, especially where the frosts are just around the corner. But the garden still offers much opportunity for activity even here. Old flower stalks must be discarded. Perennials should be cut back and the leaves and rakings spaded under. Cut out all the old dead wood among the shrubs and prepare the garden in general for a winter of rains. Bulb planting is not so limited as the sowing of seeds in the interior valleys.

Many bulbs may be set out now. Lilies, hyacinths, narcissi, tulips, crocus, iris, scillas, snowdrops, freesias, ixias and chionodoxa are among the bulbous plants.

Then, too, we have a few hardy perennials that should go into the ground this month for spring blooming in all sections, especially in the interior. Plants of yucca, hibiscus and rudbeckia (or golden glow) may go into the ground this month.

The hemercallis is well worth cultivating in the hardy gardens, too. While it is not a bulb, it has fleshy root clumps which make it easily grown. They are propagated by root division which may be done at this time of the year in all sections.

Another old-time favorite is found in the Dicentra Spectablis or Bleeding Heart, which should be planted out as soon as possible now.

THE USE OF CYPRESS.

Cypress as a windbreak is planted extensively throughout Southern California, especially along the coast region, where the west winds are strong. The Monterey Cypress, which is a native of California, is used so generally that we have almost forgotten to remember their beauty, and how necessary they are in our landscape.

It takes a great many years for the cypress to reach a height of seventy-five feet; therefore, we can feel safe in planting a few of them even on a small place. For a windbreak, where inter-setting is impossible, plant them about six feet apart. The little trees soon will "fill in the space." If the cypress are planted too close together they die out in a few years for lack of root space.

The Italian Cypress has become one of our most popular trees for landscape work. Owing to their compact, narrow growth, they lend dignity to any garden in which they are planted. They are especially useful as sentinels near the front door, with perhaps another pair toward the front of the lawn near the boundaries.

While cypress may be grown from seed at home, it is much more advisable to procure small trees from your nurseryman. If you wish to experiment with seed, however, prepare boxes as you prepare them for any seed. Place the boxes in a protected place, and keep them moist. When the little plants are two or three inches high transplant to flats or small pots. When we purchase the flats of shrubs and little trees, they are usually 10 or 12 inches high. After they have reached this size, they make rapid headway when planted out, so for best results we must wait patiently for our little seedlings to reach the planting out stage.

Corn Belt Hens: 58 Eggs

THE average Corn Belt hen lays only 58 eggs per year, according to W. H. Lapp of the Iowa State College. The college hens lay only 119 eggs. Many Pacific Coast poultrymen estimate that a hen must lay at least 125 eggs per year to be worth keeping.

"There are over 30,000,000 hens in Iowa alone," writes Prof. Lapp, "with similar numbers in Illinois and Missouri. If the average production in these States was 150 eggs per hen, our market would be strained to the limit.

"Poultry is not the main enterprise on most Corn Belt farms. The consideration accorded it, therefore, is not the same as where poultry is a more important source of revenue."

SHIPS TB BULLS—FINED

A Corning stockman recently was fined $100 for shipping 38 bulls, of which 20 were tubercular, into Modoc County, a tubercular-free area.

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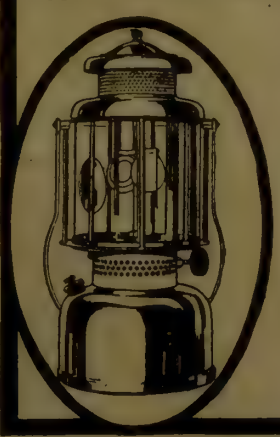

—Use it for fruit picking and packing.
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Recommonds Thermometer for Sterilizer

By **A. W. FARRALL**

Division of Agricultural Engineering, University of California.

STERILIZATION today plays a very important part in the production of clean and wholesome dairy products. It has been found that the heating and holding of dairy utensils, such as milk cans, coolers, milking machine units, strainer cloths, etc., at a temperature of 212 degrees or more for twenty minutes will very effectually reduce the bacteria count and kill disease germs.

The California law, in fact, requires the sterilization of dairy utensils. To meet this demand there have appeared upon the market several types of sterilizers. Practically all of them will do satisfactory work if properly handled.

There are, however, certain points to be considered in the operation of a sterilizer if efficient results are to be obtained. Oftentimes, in case of poor sterilization, the difficulty may be traced to the fact that the sterilizing temperature has not been maintained for the required length of time.

LIKE STEAM BOILER

Sometimes; due to a poorly operating oil burner, a longer time than usual is taken for heating up. The collection of soot upon the bottom of the sterilizer may also cause slow heating due to the poor heat-transmitting qualities of the layer of soot, which acts just the same in the sterilizer as it does in the flues of a steam boiler.

The engineer cleans out the flues of his boiler regularly. The same should be done with the sterilizer. The engineer also has a gauge to tell him when his steam pressure is right; in the same way, a dairyman should have a thermometer to tell him when his temperature is right.

In the type of sterilizer which consists of a steam chamber into which steam is furnished from a boiler, it must not be forgotten that it takes considerable time for the sterilizer and contents to heat up after the steam is turned on, before sterilizing actually takes place. Therefore, the time of sterilization must not be counted from the moment that steam is turned on, but from the time that the contents actually attain sterilizing temperature.

TIME ELEMENT IMPORTANT

From a number of tests conducted by the University of California upon the latter type of sterilizer, results showed that when steam was supplied at twenty pounds per square inch pressure to a 4x4x5-foot sterilizer through a three-fourths inch pipe, practically fifteen minutes was required for the temperature of the sterilizer to reach 212 degrees F. This means that utensils held for twenty minutes after the steam was turned on would have been sterilized for only about five minutes, or fifteen minutes "short."

A thermometer placed in a hole in the top of the sterilizer so that its sensitive bulb extends through into the inside will show when the proper temperature is reached. It should be used occasionally to check up on what is taking place inside the sterilizer.

A good chemical thermometer costing about $1.50 and reading as high as 220 or 250 degrees F., depending upon the temperature attained in the sterilizer, is the proper instrument to use. It may be attached by pushing it half way through a large cork which will prevent its dropping entirely through the hole in the top of the sterilizer.

Another point of operation is that of opening up the device after each sterilization and if possible removing the equipment. If this is done, the moisture will be evaporated from the hot surface of the utensils, leaving a dry surface which will remain sterile and at the same time will not rust.

Pruning Deciduous Trees—Weldon

(Continued from Page 3)

and five will make a much larger growth than similar trees when topped. A trial will convince the most skeptical.

STRONGER TREES RESULT

It is also true that long pruning will result in stronger trees; trees that are capable of holding up heavy loads of fruit without propping. This fact can be appreciated by anyone who has observed the ease with which splitting takes place when horizontal cuts are made. It is possible to split large branches through the center by the application of a little weight on a lateral just below where a leader has been removed.

Mechanical weakness is characteristic of trees that have been stubbed and there is certainly much to be said in favor of long pruning when this point is considered. Of course long pruning which results in production of fruit wood at the tips of the branches only, may result in broken trees. This is not due, however, to any serious mechanical weakness but rather to faulty distribution of the load. This condition may be found in many long pruned orchards where an improper system has been used.

Length of life is another consideration of pruning. Improper cuts may interfere seriously with the longevity of the tree and great care should be exercised to have all cuts made in such a way that they will heal readily with the least possible amount of wood rot. Infection of serious wood rot fungi may follow careless pruning, and nothing will shorten the life of the tree more surely than some of the forms of wood rot.

FEW CUTS REQUIRED

Long pruning is a thinning-out system of pruning which can be accomplished with few if any cuts that will not heal readily. The short system of heading in, regardless of where the cut is made, and of making horizontal cuts in the removal of main upright branches, has resulted in the decline of many of our orchard trees and short life is without question a partner of short pruning.

Already the value of long pruning in increasing production has been emphasized. In a recent short article for ORCHARD and FARM, the writer told of an experiment where fifty-four long-pruned Lovell peach trees and fifty-four short pruned Lovell peach trees side by side produced respectively during the season of 1923 thirty-eight boxes and six and one half boxes.

Quality, another very important consideration, is materially affected by pruning. The writer in five years of experimental work, and in many more years of general observations, has not been able to note a great difference in quality of fruit from long and short-pruned trees.

Of course size of fruit is greater when pruning is severe than when it is light, and the short system frequently results in larger fruit than the long system. But as previously stated, there must be sufficient thinning of long pruned trees to keep the crop down to a sane plane of production and when this is done quality will not be impaired because of long pruning.

Considering the points which have been touched upon in this article there is certainly much to be said in favor of the long system of pruning as it has been demonstrated by Weldon and other men from the University of California. The writer is so much in favor of the system and so strongly opposed to severe heading in of trees that all pruning work in orchards of the Chaffey Jr. College will consist of long pruning except where a few short pruned trees annually will be cut back for purposes of comparison.

So far nothing has developed in regard to long pruning, which would cause one to be at all alarmed regarding its effect upon trees or fruit.

Soil Supports Cities

"YOU people of the cities should understand the farmer's problems and should be interested in his success, for a farmer whose income does not exceed his outgo is not an asset to the community," declared Sam H. Greene of the California Dairy Council in a recent speech before the Rotarians of Santa Rosa.

"You are largely dependent upon him, for while the merchant gives a distinct service in handling farm commodities, and thereby adds to their value, he cannot renew those commodities. That part of it is wholly up to the farmer.

"The farmer exercises 45 per cent of the purchasing power of the nation, and in this community the figure will approach nearer 80 per cent.

"He is a vital factor to you people of Santa Rosa; therefore, if your farm adviser asks you for any assistance at any time, for your own selfish interest you should do everything you can to co-operate with him."

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Power Pumps Draining Delhi

Electric Pumping Plants Lower Water Table at State Land Colony—Colonists Pleased With Results Obtained

STATE land colonists at Delhi (Merced County) are solving their drainage problem with the use of electrically operated deep well pumps. Owing to the flat character of the land, this method has been found more practical than ditch drainage and has the further advantage of conserving the water supply, which is apt to run short at certain seasons.

A pond which had been formed by irrigation drainage water was drained by 23 days of continuous pumping. Twenty acres of land, most of which was submerged, are being seeded to alfalfa. Four farms, having a combined area of 145 acres, have been reclaimed from the swamp surrounding the pond and will be offered for sale.

Drainage work began three years ago, when five wells were put down for the purpose of raising water for late irrigation, when the ditch supply was inadequate. The effect on wet spots of the pumping was so noticeable that eight test wells were put down by the University of California, and Prof. Walter Wier placed in charge of the pumping operations.

There is no danger of bringing alkali to the surface, because the water used for irrigation contains only negligible quantities of injurious mineral salts and the pumps draw water from subterranean sands nearly 200 feet below the surface.

Nine pumps belonging to the State irrigation system and one near the edge of the colony, put down by the Turlock district, lowered the water level in the soil four feet, after one month's continuous pumping. One 30 horse power pump throws 1200 gallons a minute—five acre feet per day. The well contains 46 feet of 16-inch casing and 128 feet of 12-inch pipe. The cost of the plant, including pump house, was $3000.

Cheap electric power is obtained from the Don Pedro dam, which is owned by the Turlock irrigation district.

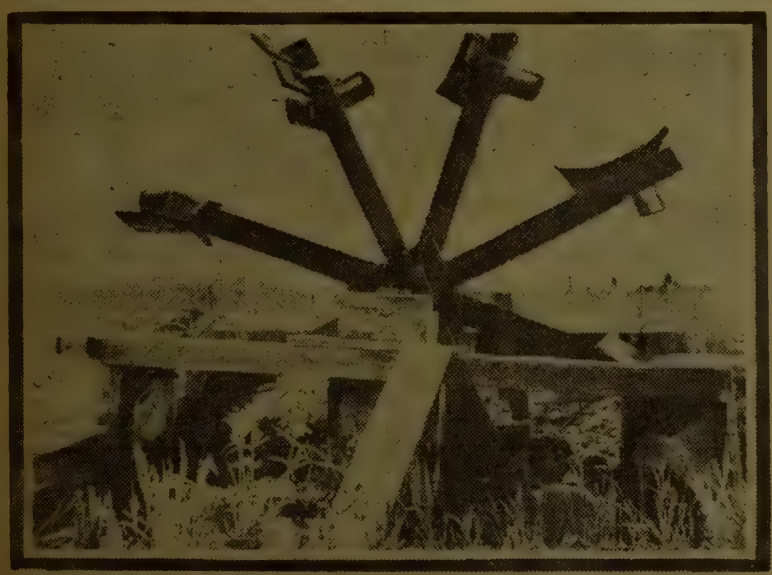
Ernest Fortier, chief engineer in charge of the work, estimates that if the nine colony pumps were run 10 months out of 12 the general water table would be lowered three or four feet and permanently maintained five feet below the surface. On one orchard last year where the water in low spots came within six inches of the surface, the water table this year was forced down to 10 feet.

The effects of the pumping are apparent 1000 feet from the wells. This distance is expected to increase, as the pumping continues. Crops of corn were this year grown on land that was under water last year.

Stream Furnishes Both Power and Water

A SYSTEM of water wheels, controlled by a stream which flows through the place in the form of a horseshoe, supplies water for domestic uses and for a great deal of the irrigating done on the Goul Ranch, on the Porterville-Springville highway, Tulare County.

These wheels are forty years old and are numbered among the Springville landmarks. Although Time has called for certain repairs and has left its traces on these objects of picturesque interest, the old wheels are still turning with efficiency.



Unique water wheel which has seen service for forty years on Tulare County Ranch

Small tin cans, of about one-quart capacity, are fastened on the arms of the water wheel in such a way that a small amount of water is dipped up at each revolution and emptied into a flume which conveys the water to the lawn or wherever needed.

One wheel is used to fill the tank of the cooler, each revolution adding a few drops to the container, the supply coming steadily and maintaining an even amount of water in the tank.

Three kinds of soil on the Goul Ranch provide for a wide range of products, which are grown successfully. The adobe tracts display flourishing citrus groves, the fruit from which is shipped each season to Eastern markets. Stretches of red land have been set to grapes, and several acres of loam soil produce numerous varieties of deciduous fruits and nuts.

FIGS ARE PROFITABLE

Twenty-six fig trees, forty years old, with their gnarled limbs and immense leaves, planted along the horseshoe stream, add a picturesque touch and call for rather an unusual method of harvesting the fruit. The Gouls do not gather the crop but allow it to remain on the trees until ready to fall, thereby preserving a high sugar content. Burlap screens are stretched under the trees, which serve the double purpose of preventing the fruit from falling in to the stream, and of serving as drying racks for the figs.

An experiment that has formed a special feature of development on this ranch, at times, is the raising of calla lilies and chrysanthemums for spring shipment to Eastern markets, as flowers produced in this environment reach most Eastern points in time for the Eastern trade.

It is interesting to know that every foot of soil on this place is utilized, blackberry vines being planted around the rocky portions where cultivation is impracticable.

The location is unique. The house is built over a portion of the stream at the middle of the horseshoe, which is bordered on one side by a terrace of flowers, of commercial importance. Along its banks are swinging seats and attractive rustic features. The large water wheels, continually turning in the limpid stream, create an atmosphere of restful coolness during hot afternoons, and like the hedge of roses surrounding the citrus groves, form a pleasing combination of utility and decoration.—S. W. WYLDE.

Lake County Pears

(Continued from Page 2)

available and it will pay to apply it to the soil.

Clear Lake, 20 miles long and eight miles across at the widest place, furnishes much more water than the limited amount of nearby farm land ever could need. A very small quantity is pumped onto adjacent orchards and considerable is used by Napa County farmers.

Dry orchardists point to profitable crops as proof positive that artificial watering is unnecessary. They refer, moreover, to the fact that four pounds of dry land pears produce one pound of dried fruit, whereas five pounds of irrigated fruit is necessary to make this quantity. High sugar content, unexcelled flavor and keeping quality, for all of which Lake County pears are famous, would be impaired seriously, it is claimed, by irrigation.

Having grown good crops of fine pears, where are Lake fruitmen to sell them? A high range of mountains intervenes between Lakeport and the nearest railroad shipping point, Hopland, 20 miles distant. That seemed to preclude disposing of fruit to its fresh state. It was, therefore, evaporated, thus saving one-fourth the freight and all the boxes and packing.

The California Packing Corporation established at Kelseyville, center of the fruit district, the largest pear drying yards in the world, where a portion of the famous El Monte goods is produced. At the yards, which extend for a third of a mile, with sulphuring and cutting sheds on either side, 200 women and girls and 75 men are employed during the rush season. At this and two smaller yards, 6000 tons of pears were dried last year.

FRUIT BRINGS GOOD PRICES

Ante-bellum pear prices were from $30 to $40 a ton, but rose to $75 during recent boom times. The price last year was $60, supposedly cash, but final settlements were from $50 to $55. An unusually heavy crop was harvested, amounting to 10,000 tons.

The crop this year was only about one-third normal, due mainly to overbearing last year. With low yields came low prices, driers offering but $30—half of the 1922 figure. The outlook was not encouraging.

"The driers thought they had us over a barrel," related a prominent grower. "They believed we would be forced to sell to them at their price. Our County and State Pear Growers' Associations never have been in a position to market our crop, but we have been able to obtain much valuable information as to best methods of producing and disposing of the fruit.

"The road to Hopland has been improved until it is almost as good as a paved highway, affording us a practical outlet to the railroad by means of auto trucks. The cost of this haul is considerable, $6.50 a ton, but we figured it would be more than offset by the better prices our fruit would bring in a fresh state.

TRIAL SHIPMENTS SUCCESSFUL

"Enough Lake County boxed Bartletts had been shipped out in former years to convince us that the New York market would take all our fruit at good prices. Accordingly, we packed and shipped over 200 carloads this year. Some consignments netted us over $90 a ton and all of them averaged about $53—nearly double driers' prices."

This unexpected market movement has left the dryers with an extremely limited supply of fancy Lake County pears, which is expected to result in much better bids for the 1924 crop.

Satisfactory fresh shipment on a large scale has caused several big fruit companies to establish extensive packing plants in Lake County. It is not expected, however, that drying will be discontinued entirely. The transportation of a 10,000-ton crop by auto truck over a high grade of mountains at present is impractical. The tonnage, moreover, is expected greatly to increase, on account of the large number of young orchards coming into bearing.

Furthermore, the advantage of the cash local dryers' market over consigning to commission merchants is not overlooked. On the other hand the amount of fruit which can be dried and sold at profitable prices also is limited. Dealers still have on hand a portion of the 1922 crop. Owing to the isolated position of Lake County the available labor supply during the drying season is not very extensive. The quantity of fruit dried last year is believed to be the maximum that can be handled under present conditions.

The consideration of these cold, clammy facts doubtless will cure any extreme case of pear fever and prevent the inexperienced and undercapitalized from rushing into excessive plantings where successful growers fear to tread. "But come on in—the water's fine!" is their encouraging invitation to the interested outsider.

New Chayote Bulletin

THE chayote, a vegetable well known in Southern California, has engaged the attention of the U. S. Department of Agriculture, which considered it of sufficient importance to publish a bulletin about its culture and uses. (Write for Circular 286, Office of Information, U. S. Department of Agriculture, Washington, D. C.)

The chayote vine is prolific, and a very rapid grower. A single vine, properly grown, will yield sufficient "fruits" for a family, and in addition will cover an unsightly fence or outbuilding in a single season.

It flowers profusely, makes good bee "pasture" and even furnishes forage for livestock, the foliage being relished by farm animals.

In Mexico the underground tubers are used in much the same manner as we use potatoes. The fruit produced on the vine somewhat resembles the cucumber in appearance and the summer squash in flavor.

Beware of High Prices

THE fruit industry must learn to shun periods of phenomenal prices even though the temptation be hard to resist," declares Henry Hartman of Oregon Agricultural College.

"Inflated prices always bring the speculator into the field, the person who knows but little about the fruit game but who is seeking high and quick returns from small investments of time and capital. Periods of exceptionally high prices always come to a sudden halt, with terrible after effects."

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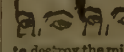
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Late Cherry Pollination Discoveries

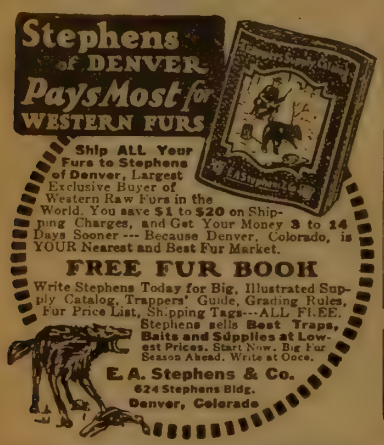
THE Royal Ann, Bing and Lambert—three leading varieties of sweet cherries are all self-sterile and intersterile. The only way to obtain these kinds of fruit is to fertilize the blossoms with pollen from certain other varieties. Black Republican, Long-stemmed Waterhouse and Norma are recommended for this purpose.

Individual trees vary in their ability to fertilize other varietes; hence only buds and cions from trees of known pollinating value should be used in grafting and budding.

Cherry pollen is not carried to any appreciable extent by the wind, therefore bees and wild insects must be depended upon to carry on this important work.

The foregoing facts were proved by large-scale field tests in cherry pollination carried on during the past two years in Wasco County by the Oregon Agricultural College. As a result of this experimentation, cherry growers in The Dalles district will conduct their orcharding operations in accordance with these discoveries.

It is hoped by proper pollination greatly to increase the cherry crop of Wasco County, which now amounts to 2000 tons. The fruit usually nets growers eight to ten cents a pound.



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Crop Fits Machines

THE usual way, when some farm operation must be performed more rapidly or effectively, is to demand of the implement manufacturer that he build a machine to fit the crop. Grain sorghum, however, presented well-nigh insurmountable problems. With some heads erect and some on long "goose necks," some thirty inches above ground and some six feet, a satisfactory job of harvesting was nearly impossible.

The plant breeding experts at the University Farm, Davis, have come to the rescue and produced a grain sorghum to fit the machine. White Yolo has a very erect and even habit of heading. In addition it is fairly drought resistant and a fair yielder. An effort is being made to develop a still higher-yielding strain having the same habits of growth. In the five years that this grain sorghum has been grown no tendency to revert to irregular growth has been observed.

A number of other crops present good possibilities for improvement with a view to ease and efficiency of harvesting. Nuts and fruits as well as grains can be improved. Uniform ripening time for all the crop on a tree and uniform strength of attachment to the twig especially in such crops as almonds, walnuts and, in some cases, possibly prunes and figs, would effect a great saving in labor as well as in quality and quantity of marketable crop.—A. H. HOFFMAN, Agricultural Engineering Division, University of California.

Farms Need Equipment

"FOUR-FIFTHS of the present farms, properly equipped and efficiently managed, would raise the present crops with certainty to the consumers and remuneration to the farmers," asserts the editor of the Saturday Evening Post. "It does our agriculture no good to have ineffective farmers raising produce for ineffective foreign buyers at unremunerative prices, farmers forced by high-cost production literally to pray for crop failure abroad.

"The farm needs implements, machinery, gas engines, telephones, electric motors, buildings, roofs, fences, paint, tile, culverts, harness, labor-saving equipment. We do not need more farms, but better farms. Fewer farms, but more efficient units.

"As rapidly as the buying power of farm produce improves, we may expect to witness outlays for restoration of the farm plant."

ELECTRICITY FOR PLANTS

The practicability of using static electricity in greenhouses to stimulate plant growth has been demonstrated at Rothamsted, Europe, according to H. J. Baade, Napa County, farm adviser.

Kikuyu Grass for California

(Continued from Page 5)

A Typical Surface Runner from Kikuyu Grass Plant.

Prof. I. B. Pole-Evans, Chief of the Division of Botany, Union of South Africa, forwarded me a small quantity of Kikuyu grass on January 6, 1920, in a small tin tube. When the container was opened in Berkeley February 17, new roots had formed a matted growth and leafy shoots several inches long were present. These were planted in the greenhouse and grew readily.

About the same time we were fortunate enough to receive a considerable quantity of the roots from the United States Department of Agriculture which imported Kikuyu in 1915 under the misnomer Pennisetum longistylum. We find it equal in drouth tolerance to any of the introduced perennial grasses.

Our own experience, as well as that of others in Australia and South Africa, proves Kikuyu grass to be both palatable and nutritious. Cattle graze on it with avidity and, as it forms a soft turf, like to lie down on it.

The accompanying comparative analyses indicate that it has a high nutritive value.

It was made from material grown in the grass garden at Berkeley. The table shows a remarkably high content of protein, equaling alfalfa in this respect. However, we find similar results from an analysis by the Department of Agriculture of the Union of South Africa, so that our analysis may be considered reliable.

ROOTS ARE PERENNIAL

The underground rootstocks extend into the soil about six inches and spread laterally, so they must be exposed to drouth to kill them. We find that they soon die when exposed. As the plan does not produce seed there should be no danger of any serious spreading.

Kikuyu grass should find a place on many pasture lands in the State now producing a poor quality of forage, as in the flooded lands of the San Joaquin Valley, on the islands of the Sacramento River, saline, or sandy lands along the coast, or on lands subject to erosion. It should feel at home in the Mojave Desert, where sufficient moisture is available to establish it.

We would not recommend planting it on lands capable of growing good alfalfa, cotton, fruit, or high priced crops. If cut frequently it makes a coarse lawn of a very pleasing color. It would, however, turn brown in winter. Trampling and close grazing do not seem to injure it.

It is essentially a pasture grass and should not be considered for hay or as a soiling crop. We would like to see it tried out as green feed for poultry during the summer months.

(Analyses on Water-free Basis)	Protein	Fat	Fiber	Starch, Sugar, Etc.	Ash
Kikuyu Grass...	17.94	1.74	46.47	26.53	7.32
Avg. of 135 grasses of all kinds	9.21	3.14	25.71	53.97	7.97
Timothy	7.07	3.15	33.42	50.26	6.11
Alfalfa	17.79	3.18	25.13	42.69	9.53

Elwood Mead En Route to Holy Land

MORE news from our great Californian, Dr. Elwood Mead, called afield to advise other countries as to how to carry out their gigantic land settlement projects.

Having completed his mission to Australia, as adviser to the Cabinet of New South Wales on a $75,000,000 settlement project, Dr. Mead is now on his way to Palestine to consult with Zionist executives on a long contemplated colonization project there for the Jewish people.

With news of Dr. Mead comes the picture which is reproduced herewith. It was taken in Sydney, Australia, a few weeks ago and is of the three men who are big in the settlement projects of New South Wales.

George C. Kreutzer, who is acting in California during the absence of Dr. Mead and is in direct charge of the California Land Settlement Colony at Durham (Butte County), tells me that a good title for W. E. Wearne, minister of lands in New South Wales, might be:

"The man who settled 8000 soldiers on farms in Australia at an expenditure of $75,000,000, and now is preparing to put 6000 British settlers on the land at an outlay of $75,000,000."

The third person in the picture is E. P. Fleming, undersecretary of lands.

Sparce in population, Australia is big in ideas and courage to back a sound, progressive land settlement policy.

Minister Wearne has a high regard for things American, as is evidenced by the fact that he called on one of our great Americans for advice.

While America soldier settlement plans are just passing from the stage of discussion into action Great Britain already has settled 8000 ex-service men on farms in Australia and is putting more on a new project. The aid of Dr. Mead was sought in connection with the new project involving 6000 farms. Great Britain is matching dollar for dollar every penny New South Wales is putting into the project.

Left to Right—W. E. Wearne, Minister for Lands, N. S. W.; E. T. Fleming, Undersecretary for Lands; Elwood Mead, irrigation expert.

As to definite news of Dr. Mead, he left Sydney on the S. S. Tasman September 15 for Singapore and will spend a few days in Java inspecting the irrigation works there. Thence he goes to India and will spend a week in the Punjab, where world-famous irrigation works are located. Then he goes to Palestine on the new mission already mentioned. He will get back to the United States some time after the first of the year.

Three Find Contentment in Manless Paradise

By ANDREW R. BOONE

THERE'S "a heap of country in California," but the three Hancock girls want none of it—none other than their 320 acres, which nestle beneath the brow of a hill in Harbison Canyon, San Diego County.

Annie Hancock, 54 years old and author of the remark which indicates their contentment with their own plot, once took a trip as far away as Los Angeles and San Jose, but she returned secure in the conviction that nothing equals the simple life she and her sisters—Mary and Elizabeth, 78 and 65 years young, respectively—lead, far from the haunts of a rushing civilization.

They have solved the problem of perfect independence together since other older members of their family left them, solved it entirely in accord with their own convictions that farm work enables them to avoid many of the worries which attend the insecure life of city folk. And today, at advanced ages, they are certainly exponents of health, happy in their simple ranch quarters.

Elizabeth, nearly 70 now, still jumps unaided from the ground to the back of her saddle-less horse, and rides him bareback when she is not busy plowing and harvesting their simple crops. It is Annie who does the chores about the buildings and cares for the goats and the chickens, while Mary attends to whatever other farm work is necessary.

The "invincible trio," as they have come to be known among their few neighbors, live on this manless paradise about three miles from a traveled highway while many travelers whiz by in their modern modes of conveyance, not realizing that within such a short distance, self-reliant to the nth degree, live the three elderly exponents of the open life, coaxing their existence from Southern California soil, and living on their monthly income of $30 to $60.

Forty-two years ago their father took up the land as a homestead. Two years later Elizabeth started plowing, and she has been at it ever since. The hay and grain provide feed for their chickens, rabbits and turkeys and some cash for themselves. At harvest time they labor long together, seeking the aid of no man.

Many times have they ridden horseback over the twenty-five miles of roads and highways to San Diego during the forty years, yet they always have returned to their back-country home, eager for the simple tasks and duties.

In addition to their four dogs, fifteen turkeys, 100 chickens, a handful of rabbits, goats and seven milch cows, six yearlings and a pair of 2-year-old heifers keep them company. It is from the products of these and the soil that they are able to keep their bodily comfort apace with their mental happiness.

Mary, Elizabeth and Annie Hancock, aged 78, 65 and 54, respectively.

Here are home and buildings on the manless ranch in San Diego County.

No, this isn't a vineyard, whitewashed by the owner for some unaccountable reason, but a young citrus grove, cut back for a new start.

Meet Eleanor and Her Prize Calf

THIS is little Eleanor Irene Sapp of Hemet (Riverside County) and her registered Jersey bull calf, which she won in a dairy contest at the San Jacinto-Hemet fair.

In a letter to the Editor, Eleanor said: "I only wish every one could feel as happy as I did when my name was announced as winner. I shall add to my bank account the money the calf will bring, and I hope to go to college some day. He is so gentle I can ride him. Isn't he a beauty?"

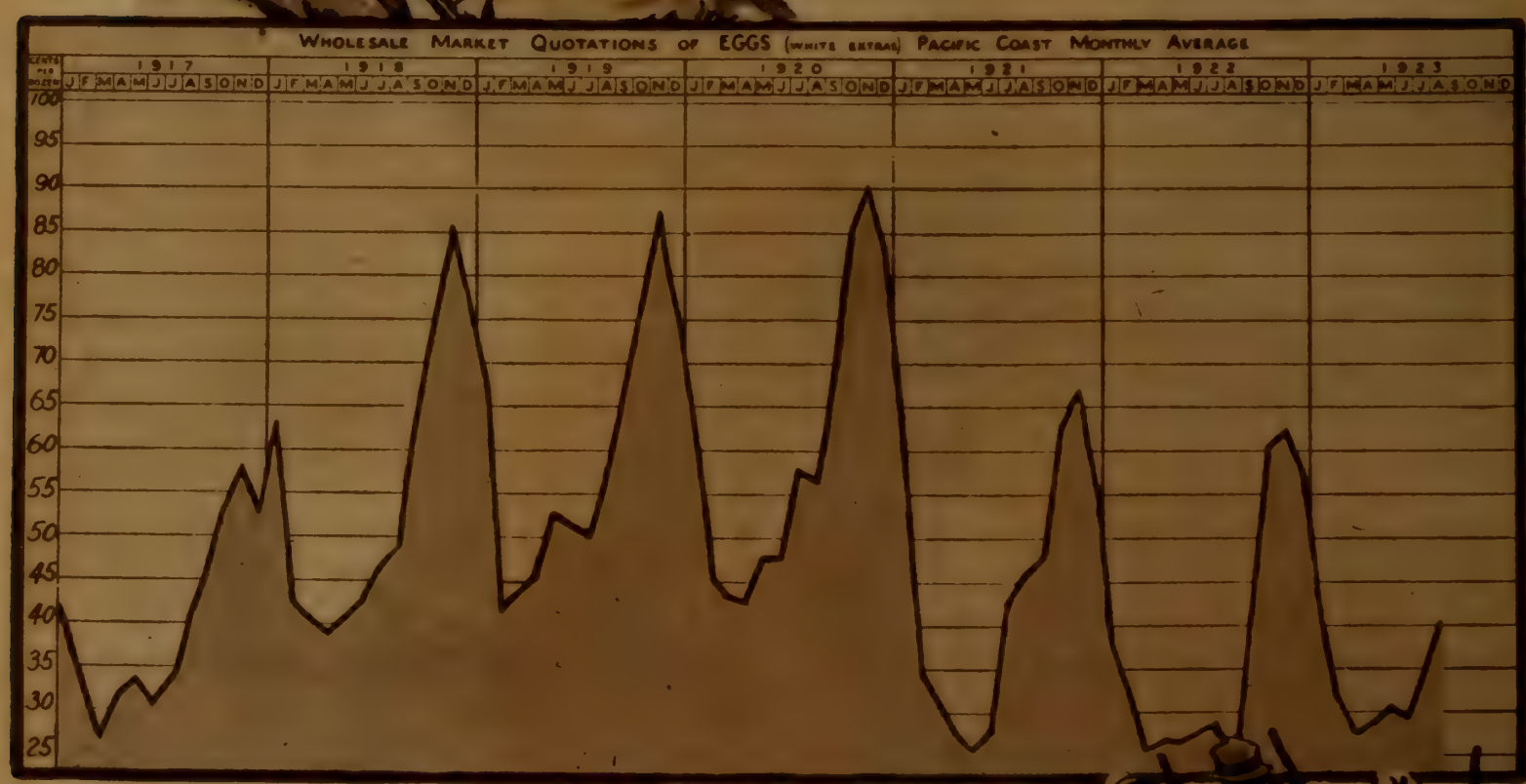
He certainly is, Eleanor, and ORCHARD and FARM congratulates you upon your success!

These young orange trees in Santa Barbara County are protected with old newspapers, wrapped loosely about the trunks. Owner thinks this plan beats whitewashing.

It might be a view from the famous "movie," "The Covered Wagon," but it's just an everyday scene in the cow country, photographed by Charles J. Beldon on the range.

The PIKE'S PEAK of the Poultry Business

—do you know when to climb it?



In NOVEMBER

THE chart tells the tale—egg prices reach their highest peak in November. But that doesn't mean the poultryman can climb up and look out upon a wonderful panorama of profit. You could—if your hens were laying heavy. But, unfortunately, your hens at this season are "laying low."

Veterans in the business will tell you that in the fall and winter every poultryman faces a threefold job:

First—to get all the eggs possible during the fall period of high prices.

Second—to maintain the health and vitality of the flock and prevent disease [such as colds, chicken pox, etc.] during the moulting period and wet weather.

Third—to prepare the birds for the spring, when poultry profits really are highest.

If you feed your flock wisely and well—and that means Sperry Surelay—your job will be a lot easier and your birds will be a lot better off. Put your feed-faith in Surelay—time-tried, uniform, dependable! Let it do for you this fall and winter what it has done for thousands of other poultrymen—guide you up above the "timber line" where there is no "dead wood" to eat up your profits!

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ORCHARD and FARM

NOVEMBER 25, 1923

Raises Walnuts for Both Pleasure and Profit

By O. H. BARNHILL

THERE are two ways of measuring success—by the amount of money made and by the quantity of satisfaction derived from one's vocation. Judged by either or both standards, the horticultural activities of Charles S. Sanderson, Los Angeles County nut grower, have been a decided success.

"Orcharding always possessed for me a great attraction," confessed the veteran horticulturist. "I came to California during the Civil War, at that time being only 5 years old. At the age of 18 years I subscribed in advance for a copy of the first edition of the late Prof. E. J. Wickson's 'California Fruits,' which to me proved a great help and inspiration.

"Stock raising and grain growing never interested me particularly. Neither did the ministry, which was my father's profession. I rented a peach orchard while still in my teens and enjoyed orcharding so well I have worked at it ever since, nearly a half century."

Mr. Sanderson's 80-acre ranch three miles north of Whittier was purchased entirely on credit and paid for with alfalfa in four years. The new owner then turned his attention to walnut growing, in which industry he has been engaged for 37 years. In 1900 half the land was planted to various varieties of walnuts. The trees have made an immense growth and have proved quite profitable, averaging more than a ton of nuts per acre some seasons.

Unlike most growers, Sanderson recommends comparatively close planting, 30 feet apart each way. This gives 50 trees per acre, or four times as many as when they are set 60 feet apart. The plan is to remove every alternate tree when they are 15 years old, leaving the remaining ones 42 feet apart. Later on every other row should be taken out. The trees that remain will then be 60 feet apart.

"The theory is fine, but will it work out in practice?" the Whittier nut grower was asked. "Has an orchardist nerve enough to pull out 15-year-old trees, right in their profitable prime?"

"Here's one who has," answered Sanderson. "Come with me and look at my 40-acre grove, which has been handled according to this plan."

REMOVES ALTERNATE TREES

It has been eight years since the 15-year-old trees were taken out. The alternate rows now are ripe for removal, already having retarded the development of some of the permanent trees. Many of the temporary trees have had removed a number of large limbs, which were interfering with their neighbors.

Subsoiling, trench manuring and furrow irrigation are practiced. Listers—"Texas ridge busters"—are used to open up furrows four feet apart. Following the modern practice of making records of individual trees, the performance of the latter was indicated by painting signs on the trunks. This method of "keeping books" made it possible to discover unprofitable "boarder trees."

One of the most interesting developments in the walnut industry has been the improvements made in hulling machinery.

"We used this old water wheel for many years," related Sanderson, "pointing to a round box with wooden flanges. "It loosened the hulls all right, but badly bruised the kernels. Next we built this 'squirrel cage' huller, which is turned by machinery and wets the nuts with streams of water from an overhead pipe. It isn't much of an improvement over the old water wheel, except in speed and ease of operation, because often it injures a great many kernels.

USES ELECTRIC HULLER

"I dislike to think of the thousands of dollars I have lost in hulling," mused the nut grower. "We now use this brush machine, which is the last word in hulling machinery. It cost $250 and has saved $2000 worth of nuts. In operating the "squirrel cage" we learned to use very little water in wetting the nuts when they first entered the cylinder, and to keep the large end of the cylinder open all the time, in order to release the nuts before they had been greatly injured.

"When the nuts fill well there is little danger of kernel bruising. A few hot days in September, however, will sometimes cause the kernels to shrivel, which leaves them loose in the shell and easily broken. The market demands that nuts shall be 90 per cent perfect. One hundred nuts, selected at random, are used in the crackling test."

ATTAINS GRAFTING EFFICIENCY

Mr. Sanderson's present interest centers in a young 10-acre walnut orchard which he is developing. Native black walnut seedlings were grown where the trees were wanted and later top-worked to desirable varieties. Unusual proficiency in grafting has been attained. The exact methods used was described in a separate article.

Concord, Chase, Santa Barbara, Bijou and other varieties are found in the old orchard. The last named sort, which is sometimes called the Klondyke, is very large, but not prolific. The Eureka is called the "de luxe nut," bringing 34 cents a pound in war times, when other varieties were selling for 26 cents. It will not thrive in all locations, but seems well adapted to Sanderson's soil.

The new orchard is largely of Eurekas, but three Payne grafts are making a remarkable growing and bearing record. One of them bore 129 nuts the second year and in the third year had a crop estimated at 20 pounds. As the trees are set 50 to the acre, this would be a half-ton crop per acre, which is as much as mature California walnut trees bear, on an average, according to Sanderson.

As the nut grower's family increased, the old buildings down near the railroad track were abandoned and a large house built on the hilltop, near the highway. An orange orchard is being developed on this part of the property and a great variety of trees, shrubs and vines adorn the home grounds. A Pierce grapevine makes a fine arbor and bears a great quantity of fine fruit, which resembles the Concord, only the berries are larger.

Although Mr. Sanderson is the picture of health, ruddy cheeks and sparkling eyes contrasting pleasantly with snowy hair and beard, his age—65 years—leads the visitor to wonder why the ranch work is not turned over to the younger generation, or to hired help.

"My greatest enjoyment is my work," smilingly replies the veteran orchardist in response to an inquiry. "I cannot explain why, except to say that human beings are so constituted that we are intensely interested in certain things, which in my case happen to be horticultural. I have eight children, but they do not inherit my love of trees and plants. It is possible that—like most horticultural workers—I impressed my sons as being overly particular, which may have prejudiced them against orchard work."

Mr. Sanderson's horticultural interest is not confined to his own trees, but includes all growing things and leads him to visit other sections, to see what his fellow workers are doing. He believes it is a great mistake not to top-work the numerous big walnut trees on the University Farm at Davis.

"A variety suitable to that locality certainly could be found," he said. "Of course, the grafting would be a big job, but it would afford good practice for horticulture students. Why, in the Santa Clara Valley there is a valuable walnut tree which was grafted in dozens of places, one of them being 28 feet from the ground.

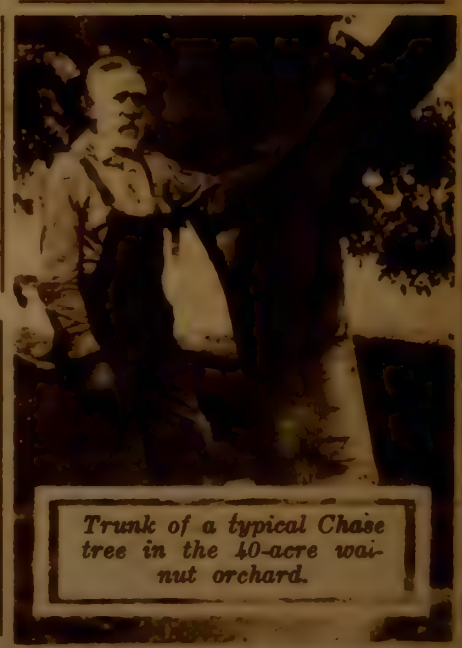
"The value of a good walnut tree scarcely can be overestimated. There is one at Carmel that has a trunk four feet in diameter and an 87-foot spread of branches. It bears between 600 and 700 pounds of nuts per year and is worth thousands of dollars."

A little incident related by Mr. Sanderson illustrates how congenial he finds his work. "Sometimes, after spending an hour or so in a water meeting, wrangling over riparian rights and legal technicalities, I have felt all fagged out and at cross purposes with everybody and everything. But after working 10 minutes with trees my head clears up and I am peaceful and contented—the joy of living has returned."

Oranges are being grown near the Sanderson farmhouse, where the soil is unsuited to walnuts.

Sanderson is considered one of the most expert walnut grafters in California. This three-year-old Payne is bearing 20 pounds of nuts.

Showing remarkable growth in one season of Payne graft on black walnut stock.



Trunk of a typical Chase tree in the 40-acre walnut orchard.

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NOVEMBER 25, 1923

Facts About Prunes—Most Important of Plums

An Interesting Bit of Early History—Development of Prunes in California—Years of Work Required to Create the Sugar Variety

By LUTHER BURBANK

Writen Especially for ORCHARD and FARM

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THE prune, perhaps, is the most important member of the plum family, as it is grown so extensively for drying. This dried product is the staple fruit of millions of households in every land, and is universally regarded as a wholesome article of diet.

Many have often asked the difference between the prune and the plum. The best definition, and the only one, in my judgment, which can be given is the following: Any plum that can be dried in the sun without fermenting is a prune. No other classification can be made. All prunes have been developed from the common European plum, Prunus domestica; although it is altogether likely that from Japanese and American plums and their hybrids, sooner or later, varieties may be developed that will produce fruits which, under the above definition, may be classed as prunes.

The prune and the prune industry up to the past few decades, have been developed chiefly in France where this fruit has been under cultivation for several hundred years. Some of the Crusaders are said to have brought back fruits of the prune on returning from their journeyings. These were planted by the Benedictines at the Abbey Clairac.

ORIGIN IN CALIFORNIA

The introduction of the prune into California was due to the energies of a French sailor, Louis Pellier, who, upon his arrival in San Francisco in 1849, had joined in the mad rush for gold.

Fortune did not look kindly upon the young man in this new and strange enterprise, and finally, early in the fifties, he established a nursery in San Jose. Soon thereafter he was joined by his brother Pierre, whom he had left in France. The two brothers worked the nursery together until the spring of 1856, when Pierre returned to his native country for the lady of his choice.

While in France this enterprising young nurseryman obtained a large number of cuttings of prunes, apples, and other fruits for the nursery. His bride and a younger brother accompanied him on his return, and together with the box of precious cuttings, they made the voyage by way of the Isthmus to San Francisco. Upon arrival at the nursery in San Jose these prune cuttings were immediately grafted upon plum stock. Thus was begun nearly 75 years ago the first prune nursery on the Pacific Coast.

TODAY A LEADING INDUSTRY

For more than a quarter of a century after the introduction of the prunes into California, but little interest was given to other culture, but with the awakening of the possibilities of fruit culture in California, the French prune was found to be particularly adapted to this climate, and from this time the growth of the industry has been most marvelous. Today it is one of the leading industries of the State, more than $5,000,000 worth being produced each year. California now takes first rank in the prune industry, her production being nearly twice that of France, and of better quality and size.

The principal varieties grown in California up to the last few years were the Prune d'Agen (known also as the California, French and Petite), the Robe de Sargent and later the Imperial Epineuse. The Fellenberg, or Italian prune, so extensively grown in the Pacific Northwest, is but little cultivated in California.

IMPROVING THE PRUNE

In 1885 I began my first extensive experiments upon this fruit. At that time I was convinced that if the large, handsome, and productive Hungarian prune could be combined with the rich, sugary little Prune d'Agen, and all these superb qualities combined in one fruit, no greater good could be accomplished.

The little French prune was selected as the parent tree, and many thousand blossoms were pollinated by the Hungarian. Three years later, at the meeting of the California State Horticultural Society in August, 1888, I had the pleasure of exhibiting seventy varieties of the best of these cross-bred seedlings.

The purchaser of the commercial part of my nurseries, being ignorant of their value, destroyed some sixty or more of them; but, fortunately, several of the most promising had been grafted into an older tree. Among these selected grafts were two that gave much promise, and they were introduced in my New Creations of 1893, under number, and were subsequently named the Giant and the Splendor.

THE GIANT PLUM

The Giant is a well-balanced cross between its two parents, the Prune d'Agen and the Hungarian, or Pond's Seedling. The plums average one and ½ to 2 ounces each, and are sweeter and of finer texture than the Hungarian, but not so firm and sugary as the Prune d'Agen. The fruit is well distributed along the sturdy branches, thus carrying the immense load without danger of breaking the trees. The handsome appearance, large size, and rare keeping qualities of this plum place it among the best market and shipping fruits; but like its pollen parent, the Hungarian, it is not well adapted for drying, and in this respect is a great disappointment. This plum is a freestone, and does not come double, which is a serious fault of the Hungarian. When placed in boiling water the skin immediately rolls away from the fruit, leaving the rich, honey-colored flesh clear for canning; for which purpose it is extensively grown, being especially prized and generally cultivated in Australia and New Zealand.

THE SPLENDOR PRUNE

Another magnificent prune raised from these cross-bred seedlings, which had been produced by pollinating the little Prune d'Agen with Pond's Seedling or Hungarian, first was introduced under the number A. P.-318 in New Creations of 1893. This was purchased by Stark Brothers of Louisiana, Missouri, who, having procured the entire stock with complete control of the variety for $3000, named it the Splendor.

This prune is about one-third larger than the common French prune, containing about five per cent more sugar, and its quality and flavor are much superior. The tree is even more productive, and is a more regular bearer, being sturdy and of well proportioned form.

Many thought this excellent prune would soon displace completely the Prune d'Agen. Surely if quality and productiveness were all that were demanded by the grower, this would have occurred; but one single peculiarity which it possesses gives the Splendor a serious disadvantage. Unfortunately, the fruit clings to the tree when ripe, so that the crop can not be obtained by falling naturally to the ground—as with the French prune—and not even by shaking the tree. However, it is extensively planted in some climates, and with this one exception gives perfect satisfaction, as its other superior qualities counterbalance its one failing.

THE SUGAR PRUNE

After fourteen years of continuous and laborious effort I was able finally to present a prune equal to the hopes and desires of the most sanguine; and it was with intense satisfaction that I was able to offer, in New Creations of 1899, my new prune, the Sugar.

For many years I had worked diligently and unceasingly, watching with the utmost care for the slightest tendency in my numerous seedlings and cross-bred seedlings to give some indication of varying toward the direction desired.

Finally, through careful selection, although it required years of patience and perseverance, my cherished desires were realized—I had a prune at last possessing the *(Continued on Page 10)*

Burbank—An Appreciation

"A VISIT to Luther Burbank, in the midst of his varied creations, is like a pilgrimage to a plant life shrine," declares Dr. Frederick W. Clampett, well known San Francisco clergyman.

"Sturdy as his favorite oak, fresh as his Shasta daisy, bright as his California poppy, he looks the measured span of a healthy three score years.

"Amid the silence of nature, unbroken by the language of his plant life, he walks as a father amongst his children."

"The happiest thought in my life," asserts the famous plant creator, "is the knowledge that I have helped the children a little bit. I love the inanimate things of nature, but children best of all."

Potato Growers Making Money—Other Vegetables Pay Well

Points on Truck Gardening and Seed Growing in the Great Santa Clara Valley

By O. H. BARNHILL

HISTORY is repeating itself in the potato business. Last year the average grower made little or no money in producing the lowly tuber, because of the low prices resulting from an unusually heavy crop all over the country. Disgusted and discouraged, many growers cut down their acreage very materially, or quit the game entirely.

The inevitable result was high prices. While many 1922 potatoes did not pay for digging, present prices leave a handsome profit for producers. The lowest price is paid for Sacramento River stock, while Salinas Burbanks bring the highest figures.

So great is the difference in the tubers grown in various localities that dealers refer to them by the name of the district where they are raised. For example, potatoes grown in the Pajaro Valley are known as "Watsonvilles." Dealers consider the quality only slightly inferior to Salinas spuds, the California standard.

EARLY SORTS SELL WELL

Early varieties, such as the British Queen and Early Jackson, bring the best prices, $5 being not uncommon. While the yield is smaller than for late varieties—like the Burbank—the grower gets the money out of his crop much sooner and can plant the ground to something else afterwards. In the southern part of the State some growers raise two crops of potatoes on the same land in one year, but it is doubtful if such a system is profitable, being too much like "burning the candle at both ends."

The Santa Clara Valley is one of the richest truck gardening districts in the State, 22,500 acres being devoted to vegetable crops. Peas, tomatoes and sugar beets lead, about 6000 acres of each being grown. Beet growers are losing out in competition with the sugar cane farmers of Hawaii and Cuba, but are planting the land to more profitable crops.

PEAS PROVE PROFITABLE

Canning peas sell for about $50 a ton and are considered fine for intercropping in young orchards, because they do not require much moisture and, being a legume, they add to the fertility of the soil. Telephone is the variety commonly grown on the floor of the valley, while Laxton is the favorite with foothill gardeners, both for canning and table purposes.

Table peas bring 9 cents a pound, $180 a ton, the first on the market sometimes selling as high as $15 per 70-pound sack. Sweet corn and string beans are other favorite crops with truck gardeners in the east side district, around Milpitas, Linda Vista and Evergreen, where there is a practically frostless foothill belt. Canning peas are planted in the fall and most other crops in January.

Most of the gardeners in this district are Portugese, three-fourths of whom own their farms. The others pay a crop rent of one-third. Italians and Japanese grow many vegetables in other parts of the valley.

Nine-tenths of the Santa Clara strawberries are grown by Japs, who divide the crop with the owner of the land on a 50-50 basis, after harvesting. The plants are profitable for three years, during which time they bear nine crops, worth $5000 per acre.

The last named sum seems large for a three-year berry yield, but Ralph L. Snell of Mountain View sold $8400 worth of Ranaree red raspberries from one acre in two years.

BERRY GROWERS ORGANIZE

In 1921 the newly organized Central California Berry Growers' Association shipped from the Santa Clara Valley 45 carloads of berries to Eastern markets. The next year the association handled 150 cars, including some larger fruits. The cost to the grower was 2½ per cent, which compares favorably with commission dealers' charges. Mountain View and Runnymede growers have their own precooling plant.

During the winter and spring San Jose and other Central California cities are supplied with early vegetables by the San Pedro Vegetable Union. Cantaloupes arrive from the Imperial Valley until July, when the market is supplied with Turlock "cants."

POPULAR NEW MELON

Watermelons from the Turlock district also supply most large California cities during the latter part of the melon season. Growers receive a half cent a pound, wholesalers two cents and retailer three cents. This means that out of every $6 paid by consumers for melons, middlemen, including carriers, keep $5 and hand the farmer $1 to pay for the labor and expense of growing and harvesting the crop.

Bauman Brothers' "Melo-Glow" Persian muskmelons from Modesto, were being wholesaled at San Jose at $1.25 per crate of six. Resembling in appearance a giant cantaloupe, Persian melons sometimes weigh 12 pounds each and retail at 60 cents. The writer saw one at Eureka priced at $1. The chief fault of this fine melon is that it is a poor keeper.

Perhaps the latest addition to the melon family is the Ice Cream watermelon, which *(Continued on Page 8)*

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TO SERVE: All those who, for pleasure or profit, engage in any branch of the land industry—AGRICULTURE

FRIENDLY PHILOSOPHY
By THE EDITOR

RECENTLY I derived much pleasure from rereading John Williams Streeter's "Fat of the Land," one of the most pleasing and inspiring agricultural books ever written.

Streeter describes himself as a well-to-do Ohio surgeon who at the age of 50 was forced by ill health to abandon his profession. Therefore he determined to indulge a life-long ambition to become a farmer.

His experience differs from that of many similar "back-to-the-landers" in that he had plenty of money to invest and actually made a financial success of his farm. But he also suffered some disillusionment.

NO DIFFICULTY IN SPENDING MONEY.

Streeter carefully laid plans to spend $60,000 on his 500-acre farm, but at the end of three years found he had invested more than $100,000 with plenty of improvements yet to be made.

Thereupon he recorded this important conclusion: "Spending money on a farm is like other forms of vice—hated, tolerated, then embraced." (More truth than poetry there!)

BUT PLENTY OF COMPENSATION.

This erstwhile professional man was compensated, however, in two ways. The larger portion of his expenditures was made with a view to future profit, emphasizing the maxim of modern business that it is just as important to know how to spend money as to save it.

As one example, he planted 50 acres of his land to orchards which, because of careful management, within seven years had returned $1200 more than the cost of the land, and were just beginning to be productive.

Indirectly, he profited by regained health, contentment and happiness.

SOLID SATISFACTION OF HONEST TOIL.

"I was dead tired when I reached home," records the author of 'Fat of the Land' in describing a hard day's work. "But there wasn't a grain of depression in my fatigue—rather a sense of elation. I felt that for the first time in 30 years real things were going on and I was having a hand in them.

"The fatigue was the same old tire that used to come after a hard day on my father's farm, and the sense was so suggestive of Youth that I could not help feeling younger."

THE HIRED MAN WHO OVERWORKED.

Reminiscent of dear, dead days is Streeter's description of one of his farm hands. This man was a Swede named Anderson, employed at the munificent salary of $20 a month, with a one-dollar raise for every six months of service.

"Anderson was not popular on the farm," relates the author. "He was too eager in the morning to start, and too loath in the evening to quit. His unbridled passion for work was a thing to be deplored, for it kept him thin and nervous.

"I tried to moderate this propensity, but with no [illegible]. After three years he suddenly gave out from enlargement of the heart due to overexertion. Thereupon I offered to assist him, but he proudly refused my aid, saying he would draw upon his savings account of $200 and go away for a rest."

Reads like a fairy tale, doesn't it? But many old time farmers now living have had just such men. Still, we doubt whether they would go back to the days of hand work, without the aid of modern farm machinery, even with the blessing of farm hands who insisted on overworking for $20 a month and "found."

What's New?—Keeping Abreast of Agricultural Progress

Sun Maid Raisin Monopoly

WHOLESALE grocers of Denmark voluntarily have granted Sun Maid raisins a virtual monopoly of their country, refusing to handle any other kind of raisins.

Sapiro Organizing Canada

WHEAT farmers of three Canadian provinces are being organized by Aaron Sapiro, California co-operative authority and originator of the Oklahoma grain pools, which Sapiro declares are the most successful in the United States.

Ohio Co-operative Buying

DURING the past year Ohio farmers purchased co-operatively $400,000 worth of fertilizer; seed, $25,000; twine, $75,000; coal, $3600; harness, $1000.

Goods are sold at regular retail prices by the Ohio Farm Bureau Service Company and at the end of each year the profits of the business are paid to the members, in proportion to purchases.

Successful Pooling Wheat

THE Oklahoma Wheat Growers' Association has the product of 850,000 acres of wheat under contract and operates a 500,000-bushel terminal warehouse at Ft. Worth, Texas. Two cargoes of pooled wheat were exported to Genoa, Italy, and four shiploads to Antwerp, Belgium.

In 1922 the association handled 3,250,000 bushels of wheat, using 180 elevators.

Pear Prices Profitable

IN pleasing contrast to low price complaints of apricot and peach growers is the report of handsome returns received for El Dorado County pears shipped East the past season.

Bartletts returned growers $2 to $3 a box, according to press dispatches, while Winter Nelis sold at similar figures. Gros and President plums sold in the East for $2 a box, one shipment bringing $4 per 20-pound crate.

Poultry Feed Tests

THE poultry feeding experiments carried on by C. G. Burgess at Pomona during the 1922-23 season, in connection with the Farm Bureau Egg Laying Contest, indicate the superior feeding value of dairy products and show that meat alone is a poor protein food for poultry.

A pen of hens supplied with animal protein in the form of meat laid an average of 62 eggs, the feed cost of which was 23 cents per dozen.

Hens fed on dried skim milk laid 135 eggs, which cost only 13 cents a dozen for feed.

In 11 months hens fed on meat gained only three per cent and 40 per cent of them died, while birds fed on dried milk solution gained 27 per cent and the mortality was only two per cent.

Sun Maid Raisin Progress

THE general office staff of the Sun Maid Raisin Growers was reduced from 438 Oct. 1, 1922, to 327 on the same date this year.

From September 19 to 29 the association shipped more raisins than in any previous 10-day period, 127 carloads going out the last day—a record shipment.

The Federal Government has loaned the growers $5,000,000. In September daily Sun Maid receipts ran from a quarter million dollars to one-third million. Three-quarters of a million dollars in cash constantly is kept on hand. In three months $5,000,000 was paid to the old corporation.

"These high lights justify the confidence of our members in making deliveries to the new association," comments Ralph Merritt, managing director.

Selling Unpickled Olives

A CHICAGO dealer this year bought more than 300 tons of California olives, grown in the vicinity of Lindsay. Part of this fruit was shipped fresh in 20-pound lug boxes, under refrigeration. Most of it was barreled in weak brine, the pickling process being finished after the olives arrived at destination. Three styles of cured olives were made—Greek, Cicellian and Tuscany.

Growers were paid as soon as the fruit was loaded. Eastern prices received for uncured olives averaged about 14 cents, according to a report.

One hundred thousand dollars is being spent to advertise California olives. It is believed that bulk shipments of uncured fruit will be sold by consumers to such an extent that the market for domestic olives will be greatly enlarged.

Hold Pear Packing School

A TEN-DAY pear packing school recently was held at Kelseyville (Lake County). Twenty-five persons took the entire course and several others received some training.

The salary of the teachers was paid by the Women's Club, Chamber of Commerce and other public-spirited organizations.

"About $1,000 was paid out for pear packing in this community the past season," explains Mrs. Fred Dorn, to whom the success of the project chiefly was due. "A large share of this money went to outside workers, who had to be imported to prepare our fruit for shipping.

"Our own young people need this money which can be earned during the summer vacation season, and when properly trained they will be able to pack the entire pear crop of Lake County."

Easterners Boxing Apples

IN the vicinity of Sturgeon Bay, Wis., orchardists this year packed 200 carloads of apples in the Northwest bushel box. For the first time a few Maryland apple growers are using the bushel box, grading and packing Jonathans according to accepted standards.

Farm Prices Are Advancing

PRICES of farm crops averaged one-fourth higher in September than a year ago, according to the U. S. Department of Agriculture.

The purchasing price of the farmer's dollar in September was placed at 75, compared to 64, an advance of 11 points in one year.

Exports of wheat and flour during the first nine months of 1923 were 45,000,000 bushels less than for the corresponding period of 1922, while exports of pork products increased 370,000,000 pounds.

Camera Helps Co-operative

REDUCED clerical costs, eliminating errors and enabling members to "see the books" recently were accomplished with a camera, by the Oklahoma Cotton Growers' Association.

Ledger accounts showing complete history of every bale of cotton, from the time of delivery until final payment, were photographed and prints sent to members. Six copies were made at a time, the statements being prepared at the rate of 120 per hour.

Wallace Wants Rates Cut

SECRETARY WALLACE of the U. S. Department of Agriculture recommends a 25 per cent cut in freight rates on farm products, especially those which are exported.

President Coolidge, it is reported, does not consider Wallace's recommendation favorably, claiming that if the proposed reduction were made freights on other commodities would have to be raised to compensate the railroads for the loss.

Sweet Potatoes Short Crop

ONLY a half crop of sweet potatoes were grown in California this year, largely because of last year's low prices. Orange County grew less than 1000 acres this year, which is about one-half of the total acreage for Southern California. Stanislaus and Merced Counties raised 4000 acres.

Yields were generally unsatisfactory, due in many cases to poor seed selection, according to H. E. Wahlberg, Orange County farm adviser, who claims "The first principle of plant propagation—selecting first class specimens for seed—is practically ignored by the average sweet potato grower, who plants small, unmarketable tubers."

"THEY SAY"

Jas. A. McNaughton
General manager Los Angeles Union Stockyards

J. A. McNAUGHTON

CALIFORNIA consumer demand for better beef is widening the price gap between the best and the poorest steers, the present spread in values probably being the widest in the history of the State. Recently choice, weighty, corn-fed steers brought $9.50 on the Los Angeles market, while the general run of half-fat, medium and common stock sold from $7.25 down to $5.50.

California stockmen are awakening to the fact that consumers no longer will be satisfied with inferior meat and are breeding and feeding better animals. The price of purebred bulls now has reached a point where cattle grazers feel they no longer can afford to use scrub sires.

The producer is willing to furnish what the public wants if he can get paid accordingly," declares J. A. McNaughton.

"On Eastern markets there is a margin of 2 to 5 cents per hundred between top grass steers and top grain fed steers, depending upon quality and the length of time fed. There is no reason why the same differentials should not work out in this territory. We feel the time has arrived when it is possible to at least make a start in that direction.

"We already have found that the producer, being assured of a fair return, is willing to furnish the grain-fed steer of quality. We know the packer is willing to pay additional prices for quality provided he can merchandise the product with a fair return for his work. There can be no question about the retailer or the jobber, provided the public is willing to pay a price that will fairly compensate.

With the advent of modern hotels demanding better quality, there is an outlet in that direction and with the coming thousands of Eastern people who are coming in here every year, people who are used to the best quality and have the means to pay for it, there is a steadily increasing demand for high quality meat."

How I Make My Old Citrus Orchards Pay

Successful Grower Explains Methods Which Have Maintained Productivity of 40-Year-old Orange Groves in San Bernardino County

By F. C. BUFFINGTON

[Editor's Note—The author of this article was born and raised on a Southern California citrus ranch, and has devoted his life to a study of modern cultural methods, and their application to practical orcharding. He is now Mayor of Upland (Cal.), and has many other private and community interests, but is as likely to be found driving a team of mules in one of his groves as at the City Hall. He believes no one is as well qualified as the owner of orchard property to supervise (and perform when necessary) the actual work of producing fruit.]

SUCCESS in citriculture is the result of the fulfillment of a number of essential requirements; just the same as success in any other line of human endeavor is the result of applied intelligence effort, with the proper tools, conditions and materials to work with. I have heard some people complain about their hard luck in the citrus business, an investigation of whose methods and attitude of mind would reveal the fact that they very likely would fail in any other line of business they might enter.

Speaking in general terms, the time is now past when a profit can be made off any full grown citrus grove that is not planted to good trees of a good commercial variety, and that cannot be made to yield an average of ten tons per acre per annum of marketable fruit over a term of years. There may be some exceptions to this general rule, but I am quite sure that this is true for the industry in Southern California, as a whole.

In presenting an article on this subject I am well aware of the fact that there is a wide diversity of opinion by men of large experience and unquestionable knowledge in regard to many of the essential field practices. This is partly due to differences in soil conditions, distance from the sea coast, age and type of trees and various other things that enter into the equation and thereby influence the final result.

Forty years ago, when we first planted our young citrus grove on the plot of virgin adobe soil that is still our home, there were not many cultural problems to face for a few years. The soil, eight to ten feet deep, rich with the decayed vegetation of centuries, and taking rain and irrigating water very readily, was an ideal home for young citrus trees, which grew rapidly and bore heavily without fertilization, expert care, or any of the intensive cultural methods found necessary today on the same property.

The time came, however, when it became apparent that haphazard methods would no longer do, and my methods outlined below have been successful in keeping a grove planted forty years ago in the productive and profitable class through all the intervening years.

AMOUNT OF WATER USED

We have found that for our particular needs four acre-inches of water per month applied in a continuous run of 48 hours once every 30 days during the months without rainfall is ideal for clean cultivation; and six acre-inches of water per month, applied in three equal runs of 24 hours each every ten days during period of growth of summer cover crop when planted.

Following is our plan of applying water: First four furrows are made on three-foot centers, paralleling the head ditch between every two trees over entire grove, after which four furrows are made on three-foot centers at right angles to head ditch between each two rows of trees.

Of these last furrows, the ones next to tree trunks on each side are connected to the first furrows, made in such a way by hand shoveling that the water from the head ditch flows through the straight furrows and cross furrows at the same time, thus wetting the whole area of soil except the portion immediately under the branches.

APPLICATION OF WATER

The length of furrow served by one distributing head-ditch is 330 feet. The benefit derived from the use of this distance over the old 660-foot length of furrow from one head-ditch is that a smaller stream of water can be used, which moves much slower down grade, does not move particles of soil and fertilizer, and spreads wider laterally than a faster moving larger stream necessary on a longer furrow.

We never "flush" the furrows, but figure that the stream should take 12 hours to travel the 330 feet.

What little waste water we lose runs off the grove, without taking any soil particles or fertilizer with it. We find it necessary to "check up" on the individual furrows several times a day and regulate the size of individual streams accordingly at the head-ditch.

When the irrigated ground is dried sufficiently to be past the sticky or muddy stage, we drag the furrows with either a spring tooth or a spike tooth harrow. The two or three deeper cultivations which follow when we work the ground nine inches deep with a stiff shank cultivator, are not given until the surface soil has dried sufficiently so that the ground scouring off the cultivator teeth will crumble into small particles. The object of this deep cultivation is to work the ground below the bottom of the next irrigation furrows and thus prepare the soil for the next irrigation, besides helping conserve the moisture already in the soil.

We apply about ten tons per acre of barnyard manure in the fall of every second year before sowing winter cover crop, which should be sowed between September 10 and October 15, as best suits irrigation dates and other necessary fall work.

The application of barnyard fertilizer prior to sowing of fall cover crop helps the cover crop seed to get a good start before cold weather checks growth, aids in the conservation of moisture during the period when the irrigating furrows are left open and the cover crop is small, increases the number of angle worms and bacteria in the soil, and provides the trees with an early spring food supply before the spring application of commercial fertilizer begins to be available.

The spring fertilizing and plowing are finished by April 15, and the ground then made ready for summer irrigation. We generally apply 20 pounds of commercial fertilizer per full grown tree, prior to April 15, and another application of ten pounds per tree not later than June 15. This fertilizer contains 6 to 8 per cent nitrogen, assembled from animal and chemical sources having different periods of availability to give the tree both a quick and a continuous food supply. This fertilizer also contains 8 per cent phosphoric acid derived from bone meal and phosphate rock.

We realize that there is great diversity of opinion as to the fertilizing value of phosphoric acid for citrus trees, some of the experiment stations going so far as to claim that the different forms of nitrogen are all that are needed for obtaining good citrus crops. We have no inclination to enter an argument on this subject; we simply state that it has been our observation that trees fed nitrogen alone over a term of years have deteriorated, except where the source of nitrogen was from manures, which all carry a small per cent of phosphoric acid.

OUR PRUNING SYSTEM

We endeavor to keep dead wood pruned out of all citrus trees and to open them enough so that screened sunlight permeates the whole tree. The finest quality fruit does not grow in the strongest sunlight, but where it is partly protected by foliage.

Then, also, trees so pruned that quite a percentage of the fruit grows inside will carry a larger load without breakage than where the fruit is almost all on the outside. We have never resorted to any radical methods in pruning and hope we will never have to; but every healthy citrus tree should develop new wood each year.

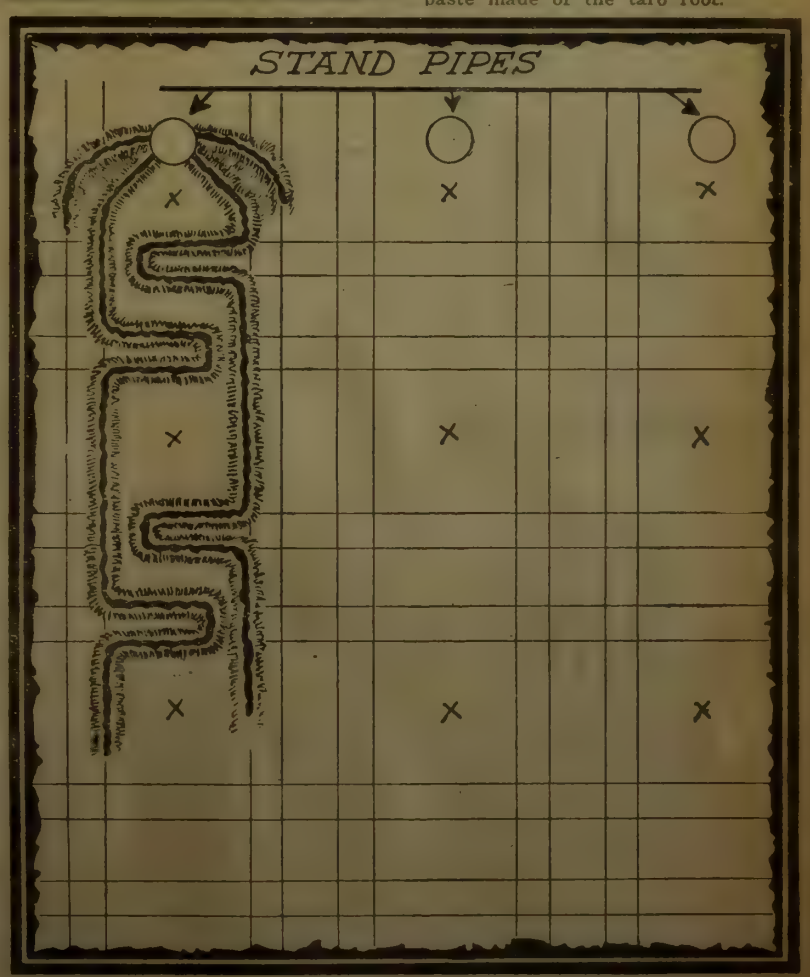
Everything done on a citrus property has an influence on the final result of success or failure, and there is no one thing of greater importance than right care of the soil, and intelligent and faithful management of irrigating water. It is work that should be done by the owner to get the best results, or by an employe of good character, who has his employer's interest keenly at heart.

We have grown whippoorwill cow peas in our grove the last three summers with very good success, and no apparent evil results, but do not consider three years' experience sufficient basis for any final opinion.

In conclusion we wish to impress on those new in the citrus business that each particular locality has its own problems to solve, and that following the practice of a successful grower in one's own locality is the sane and safe policy to follow, until one learns for himself. The cultivation and irrigation methods outlined above are for heavy land and do not apply to sandy or rocky soil.

Improve With Age

The citrus groves of F. C. Buffington, who is shown at the right in working togs, are like the much advertised automobile engines which are said to "improve with use."



By means of a home-made implement with an extra wide bar and special hitch, Buffington runs four irrigating furrows between the rows of his 40-year-old trees, working close to the rows. Trees are indicated by "x." Course of water is shown by ditch lines at left of diagram.

Canada Blueberries

THOUSANDS of tons of wild blueberries are harvested every year in Canada, where this fruit is held in great favor. Nova Scotia, Quebec and New Brunswick are the chief producing districts.

Most of the berries are gathered by Indians. One person picks a bushel a day. Some pickers use a rake, with which they gather three bushels a day.

The fruit is sold to merchants who pack it in 11-quart baskets for shipment. A fat crate holding 16 or 32 quarts also is used.

For the purpose of improving and domesticating the blueberry, experimental plots have been established in Manitoba by Prof. H. F. Roberts of the University of Manitoba.

The commonest wild variety is *Vaccinium Pennsylvanicum*. It is bluish, small-seeded fruit with a distinctive bloom and grows on bushes one to two feet high. *V. nigrum* is a bloomless black fruit. Another variety grows six to 12 feet high.

In New Hampshire 10,000 to 20,000 quarts of blueberries are gathered yearly from a 200-acre field. A 15-acre patch produces 1000 to 3500 quarts, according to the Canadian horticulturist, from which most of the foregoing information was obtained.

As explained in a recent issue of Orchard and Farm, the blueberry is very difficult to propagate and grow, being very particular about soil and location. It prefers an acid soil composed of peat and sand. Persons interested in blueberry culture are advised to communicate with the U. S. Department of Agriculture.

Cooked Avocado Dish

THE following recipe for avocado fish patties is contributed by V. E. Good of Corona:

Crush fine a half dozen soda crackers, then add one small tin of white tuna, mixing well with a fork. Chop up three to five avocados and mix them with the fish and crackers, seasoning the paste to taste. Fry in olive oil, browning on both sides.

"These patties make fine sandwiches," writes Mr. Good. "We got the idea of making them from eating poi fish patties in Hawaii." Poi is a fermented paste made of the taro root.

POWER PARAGRAPHS

By WALTER H. GARDNER

CONVERTIBLE PLOWS, LATEST. Plows made so that the discs could be removed and chisel points fitted to the standards were offered by two manufacturers at the State Fair. "If the undercrust isn't busted the farmer will be!" observed one shrewd observer who marked the attention given on all sides to the tools used for deep tillage.

W. H. GARDNER

ENORMOUS SUBSOILER AT WORK. "One he-implement!" Such is the characterization of a "38" single-standard subsoiler now being used by Thompson Brothers of Strathmore on contract work. To pull this monster tool at full depth requires two big track layers. It is reported that the operators receive $14.50 an hour for the work done by the outfit, and that they have more work offered them than they can well take care of. For lighter tasks one track layer suffices for the motive power—the hourly rate then being $8.00. The plentiful demand for the use of this outfit is yet another proof that the farmers are thoroughly sold on subsoiling.

KILLEFER GOES TO HAWAII. R. L. Killefer, California manufacturer of tillage implements, left in October for the Hawaiian Islands at the invitation of some of the owners of the big plantations. The eyes of farmers the world over are fastened on California, where farming and marketing methods are blazing the way to greater productivity and profits. In many agricultural communities throughout the world the farmers are quite content to do the things that were done by their fathers; here we seem to have the initiative for experiment.

SUBSOILING MAY OBVIATE USE OF TILE. One authority on subsoiling declares that many farmers now are subsoiling for a year before they decide where drain tile must be laid. It is pointed out that one good job of breaking the pan and undercrust often drains perfectly places where tile would otherwise have been required.

CALIFORNIA IMPLEMENTS SOLD ABROAD. The world demand for farm machinery of California manufacture is best proved by the fact that several firms now issue complete or skeleton catalogs in foreign languages. Some are in Japanese. Most every concern has a pamphlet published in Spanish.

FARMER IS REAL INVENTOR. "The farmer invented most modern tillage machines," was a conclusion drawn by Prof. L. J. Fletcher in the paper that he read before the recent meeting of the American Society of Agricultural Engineers.

Prof. Fletcher pointed out that some farmer first conceived the need for a certain tool and often had the first crude implement built to his ideas by a local shop or blacksmith. He noted that James McFadden, a citrus farmer near Placentia, suggested the first California subsoiler and gave other examples to illustrate his point.

The writer remembers that at least one successful California-made tractor was conceived by an up-State rancher. And it certainly is true that many features of the modern tractor were added only after the farmer and operator had discovered their need and then demanded them.

DEMAND FOR ACTION PICTURES. "We want pictures!" That is the cry of every manufacturer and distributor of farm machinery, or farm journal editor. Pictures showing actual work, new hitches, exceptional tasks, record runs; before and after pictures of subsoiled orchards and field crops.

Not stilled pictures, with the equipment idle and the operator posing before the camera, but action views, where the whole outfit is intent on the job at hand.

Even good kodak views are useful to show to others how you did it! Most manufacturers are glad to pay for such pictures. Send them along—or mail them to ORCHARD and FARM with the story that goes with them; we are glad to pay for those that can be used.

DOES IT PAY TO RENT A TRACTOR? Tractors now can be rented at certain points. Once tractor makers and dealers were afraid that they were going to hurt the outright sale of their merchandise if they made it possible for the farmer to rent a machine for a part of the season, but now they are welcoming the chance to make use of the used machines that they take in on a trade now and then.

Perhaps a little inquiry will show that you can save money by renting an extra machine for the heaviest part of your work.

The charge necessarily is pretty stiff. The renter stands the depreciation and the loss of the use of the machine between seasons.

Inferior Farm Labor

"THE reason we have so much incompetent help on the farms is because laborers who use their brains are making more money at other trades," declares A. M. Stanley, editor of the Orange County Farm Bureau News.

"A farmer was in town the other day looking for help. He has three or four fine boys, but every one of them was making better than $10 a day laying floors, and their father did not have the nerve to ask them to come back to the ranch and work for about a quarter of that amount. Therefore he was around looking for others to take their place, hoping to find laborers that knew the top side of a collar from the bottom."

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Dust and Rust Tractor Enemies

Timely Suggestions on Care of Iron Horse at End of Season—Attention Now May Obviate Future Trouble

By B. D. MOSES

Agricultural Engineering Division, University of California

THE waste resulting from improper care of farm machinery is enormous. Tractors, harvesters, binders, plows, representing heavy investments, are housed carelessly under the blue sky and protected from the weather only by the coating of old grease left from the last job.

A week before the tractor is to be put up for the winter, the operator should make a thorough inspection of all parts. Bolts and nuts should be tightened, and broken or lost parts repaired or replaced. This will give a reasonable time for the ordering of extras and the locating of minor troubles.

Cleanliness is extremely important. An old broom, some rags and a can of distillate are the chief tools. Drain the transmission and the oil pots, refill with proper lubricant and run the engine long enough to distribute oil thoroughly.

The radiator now should be drained and refilled, and engine operated to remove all the loose sediment. In cases where dirty water has been used, it may be desirable to make a solution of one cup of sal soda to each two gallons of water. Run the engine for 15 or 20 minutes, drain and flush. This will tend to loosen the scale and also to remove any oil that may have got into the circulating system.

A good implement shed for general use. Tractors, however, require protection from dust and moisture. It might be advisable to enclose one section of this structure for a tractor garage.

FILL GREASE CUPS

In order to have all bearings in proper shape, grease cups should be filled and screwed down so as completely to cover the bearing surfaces with new grease.

Such exposed parts as chains or rollers might well be greased to prevent rusting.

The air cleaner must be cleaned thoroughly, all mud removed and water type left dry, while the oil type should be flushed with fuel and refilled with clean oil.

When shutting the engine down for the last time, it is a very good plan to pour about a pint of oil slowly into the air horn on the carburetor, thus thoroughly lubricating the valve stems, cylinder walls and piston rings. If the fuel is turned off by the cock nearest the fuel tank and the engine "starved," and not "killed" by shorting the magneto, the oil will remain in good shape in the cylinder. A further precaution might very well be taken of pouring a quarter pint of oil into each cylinder through the spark plug hole.

Draining of the entire water system is extremely important in cold climates, and all drain cocks on low pockets such as water pump, cylinder jackets and radiator tank should be opened. Even in warm climates occasional freezes occur and the repair cost incident to cracked cylinders, pumps and radiators is high.

More effective draining also can be accomplished when the engine is hot. Crank case flushing is better not left until the last thing, but the oil should be drained a day or two before the end of the work, oil screen cleaned and a fresh supply added.

Kerosene never should be used as flushing fluid, but it is advisable to run a quart or so of fresh cylinder oil through the lubricating system, which then is drained off and the crank case refilled with new oil.

MAKE REPAIRS NOW

Such repairs as valve grinding, carbon removing and bearing adjustment, depend upon the condition of the engine, but it is much better to do them at the close of the season than at the opening of the busy season.

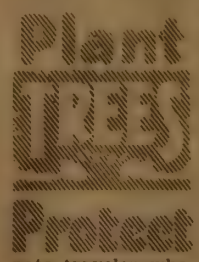
The magneto generally is equipped with very fine ball bearings and for this reason nothing but magneto oil or a good grade of electric motor oil should be used. Two or three drops at each oil hole will keep them in good shape, then the magneto should be covered to keep off the dust and protect it against moisture. In the event that there is no good covering for the tractor and if there is any chance at all of the instrument being damaged by the weather, it should be removed and put in a safe, dry place.

The fan belt should be slackened and, if leather, an application of heats foot oil will preserve it.

These precautions are not productive of the most satisfactory results unless there is a dry, clean shelter and a dry, clean floor. This does not require an expensive building, any shelter that will keep off the water, dust and chickens will do the work.

Evidence of Economic Value of Trees

RESIDENTS of the interior valleys are awakening to the cash value of trees, particularly for roadside and highway planting. They realize that many motorists choose the Coast highways during the hot summer months because of the long stretches of unprotected roads along the valley route, where in many instances there is not even a shade tree to protect the unfortunate traveler who must change a tire.



State officials and others interested in tree planting have encouraged beautification of highways and homesteads, and have discouraged the planting of certain kinds of palms and ornamentals which are of no particular value for shade, even though they may prove attractive to tourists.

Notable among achievements of the past few years is the work of the women's clubs of Madera, which sponsored the planting of more than seven miles of elm trees near that thriving city.

The Delhi Colony has interested itself also in tree planting, one result being long stretches of black locusts along the highways. The motorist finds locusts thriving between Livingston and Turlock, and already a great change for the better has been wrought in this district.

At Tulare, on both sides of the town, European sycamore stand is a monument to the civic pride of local individuals and organizations, while Visalia has been instrumental in planting large numbers of Arizona cypress.

From Tracy to the Alameda County line, black walnut is much in evidence, and black locust trees have been planted here also. Rotary, Kiwanis and other clubs have given their support to the movement in different sections.

Most of these trees have been set out under the direction of M. B. Pratt, State Forester, who conducts the State Nursery near Sacramento from whence thousands of young trees have been sent to various parts of the State.

Southern California, according to the State official, is far ahead of the Central and Northern parts of the State in highway beautification, but there are yet miles and miles of open roads to be planted not to mention the need for trees on farms and in towns and cities.

Miss Allen Succeeds with Grapes

Office Worker Develops Vineyard in the Coachella Valley —Also Grows Dates, Beans and Tomatoes

By MARY E. WALTER

MISS MARGARET ALLEN'S success with grapes in the Coachella Valley points the way for other women who have become tired of office work and want to labor in God's great out of doors.

"Grapes for women," is her slogan, "because," as she explains it, "a woman can do most vineyard work herself, even in a hot climate.

"Yes, I do my own weeding," she confessed, when I found her hoeing in her vineyard. Part of her farm is in six-year-old Malagas and one-year-old Dattiers. "Weeding's as simple as golf, with this hoe that pulls or pushes and doesn't make one bend one's back. Pruning also is easy, if a woman develops arm strength, and removing suckers is play."

Irrigating is Miss Allen's pet task, in a land where artificial watering is an important and expensive part of farming. "Any woman can irrigate," she declares. "All that is necessary is to turn on the motor and then walk about with a hoe. It is no harder than many household tasks. Grapes, by the way, need not be watered as often as many other crops in this region."

DOES HER OWN PRUNING

Miss Allen prefers to do her pruning, saving the $5 a day charged by men and working with greater skill. She made the cuttings for her Dattiers and planted them. Then she staked, tied and trained the young vines; thus saving much early cost, and now she's bringing up the baby vineyard in the way it should grow.

"But I draw the line at team work," she admits.

Her accounts show $7 a day expense for man and team to run irrigating furrows and harrow the ground afterwards, operations which must be performed seven or eight times a year.

Margaret Allen came to Coachella Valley from Nebraska, where she had worked in an office long summers and winters and yearned to be out of doors 365 days a year, where there was sunshine every month of the year. This is almost possible in the land she chose for her future home.

GRAPES PERMIT LEISURE

"Grapes require attention seven months of the year and care for themselves the other five. I water them once after harvest. Then they rest till after pruning in January. Unlike general farming or poultry raising, a vineyard permits leisure and frees a woman from outdoor work in the heat of the desert summer. Of course, young vines demand very close attention for the first two years, but after they become established, caring for them is largely routine work."

While the ledger account shows small cost for Miss Allen's start in grapes, it reveals many credits to green beans and tomatoes, with which her land was intercropped till the grapes paid. Her accounts show she received the cream of the prices for Malaga grapes the last half of June.

"The hot dry climate of the Coachella Valley gives a long growing season which brings grapes to early maturity. Rooted cuttings set in February bear some fruit a year from the following June, at which time they are as large as 2½-year-old vines elsewhere. When they attain the latter age they begin bearing paying crops. Coachella and Imperial Valleys market grapes two to four weeks earlier than other California grape districts."

Miss Allen also is a date gardener, having a few bearing palms and nursery of young ones.

"Date growing is mostly woman's work," she asserts, a claim which she proves by pollenating, pruning, irrigating, propping and training fruiting stalks; picking, maturing and packing the fruit.

"On the whole, grapes are better for women than either dates or vegetables," concludes Miss Allen.

Margaret Allen loves her desert farming and takes a scientific interest in it. She does all the work she can herself, and claims she would do some of it, even if she had 100 acres of good, bearing land.

And yet, this woman rancher remains feminine, fine, petite. She led an active social life before she came to the farm and keeps it up in one of the most unique and interesting rural communities of the West. Lately she has been pushing construction of the new club house of the Indio Woman's Club.

WEARS NICE WORK CLOTHES

She refuses to wear coarse, ugly work garments, dressing in light cottons, simply but attractively made. She violently opposes uncouth footwear for the woman farmer, claiming it makes the feet unnecessarily tired and sore. She dons high boots only during the irrigation season.

"Farming is hard work and no woman need think it isn't," smilingly admits Miss Allen. "It is vastly harder than office work. The discouragements and failures are more difficult to bear. The responsibility is 100 times greater; causes for worry come 1000 times oftener. But the reward is proportionately larger; a permanent, self-supporting home of peace and plenty, comfort and happiness. It is worth the cost.

"I have learned the joy of working for myself. I wouldn't go back to office work if farming were twice as hard."

Likes Simple Life

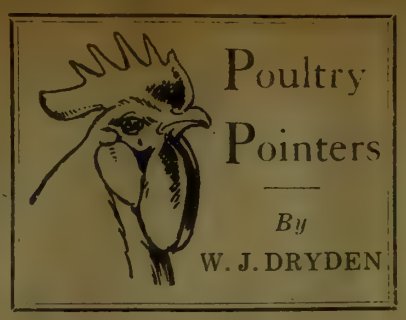
The attractive and comfortable home of the intrepid woman farmer is shown above. Miss Allen is seen pruning one of her grape vines. She believes in doing the work herself; then she knows it will be done properly.

Girl Stock Judge

TO Miss Bertha Underhill of Berkeley goes the honor of being the high "man" in the Intercollegiate Stock Judging Contest at the Pacific International Livestock Show at Portland, Oregon. The California team landed in second place in competition with the agricultural colleges of the West. The team as a whole, however, won a permanent trophy as the result of ranking high in the judging of beef cattle.

BERTHA UNDERHILL

Rarely has a woman student earned even a place on an inter-collegiate stock judging team while the honor of being the highest point winner has never before gone to a woman. This was Miss Underhill's first experience on an intercollegiate team. At the Pacific International Show Miss Underhill made a score of 937 points, while her nearest competitor, a student from the University of British Columbia, came in with 933 points to his credit.



Poultry Pointers

By W. J. DRYDEN

DISINFECTANTS GOOD INSURANCE.

The prevention of diseases is of far more importance to the poultryman than the treatment and cure of sick and infected birds. Few birds are worth the trouble and cost of treatment after having once contracted any disease.

If proper disinfectants are used, and if the birds are housed in proper sanitary quarters and fed a balanced ration, there is no excuse for disease in the flock. It is impossible, however, to have ideal conditions and to guard against disease being introduced by animals.

For proper disinfection, carbolic acid, if pure, is one of the most popular and useful disinfectants. Only pure carbolic acid should be used as is also true with the other disinfectants, such as phenol, cresol, chlorinated lime, slacked lime, formalin or formaldehyde, corrosive sublimate, sulphur dioxide and others.

A most thorough cleaning should precede the application of any such solution, as they must come in actual contact with the germs in order to destroy them.

RANGING PREFERRED IN OREGON.

Despite the weather conditions of Western Oregon which are not as favorable to poultry as in most of California, the large and successful breeders of the northern State would not consider raising their breeding and laying stock under confinement. J. A. Hanson, Ambrose Brownell, Charles Armstrong and other Oregon breeders keep the pullets and cockerels on the range, with only trees in which to roost. They are left under these conditions until the pullets start to lay or the cockerels are needed for mating.

ELECTRICITY USE AND ABUSE.

From a summary of experiments carried on by some of the leading experiment stations in the country as well as results secured from breeders of the Coast, the following suggestions proved to be the general practice:

The hens should be given a 14-hour working day by turning on the lights, either early in the morning or in the evening, or both. The morning seemed to be accepted as the most convenient time.

One 25 watt lamp will cover 60 square feet of floor space.

A 12 or 14-inch diameter reflector not only will save electricity, but improve the lighting effect as well.

Lights should be placed about 7 feet above the floor as well as under the dropping boards.

Use of electricity for breeding stock has not proved advisable in most instances.

Method of feeding as well as time of feeding must be changed to correspond with the changing of the hours during which the hens are kept at work.

CONCERNING GREEN FEEDS.

Prof. B. F. Kaupp of North Carolina holds that clover, alfalfa, spinach, rape and sprouted oats, with collards, kale, and cabbage followed by root crops, such as mangels, are the best kinds of green feed. The birds will need at least one-half ounce each per day.

In order to insure the greatest palatability, it is necessary to give a large variety of feeds, which cause the fowls to eat more. The larger the variety, up to any reasonable entent, the greater the palatability will be and the more the hens will eat.

HOME MIXING VS. PREPARED FEEDS.

Can the poultryman profit by mixing his own feeds? If the poultryman understands what it takes to make a balanced ration and is in a position to buy most of his feeds when prices are low, it may pay. But it is doubtful if the average poultryman can mix a balanced mash with any saving. The best grades of commercial feeds will prove to be more satisfactory to the beginner as well as to most poultrymen with small flocks, while many large operators now depend upon prepared mixtures.

THOUGHTS ON HATCHING.

The success of any hatch depends upon the eggs. The vigor of the chicks; the percentage of hatch; in fact, the entire result of the whole season's business depends upon the egg supply. The eggs are either good or bad, according to the flock—its vigor, feeding, housing and management.

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WHITE LEGHORN BABY CHICKS from high prod. flocks, mated to male birds with best blood lines on Pacific Coast. Write for prices. Rio Linda Hatchery, Rio Linda, Cal.

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AUTO TRAILERS, rubber tires, timken bearings, with flare board body and drop end gate with hitch, $62.50. BIRDSELL MFG. CO., Kansas City, Mo.

PATENT ATTORNEYS

PERCY S. WEBSTER, Savings Loan Building, Stockton, Calif. Long established organization. Send for free book on patents.

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BEES FOR SALE. [illegible] Free. Roy Spencer Apiaries, Sawtelle, Calif.

NURSERY TREES AND PLANTS

BEFORE YOU BUY! Get our prices on fruit trees; grape vines, both domestic rooted and grafted on resistant root; berry plants, etc. We will save you money in addition to supplying you with fully guaranteed stock. Write us list of your wants and request price list. Wholesale and retail. J. F. MILLER & SONS, Healdsburg, Calif.

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FRUIT AND ORNAMENTAL TREES—Most complete line offered Southwest. Buy direct from growers. Catalog free. Express paid. Consolidated Nurseries, Houston, Tex.

IF you want world's greatest commercial Everbearing Strawberry order Johnson's Improved Superb; $25 thousand, $3.50 hundred. U. S. N. JOHNSON, Nevada City, Nevada County, Calif.

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CHOICE New Oregon and other strawberry plants. Full line blackberry, blackcap, currant, gooseberry, loganberry and raspberry plants at lowest prices. Send for complete list; interesting. WARD K. RICHARDSON, 198 Hickory, Salem, Oregon.

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FARM LAND FOR SALE

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep rich, tried soil; complete irrigation with cheap water. Thorough drainage, rail, water and highway transportation. Write owners SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and BERRY FARMING in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land. Near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

FARMS WANTED

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

FARM wanted immediately. Send particulars. Mrs. L. Roberts, 320 E. Tray, Roodhouse, Ill.

REAL ESTATE FOR EXCHANGE

WILL trade my $1000 equity in 10 lots in Pindale, 7 miles from Fresno, as first payment on rabbit ranch near Los Angeles. 542 G St., Bakersfield, Calif.

BUSINESS PERSONALS

YOUR Christmas problem solved by giving Patterson's superfine pack of raisins, figs and nuts in California redwood boxes, 5 pounds to any address $5. Agents and dealers wanted. W. B. PATTERSON, 2233 Fresno St., Fresno, Calif.

BUSINESS OPPORTUNITIES

EARN $125 to $500 monthly at home [illegible] Spare or full time. [illegible] opportunities. Write for booklet G-51. Stand. Business Training Inst., Buffalo, N. Y.

TYPEWRITERS

TYPEWRITERS all makes $20 up. Easy payments. 15-day trial. Express prepaid. Guaranteed two years. PAYNE COMPANY, Rosedale Station, Kansas City, Kan.

BOOKS FOR FARMERS

"THE HOME GARDEN," by L. C. Johnson of Pomona, the largest plant grower in California tells how when and what to plant, and how to cultivate. Post paid, 60 cents.

FARM TRACTORS, MACHINERY

NEW and rebuilt implements at special prices. Call and see them. ARNOTT & CO., 114 S. Los Angeles St., Los Angeles.

When answering advertisements please mention this paper.

Vetch May Replace Alfalfa

ALFALFA is the best hay in the world for the dairy cow, but vetch is better. This sounds like a contradiction, but it may be explained in this way: 100 pounds of average alfalfa contains 51.6 pounds of digestible nutrients, while 100 pounds of vetch hay contains 58 pounds of digestible nutrients.

The proportion of digestible crude protein to carbohydrates and fats in alfalfa is 1:3.9, while in vetch the same comparison gives 1:4, about the same. This will show any dairyman that if he cannot get alfalfa or does not have it available, a mighty good substitute is vetch.

All cows need a leguminous roughage, one that is rich in protein. Milk contains a large percentage of protein, the same proportion that alfalfa does; therefore feed for cows must contain a lot of protein or they will not have it to put in the milk. Protein can be bought in bran, cocoanut, cottonseed meal and oil cake meal, but it is expensive and can be raised more economically on most farms.

Cows that are fed a good ration of silage and vetch-and-oat hay will produce milk very economically. Perhaps it will pay to feed them some grain or mill feed in addition, but that point must be determined on each ranch, because of the variation in conditions.

Vetch does well in the coast counties. It grows during the winter and increases the yield of hay, besides very greatly improving its quality. It should be sown in oats at the rate of 30 to 35 pounds per acre, unless it is known that less will do. About twenty-eight the usual amount of oats should be sown.

It is characteristic of vetch to make an uneven growth; at least it often comes that way the first time it is sown. The grower, however, should not be discouraged as it will grow more evenly in succeeding years. In some sections inoculation does not help to make the "stand" more even, although it can do no harm anywhere.

If the crop is on bottom land and there is plenty of moisture, it may be cut early in the spring and put into the silo. A second crop will then grow, which can be used for hay. This method gives two crops with but one sowing and will be found very profitable. It has been followed for several years by dairymen in Marin County, with excellent results. M. B. DOISSEVAIN.

Making and Selling Jellies at Home

THE experience of Mrs. G. W. Wisdom of Oceanside, San Diego County, in making and selling jelly and similar fruit products points the way for farmers' wives to make a nice little bunch of money at home. Mrs. Wisdom sells at wholesale each month about $100 worth of her tasty wares.

The best part of this supererogatory kitchen work is the enjoyment it affords this amateur home manufacturer, who deserves a place in the professional class, judging by the uniformly high quality of her products.

It was while Mr. Wisdom was in the orcharding business near Escondido 3 years ago that his wife became interested in working up waste fruit into delicious table conserves. She liked the labor so well that when she and her husband moved to Oceanside and went into the grocery business, the jam and jelly sideline was continued.

In the center of their food store there is a pyramid of Mrs. Wisdom's wonderfully attractive fruit products, manufactured by the proprietor's wife in her kitchen. Jellies predominate, being made in great varieties from all the commoner fruits and many of those which are little known to the average consumer.

Guava jelly is the last seller, being in strong demand even more in the year. The strawberry guava is considered a very good substitute for strawberries, for jelly making. Jelly made of loquats and guavas mixed, too, is very popular with housewives. Loquat and orange and loquat and apple are two other good jelly combinations. New fruit products constantly are being added to the Wisdom home made line, which now comprises twenty kinds of jams and jellies.

Mrs. Wisdom makes her own pectin by following directions obtained from the U. S. Department of Agriculture. This substance goes far towards solving the vexed problem of how to make some kinds of jelly jell.

Another valuable "trick of the trade" is to can large quantities of fruit juices when different kinds of fruit are in season, cheap and plentiful, and then work it up into jelly as needed and time permits.

Standard sized jelly glasses are used and the same prices charged as those asked by large manufacturers. Eight stores in San Diego and three elsewhere sell Mrs. Wisdom's goods in addition to the home store at Oceanside. O. H. PARNHILL.

Potato Growers

(Continued From Page 3)

in appearance closely resembles the Honey Dew muskmelon. It has red meat and black seeds and promises to become popular. The Honey Dew does not sell well.

While cantaloupes may be grown on the same ground for three years, California growers aim to avoid planting watermelons on the same soil two years in succession. Most of the seed for the last named crop is shipped in from Florida, while the bulk of the cantaloupe seed comes from Rocky Ford, Colorado.

Large light-green avocados from Florida lend a tropical touch to the San Jose market. They are wrapped in tissue paper and packed in excelsior. The wholesale price is $5 a dozen; retail, 75 cents each.

USE BATHING GIRL LABEL

The Oxnard Citrus Association is taking advantage of the popularity of bathing girl pictures by using them on their lithographed "Seaside" lemon labels.

The 40-pound box, which costs 28 cents, is the popular package for local use, being loaded by dealers to customers. The "L. A." big, holding 80 pounds, is preferred for shipping.

Celeriac is valued for its roots, rather than leaf stalks, the latter not being blanched. The plants, roots and all, are tied in bunches of six and sold at a nickel apiece.

Tomatoes are a big crop in the Santa Clara Valley, yielding an average of 330 bushels per acre, 10 tons, and having been known to produce bumper crops of 700 bushels. The plants are set five by seven feet about the first of May and irrigated twice.

Growers usually pay $10 a ton. The cost of production and harvesting is estimated by Lookeck Dessepack of the California Packing Corporation at $80 an acre.

This indicates a net profit of only $20 an acre, without counting interest on value of land, hauling crop to market and some other items. Although tomato growing involves much hard hand labor, Japs and Indians are willing to do the work for one-half the crop.

GROWING VEGETABLE SEEDS

Most of the onion seed produced in the United States is grown in Santa Clara County, also 90 to 95 per cent of the lettuce, carrot, radish, parsnip, beet, salsify and celery seed sold to the American wholesale trade.

Ten thousand acres devoted to these crops yield a million pounds each of lettuce, carrot radish and sweet pea seed and a million and a half pounds, 750 tons, of onion seed.

D. J. Hunt, from whom a portion of the above facts were obtained, is a member of the A. G. Col Company, San Jose wholesale dealers in fruits and vegetables. Hunt, who graduated from the U. of C. in 1914, class in agriculture, deplores the lack of interest which young men are taking in the farming profession.

"Despite the fact that the California College of Agriculture now has some buildings, more equipment and a stronger teaching force than it had 10 years ago, and the population of the State is considerably larger, the number of students has not increased. Too many country boys are drifting to the cities in search of white collar jobs. The United States needs more intelligent, red-blooded, young Americans on her farms," says Hunt.

CO-OPERATIVE EGG MARKETING

Plans for immediate organization of a Co-operative Egg Marketing Association in Kansas were included in the resolution adopted by a recent egg marketing conference held at Topeka.

The California White Leghorn Breeding Farm

SUPERIOR ENGLISH LEGHORNS—INTERNATIONALLY KNOWN

The World's Best

Write for mating list and learn why.

FALL CHICKS

ECKMAN & MILLIGAN, Lankershim, Cal.

Hegarty's Hogs Make Money

"IF YOU were asked to select the best hog raiser in Glenn County whom would you name?" asked one farmer of another one Saturday afternoon.

"Well, it might be any one of a half dozen men I know who have good hogs—some of them purebreds—fine looking stock—sort of hard to settle on any one"—was the reply.

"How about Lawrence Hegarty?"

"No, I wouldn't have him in the list. His stock is pretty much mixed up, some red, some black. I have seen them when they were pretty thin and he doesn't give them any particular care any time. Why do you mention him?"

"Because I believe he makes more money on his hogs—investment, care and everything considered—than any one I know, and he has been doing it for years. And I figure that money is the main thing folks keep hogs for—not for their society or just to have them around."

So the next time I saw him I said: "Mr. Hegarty, how long have you been raising hogs?"

"Oh, a long time—forty or fifty years."

"Do you make any money?"

KEPT FOR PROFIT

"Why, sure," he answered in a rather surprised tone. "Of course, they do or I wouldn't keep them."

"And how much will they bring in, one year with another?"

"From $1000 to $2000 a year—probably an average of $1200 or $1500."

"At about what cost?"

"I don't know. You see there is no regular man to take care of them and they just sort of live on what they rustle most of the time. Sometimes in the winter we have to feed them a little barley out of the sack, and there is one five-acre patch we sow in barley and let them eat while the grain is growing and ripening on the balance of the place. Then they live on stubble and grass mostly until the crop is sown again.

"We like to get a good market price for our hogs, but no matter what it is we make some money, because they don't cost too much to raise that way.

"What is the best kind of hogs? Well, hogs are pretty much hogs. I really like the old fashioned medium-type Poland China best. These big, rough, loose-jointed hogs take too long to mature, and no one wants a hog to weigh over 200 pounds any more. You might as well be raising elephants as 1000-pound hogs."

Mr. Hegarty has about 400 acres of land adjoining the river at Butte City—a body of as fine land as there is in the State. It has raised a good crop of barley every year for fifty or more years, and there is no indication that it will not do this forever.

There is no better farmer in this part of the country than Mr. Hegarty—no better neighbor and no more delightful gentleman to meet and to know.

"JUST HOGS"—THESE!

There is so much written and spoken nowadays about pedigreed hogs and pigs that must weigh 200 pounds at 180 days and big type hogs and hogs of various other sorts and degrees, that we found the story of such a hog enterprise interesting and refreshing. These are just common money-making hogs that ordinarily you don't hear much about.

Now we live right next to Mr. Hegarty and we raise registered Berkshires. We are much newer in the business than he is, and are learning all we can from him. We have learned that for a hog to be of much use as a breeder to the majority of Sacramento Valley farmers it must be able to "get along" under the same sort of conditions that Mr. Hegarty's do. If the registered hog can do this, and at the same time be a little better animal than the common one, there is a place for him; otherwise not!

So we live at perfect peace with Mr. Hegarty, not only on the hog question, but on all others. His many years of experience and fat bank account prove that he is right. And we know that our registered hogs are all right as long as they earn a place on the ranch. When they fail to do that we will be out of the hog business.—W. S. GUILFORD.

Making Leather From Pacific Coast Hides

CALIFORNIA oak leather is probably as good as any sole leather procurable, but the western range steer hides, due to brands and wire scratches, are not suitable for furniture leather, belt, case or strap leathers, according to Roy L. Donley, Los Angeles hide and leather dealer.

A large portion of the leather used in shoes necessarily will have to be imported from the East and Middle West, for a time at least. Neither are there enough light skins available here at the present time to provide sufficient upper leather stock.

However, as the dairy industry develops on the Coast, more skins or hides suitable for upper and other high class leather will be available here. The California dairy industry is in its infancy.

With the development of cattle feeding on the Coast, there will be fewer horned cattle resulting in better hides with less branding and other imperfections found on range cattle.

At present, sole leather is manufactured on the Coast, but owing to the lack of large shoe manufacturing industries, a large proportion of this leather is shipped East by rail and by steamship.

In addition to this, a large portion of our raw hides are now being shipped east to be tanned, converted into shoes and leather goods and the finished article sent back for us here.

A fact not generally known is that Los Angeles is the second best market in the country for leather novelties. Some of these novelties are manufactured in Los Angeles from finished leather imported from Eastern tanneries and leather houses. Very little of this class of leather is actually tanned on the Coast.

"California, known as a hide-producing country for over a century, now offers unlimited possibilities in the shoe and leather industry," declares Nelson R. Crow, editor of the Farm and Ranch Market Journal, who obtained the foregoing interesting facts.

"If Los Angeles doesn't seize this opportunity some other Coast city will attract shoe and leather manufacturers of capital and vision and become the center of both the shoe and tanning industry."

Exhibit Emphasizes Cow Testing Lesson

THE largest cow testing association in the United States is believed to be in Los Angeles County, where under the auspices of the Farm Bureau Association more than 5000 cows now are on test. A total of some 6500 cows is represented in the membership of the organization.

Five years ago there were but 1000 cows, indicating a remarkable growth. Four testers now are constantly in the field, working under the direction of Assistant Farm Adviser Gordon.

One of the most enthusiastic advocates of the testing idea is I. J. Scott, Pomona dairyman who with a herd of 34 grade cows was outranked only by one purebred herd. Scott's average per cow for the year closing in July was 4716 pounds.

His culling "deadline" is 400 pounds, except in the case of a heifer with first calf.

Long a testing advocate, Mr. Scott is striving to increase the membership in the association. He belonged to the first testing organization formed in Iowa many years ago and both from observation and from his own experience has learned that nothing will do more to place dairying upon a sound financial basis than the elimination of "boarder" cows.

At the Pomona (Los Angeles County) Fair, Scott had an exhibit of representative cows from his herd, with a poster inviting visitors to place them according to number in the other of their production.

A graphic object lesson, for many of the best dairymen upon comparing the results of their examination of the animals, with the actual records, found they had placed the cows in just the reverse order. Few, if any, were able to place the four cows in their correct relationship.

The true records were printed upon a window curtain, arranged with a roller, so that it could be drawn down by the visitor and compared with his own estimate.

"Many California dairymen would be better off with half the cows they now milk and would make more money with less labor, if they were operating upon a known basis instead of by guess work," pointed out this veteran producer. "It is hard to understand," he added, "how any commercial milk producer can fail to affiliate with the testing movement."

Electrically Dried Nuts

WHAT is said to be the only electric walnut dehydrator in the world's largest walnut orchard was used this year in drying Anderson and Barngrover's 50-ton nut crop near Linden (San Joaquin County). The grove comprises 500 acres of six-year-old trees. One thousand acres of walnuts were planted in the Linden district this year.

The New BULLETINS

AMONG new bulletins issued by the United States Department of Agriculture the following are deserving of special mention. They may be obtained free on application to the Division of Publications, Department of Agriculture, Washington, D. C. Order by number:

	No.
Marketing Main-Crop Potatoes	1317
Fumigation of Citrus Trees for Control of Insect Pests	1321
Pruning Citrus Trees in the Southwest	1333
Controlling the Gipsy Moth and the Brown-Tail Moth	1335
Feeding and Management of Dairy Calves and Young Dairy Stock	1336
Diseases of Poultry	1337
Polish and Poulard Wheats	1340
Mule Production	1341
Clothes Moths and Their Control	1353

TECHNICAL BULLETINS

The following technical bulletins may be obtained on receipt of price listed:

	Price.	No
Cultivation of the True Yams in the Gulf Region	10c	1167
Further Studies with Paradichlorobenzene for Peach-Borer Control, with Special Reference to Its Use on Young Peach Trees	5c	1169
The Manufacture of Camembert Cheese	5c	1171
Cereal Experiments at Chico, California	10c	1172
Hungarian Vetch	5c	1174
Grain-Sorghum Experiments at the Woodward Field Station in Oklahoma	15c	1175
Potato Brown Rot	5c	Dept. Circular 281

NEVADA PUBLICATIONS

The University of Nevada has contributed the following interesting data. Copies of the bulletins may be obtained by request from the Experiment Station, University of Nevada, Reno, Nev.

	No.
The Low Larkspur	105
The Spring Rabbit-Brush	104

CALIFORNIA CIRCULARS

The following new and helpful circulars have been issued by the University of California and will be sent free upon request. Address Director Agricultural Experiment Station, Berkeley, California.

Fungicidal Dusts for the Control of Bunt	364
Sewing Grain Sacks	261
The Tendency of Tractors to Rise in Front; Causes and Remedies	267

Farm Meat Circle

MEMBERS of Milford Farm Center (Lassen County) formerly found it quite difficult to secure fresh meat during the summer season, as the nearest meat market was 30 miles distant. Through the Farm Bureau a meat circle composed of 16 farmers was formed.

Each member agreed to butcher one fat beef, not more than two years of age, which would dress 350 to 500 pounds. It was further agreed that one animal should be butchered every six days during the haying season and that each person in the community would get a supply of meat every six days from the meat circle. The meat was sold at 9c to 12c per pound.

After three months, each circle member had butchered one animal. A settling up meeting then was held. The method of accounting was unique in that no special books had been kept.

Fifteen circle members were present at the meeting, seated around a large 16-foot table. Each man took out his pocketbook and emptied it on the table in front of him. An outsider coming in would have thought a big poker game was being played without any poker chips or cards.

The chairman of the committee announced the amount of money each of the 16 members owed for meat. These amounts were taken by the members from his pile of coin in front of him and deposited in the center of the table, for the first person butchering.

After "raking" this in, No. 2 called off the amount of money owed him by all members of the circle. This method was followed until all had settled their account with every one. Settling up took approximately one hour. After the settlement was made everybody pocketed his money, much of which had changed hands many times.

Arrangements then were made for the formation of a second meat circle to operate during the fall and winter months, with the same rules and regulations. Everyone present expressed satisfaction with the organization and all were very enthusiastic about continuing the work indefinitely.—FERN L. SHARP.

Breed Yearling Hens

IT is a mistake to raise chicks from hens in their pullet year, declares Dr. M. A. Jull, who is in charge of poultry investigations for the U. S. Department of Agriculture.

The small eggs laid by pullets, the latter's lack of constitutional vigor and the fact that they are force-fed—which lowers the hatchability of eggs—are given in support of the foregoing statement. Jull believes yearling hens should be used for breeding purposes.

TRAPNESTERS ACTIVE

ORCHARD and FARM is in receipt of the 1924 catalogue of the Santa Cruz Trapnesters' Association of Santa Cruz, Cal., of which Owen L. MacGregor is secretary and treasurer. Mr. MacGregor announces that Professor James Dryden, the famous poultry writer and authority whose articles are familiar to ORCHARD and FARM readers, has been secured as breeding adviser. The Association anticipates a busy and profitable season.

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Army McClellan saddles, russet leather, new 6.95
Army Gloves, 5 finger horsehide, postpaid .98
Army sheepskin lined coats, 40 inches long. Cost Government about $45.00. Like new. Smashed price, postpaid 12.93
Navy Pea Coats, 20 oz. blue melton brand new. All sizes, postpaid 9.85
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Junior College Is Making Good

"IT has come to stay," said Dean C. J. Booth of the famous Chaffey school (Ontario, San Bernardino County) in discussing the Junior College recently. "In many communities it is considered as indispensable as the grammar school or high school. We now have more than 15 junior colleges in this State and undoubtedly we shall have more."

Two years' college work is afforded by the Junior College and a surprisingly large number of the students complete their course by attending a university the last two years.

"Every one of our students who is qualified plans to enter the university and finish his course," stated Dean Booth. "In this respect the Junior College tends to increase greatly the number of college graduates. Many of these students would not have started college work at all if it had been necessary for them to go away to the university upon leaving high school. But having become interested through their two years at Junior College they are imbued with the determination to acquire a degree."

HIGH SCHOOL STANDARD RAISED

Another effect of the Junior College pointed out by the popular Ontario official is that of raising the high school standard. When the college is connected with or operated in conjunction with a union or local high school the high school students strive to raise their scholastic standards, and they also become enthused over higher education. Thus it will be seen the influence of the modern Junior College is much more potent than surface appearances might indicate.

But there is still another factor: The Chaffey College maintains an agricultural experiment farm and a field department which renders invaluable service to the farmers and fruit growers of the immediate territory. Professor Weldon of the ORCHARD and FARM staff is in charge of the farm, and in addition to acting as pomologist to the school co-operates with county farm advisers and other officials in extension work. Fertilizer experiments, for example, are being conducted in co-operation with the citrus experiment station at Riverside.

As one interesting example of Professor Weldon's valuable work is cited a recent experiment in pruning. Two rows of 41 trees each (Lovell peaches now in their fourth season) were set aside for study. One row was "short pruned" according to the old system, and the other was pruned long. The long-pruned trees yielded 38 boxes, all 2 5-8 or over, while the short pruned trees yielded only 6½ boxes, which were of no better quality, if as good. Further comparisons will be made as the trees develop.

This year Chaffey has more than 1200 students of which at least 200 take agriculture. It is estimated the Junior College students spend (or keep) within the town and district at least $250,000 a year which would be spent elsewhere if they went away to school. Moreover, they have the advantage of living at home during the first two years of their college course and of taking work which will be of immediate value to them in developing local enterprises later on.

"Our records show," concluded Dean Booth, "that a great majority of our students return home and engage in business or agriculture here, whereas it is well known that only a small percentage of State University students return to their home districts to take up their life work."

ALLIED WITH BERKELEY

The Junior Colleges work very closely with the State University. Dr. Baldwin M Wood, who represents the Berkeley school in its dealings with the Junior College, is much interested in the community college idea, and renders valuable service to the schools and students.

It is believed by those who have made a close study of the Junior College plan that eventually it may result in doing away entirely with present overcrowded conditions at the State Universities, by relieving them of a large percentage of the freshman and sophomore students. In fact, the tendency seems to be towards decentralizing higher education and tying it up with extension and experiment work in the various communities.

Only one factor has been a serious handicap to proper development of the Junior College: this is the inability of any but the more well-to-do districts to employ high-caliber teachers, comparable to those on the staff of a State university.

As the Junior Colleges gain in prestige and attendance, however, and agricultural development in the various districts advances, this condition is overcome. In fact, some of the older and wealthier schools now pay salaries to some of their professors comparable to those paid by higher institutions of learning.

Anyone who has made a study of agricultural or general education cannot but agree with Dean Booth that "the Junior College has come to stay." —J. C. K.

Stockmen Visit City

"PRODUCERS of livestock realize that the stockyards are a great educational center, points out H. M. Nater, Los Angeles banker, in the Farm and Ranch Market Journal.

"Stockmen like to accompany their shipments to market, observe the handling and sale of animals, compare their stock with that of other farmers, learn why it has brought more or less money, observe the effect of better breeding and better feeding, in prices secured for stock and last, but not least, enjoy themselves for a few days in the city.

"Western railroads having given the producers who accompany stock to market a ten-day stopover privilege, there is plenty of time for them to look about, attend to shopping and the buying of supplies with a part of the proceeds of their sales and become acquainted with city folk. Direct and lasting benefits will come to Los Angeles and those who visit us.

"I believe the time is near when the majority of producers of livestock throughout the entire region west of the Rockies will look forward to at least one visit a year to Los Angeles. Thousands will be visiting the central market as many are already doing and will be making their plans far in advance to spend a week or ten days here."

"Tree Doctors" Licensed

AS a culmination of the efforts of the Citrus Growers' Department of the Los Angeles County Farm Bureau to prevent some of the losses incident to the improper treatment of trunk and root diseases of citrus trees by unskilled operators, the horticultural commissioner of Los Angeles County, co-operating with similar officials in Orange, San Bernardino and Riverside Counties, recently held the first examination for "tree doctors," and those who successfully passed the examination and whose work in the field passes inspection will be given licenses to conduct such work in these counties. Those who fail to pass the examination will be prohibited from operating.

Because of the interest in the treatment of these diseases during the past few years, many so-called "tree doctors" have started work. The operations of many have been very unsatisfactory and have worked a hardship on grower and on legitimate, skilled operators alike. It is believed by officials of the Citrus Growers' Department of the Farm Bureau that the new arrangement will prove beneficial to both groups.

Citrus pests

Remarkable results have been achieved with *Ortho Orange Oil*, a spray which cleans the trees of all varieties of scale (also red spider) without injury to fruit or foliage.

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Luther Burbank

(Continued From Page 4)

best qualities of all the prunes combined in one; not only so, but, best of all those qualities seemed to be intensified.

The Sugar prune, introduced in 1899, has now been known to the public for nearly 25 years, and, although it will require, as is the case always with a new fruit, several years more even for its qualities to be thoroughly understood and appreciated, yet it is gaining every day in popularity, and sooner or later it may be expected to take the place as one of the leading prunes of commerce.

At the time of the introduction of the Sugar prune, B. M. Lelong, Secretary of the California State Board of Horticulture, gave the following accurate description of this prune in his report:

"The Sugar prune is an extremely early prune, ripening August first; cures superbly, with a yellow flesh, tender, and rich in sugar; the skin is very delicate, at first of a light purple, tinted with green, changing at maturity to dark purple, covered with a thick white bloom. The form is ovoid, slightly flattened, measuring five by six and one-half inches in circumference; the average size fifteen to the pound, which is two or three times larger than the French prune.

"The fruit stalk is short, and severs very easily from the stem as the fruit reaches maturity; the pit is medium size, flattened, slightly wrinkled, and most often separated from the flesh; the skin is so thin or porous that the fruit begins to shrink on the tree as soon as ripe."

"The tree is an unusually vigorous grower and astoundingly productive. One pound of green fruit makes seven and one-half ounces when dry. By the usual mode of curing, one pound of green fruit probably would make nearly one-half pound when cured.

"Analysis of the fresh fruit at the State University disclosed the fact that it is nearly one-fourth sugar—the exact amount being 23.92 per cent, the sugar average of the French prune being 18.63 per cent, and of all prunes 15.53.

The Sugar prune, therefore, contains more sugar than the French prune, is superior to it in flavor, and is fully two to three times the size. It is much more productive and certainly can be grown for half the expense, if not for one-third of the cost of producing the French prune. In flavor it is fully equal to the average Imperial which is deservedly popular for its flavor, but unusually unproductive, seldom producing even half a crop.

Paint Farm Schools

FOR the purpose of demonstrating to farmers the economic value of paint, the Extension Service of Mississippi recently conducted a two-weeks' "Save the Surface" campaign in Choctaw County.

Twenty paint manufacturers donated $50 worth of paint and brush for repainting the buildings occupied by the four consolidated schools in the county. Brushes and other material were purchased with a dollar-per-family fund collected from numerous school patrons. A local sawmill loaned lumber for scaffolding.

Five professional painters gave instructions in mixing and applying paint. The first hour of the morning was devoted to talks on painting, the rest of the day being occupied with brush wielding, repair work and scaffold building. A special committee mixed paint, while another furnished drinking water to the workers.

While the men and boys were at work on the outside of the building, women and girls were busy cleaning walls and furniture. School children viewed the good work being done and were instructed by the teachers regarding the value and use of paint. The scaffolding was left standing and a week later the crews of workers returned to apply a second coat. One building required a third coat.

At one school the women noised how bad the stove, curtains and furniture looked. As a result, all the desks, walls and floors were painted and a new stove and new curtains bought. A lumber dealer noticed the bad condition of the front steps and donated material for a new entrance.

Town people caught the enthusiasm of the country folk and one evening held a paint revival, which lasted until 11 o'clock. All who participated in the work were much pleased with the property preservation campaign.

GIRL WINS CALF PRIZES

Elizabeth Brown, member of the Downey Calf Club, won $25 in prizes and two silver cups with her heifer at the recent Southern California Fair. One of the cups was for the best fitted animal, and the other was for Grand Champion.

Bee Notes

By J. D BIXBY SR.
Contributing Editor

PRODUCTION COST OF HONEY.

The most important factor in the cost of honey is the size of the crop, which, of course, varies with the season. A big crop costs very much less per pound to harvest than a small one.

J. D. BIXBY SR

During the high-price period, following the war, one of the big honey producers of California harvested 50 tons one season. His production cost was 5 cents per pound.

The next year—wages, containers and other expenses being practically the same—his crop of eight tons cost 13 cents per pound. The difference in volume caused the variation in production costs.

A few years previous to the outbreak of the World War, when wages ranged not over $2 per day and containers—two five gallon cans and case—cost 60 cents per case in car lots, the writer secured from twenty of the largest honey producers of California their estimates of the cost per pound of producing extracted honey, covering a period of ten years. The figures ranged from 3 to 6 cents, the average being 4 cents. Double this figure and you will have a close estimate for the present time.

SAN DIEGO'S SHORT CROP.

San Diego County, usually one of California's heaviest producers of honey, had less than 700 cases to market this year.

BEES $100 PER HIVE.

John S. Harbison was California's first commercial beekeeper. He brought 64 colonies of bees from Pennsylvania around Cape Horn by steamer to Sacramento County, later removing to San Diego County, whence he shipped honey in car lots to New York at a large profit. When bees changed hands in those days the price was $100 per hive.

RULES SHOULD BE FLEXIBLE.

The recent Bee Inspectors' convention at Los Angeles voiced the opinion that there could be no effective cast-iron rules governing "migratory" beekeeping, owing to the natural conditions. A sudden change in atmospheric conditions may necessitate moving from one field to another of thousands of colonies of bees within 24 or 48 hours. No inspecting force could cope with such a task.

UNNECESSARY INSPECTION.

An apiarist who runs 600 colonies says:

"It is absurd and impossible that the migratory beekeeper should be tied down by rigid inspection laws, requiring that every colony must be examined before moving. The inspector must be allowed some leeway.

"I have seen a time when the income from the sage for just one day paid all my moving expenses for the season. In three days the flow was over. What if I had been tied down to an exhausted range by the failure of the inspector to get around?"

HEALTHY ORANGE COUNTY BEES.

Orange County has 12,000 colonies of bees of which less than one per cent show any disease.

STAR THISTLE YIELDS WELL.

Even in this dry year star thistle—pestiferous weed, but a blessing to the beekeeper—so abundant in the Sacramento Valley, yielded much honey in favored spots. A Butte County apiarist reports a surplus of 100 pounds per colony from 400 colonies.

NURSERYMAN BUYS BEESWAX.

A Japanese citrus nurseryman in the San Gabriel Valley is a large consumer of local beeswax. His sales of trees this year are said to have reached $50,000. Don't imagine he didn't work to get it.

In the heavy freeze of 1922 he saved nearly everything. Acres of trees were under lath, and thousands of smudge pots were rented to smudge, both the lath-covered and open acreage. Pots now are in place ready for another freeze.

Coachella Valley Dates Now Packed at Monrovia

This is the busy season at the fine new plant of the Valley Packing Association, shown above

THOSE who are interested in watching the development of the date industry in Southeastern California certainly would take pride in inspecting the new packing house of the Valley Packing Association, recently constructed and now in operation at Monrovia, Los Angeles County. The house is fully equipped with the most modern machinery and is a model of cleanliness and convenience.

Many are taking advantage of the "Visitors Welcome" sign to observe the interesting process of putting up a pack of California-grown dates which readily sells for a dollar a pound, in competition with imported dates at 20c a pound.

The dates are grown in the Coachella Valley, but after years of effort properly to pack the product near the gardens, it was decided to establish the packing plant at Monrovia, where a larger supply of suitable labor is available.

The association is a non-profit cooperative, composed of three members: The Tropical Date Company, the Menakher Date Garden and the Allah Date Gardens, which together control about

By J. ELIOT COIT
Contributing Editor Orchard and Farm

one-half the date acreage of Coachella Valley, which now amounts to 500 acres.

R. H. Postlethwaite, manager, and W. A. Chamness, assistant manager, are to be congratulated on the very fine pack being put out at the new plant.

Packing of soft dates begins about August 15 and continues as the different varieties ripen till about December 15. This year about 125,000 pounds of dates are being processed at the Monrovia plant.

Almost the entire pack has been sold through Eastern agents, although a certain amount of the extra fancy grades are reserved for sale at the plant to persons who mail fine packages of California grown dates to their friends at Christmas time.

The varieties of dates which have been introduced into this country or grown here as seedlings are numberless, but the association is making an effort to reduce the number of varieties to a few standard commercial sorts.

Among soft dates the Khadrawi is a leader. The finest dates are semi-dry, such as Zahidi and Deglet Nur. A kind rapidly growing in popularity is the Thuri, a dry or bread date, which is packed in pasteboard cartons and is not any more sticky than unshelled peanuts.

Miscellaneous varieties and seedlings are packed under the "Nomad" brand and assorted as to color into four grades: Golden, Amber, Dark and Black.

Dates are received daily by express from the gardens. They are first fumigated in vacuum, which kills all insect life and insures the fruit keeping as long as the packages are not broken, without becoming infested with bugs or weevils.

Some dates are packed in glass, without withdrawing any natural moisture. These, after washing, are capped under vacuum in glass jars, then sterilized, and when opened are similar in all respects to fresh-picked dates, except that they are quite clean.

Some varieties, such as Zahidi, are picked before fully ripe and the ripening process is completed in large incubation rooms, where the atmospheric moisture is carefully controlled.

The dates are washed and brushed in a special machine, for the purpose of removing any sand or grit which may have been deposited on them by desert winds. "Tres Palmas" is the extra fancy and "Dos Palmas" the fancy brand.

Absolute cleanliness prevails. Most of the work is done by girls.

Prize Melon Seed

IN the opinion of A. L. Musser, Los Angeles seed expert and dealer, the best watermelon seed grown in California is produced by F. A. Donner, whose work was described in a recent issue of ORCHARD and FARM.

Donner grew 40 acres of melons this year and expects to increase his acreage considerably next year. Klondike is the principal variety grown. Visitors drive long distances to sample Donner's melons, which are free to those who will save the seed.

Two methods are employed in separating seeds from pulp. One consists in threshing or grinding up the melons, the other in halving them in the field and—after allowing them to lie for a short time—scooping out the pulp. The latter is placed in vats, where it ferments, rendering the separation of seeds easy.

Double Duty Engine

Lower Photograph Shows "Hitch" for Motor

AT bottom of this page is shown a 1½ horse power engine performing at one time two typical farm jobs. One of these, the pumping of water, is a daily affair on many farms and when done by hand a monotonous and irksome task.

How many of us as boys, have hated also that frequent drudge of turning the grindstone while father slowly sharpened his tools. Small engines such as this make life on the farm more livable for every member from mother and father down.

This new engine is equipped with high-tension magneto which insures a succession of hot sparks for starting and running, and is so designed that the cylinder may be removed readily when worn and a new one replaced by the farmer. Thus, the expensive job of reboring is obviated.

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ORCHARD and FARM

DECEMBER 2, 1923

Carlsbad Capons Cut Strange Capers for Johnson

Profit in Poultry and Vegetables

THE ignorance of the public regarding the quality of one of the most delicious food products—capon meat—renders its production extremely risky business, according to this San Diego County poultryman. In addition to raising and selling $5000 worth of capons in three years, he has had some interesting experiences in winter gardening. —*The Editor.*

By O. H. BARNHILL

ONE thousand ten-pound chickens sold at 50 cents a pound, $5 each—$5000 in three years. Looks like easy money. What kind of chickens were they?"

"Capons," exclaimed George X. Johnson, Carlsbad fruit, vegetable and poultry grower. "But the average person knows as little about capons as he does about avocadoes. Until the public is educated to the superior quality of capon meat, the market for this product will be very limited.

"Making big money raising capons, however, is more than a matter of educating the public to the superiority of the product," he explained. "In the first place, it costs $2.50 to grow a capon, not counting the overhead for equipment. Furthermore, only about one cockerel out of four will make a good capon.

Johnson enjoys contemplating caponized cockerels.

Athel trees and elephant grass make good windbreaks.

City consumers prefer Carlsbad corn for roasting ears.

Early potatoes and fat poultry have proved a profitable combination at Carlsbad.

"Why?"

"Because all young chickens are not strong, vigorous growers, no matter how good the stock nor how carefully they have been hatched and brooded. Cockerels that show any signs of weakness or unthriftiness might as well be sold for broilers, as it never will pay to caponize them.

"There is another little joker in the capon business," continued Johnson, "which most persons never find out except by experience. A certain percentage of capons will grow a kind of a gland next to the backbone and this will cause the comb and wattles to develop causing them to look very much like roosters."

"Then why not behead them before selling?"

"Because buyers rely upon the absence of comb and wattle to identify capons."

Johnson believes it is a mistake to advise caponizing surplus cockerels of the farm flock, because of the uncertainty of the market for this class of stock. Dealers and consumers must be assured of a regular, steady supply of capons before they will guarantee to pay a good price for them. If the capon market happens to be glutted, buyers pay little more than ordinary chicken prices, Johnson explained.

"Marketing capons at this stage of the game is a good deal like selling Belgian hares," asserted the San Diegan poultryman. "If you want to obtain profitable prices, contract with a big restaurant or hotel keeper to supply a certain number of birds or animals each week. A single Los Angeles hotel takes all my capons at 50 cents a pound."

Johnson has about 1000 Light Brahmas in his capon plant. The birds are confined in small pens adjoining roosting sheds. The poles on which the heavy birds roost are less than a foot from the ground. The feed troughs are placed along the fence, being filled from the outside by the caretaker and emptied on the inside by the birds. This saves carrying mash and green feed into the pens.

A commercial grain mixture is fed, also kale, barley and Chinese cabbage. The latter makes heads weighing 10 to 15 pounds and is much prized for winter feed. A large up-to-date brooder house is being built to take care of the young stock.

An interesting breeding experiment is being conducted by the Carlsbad caponizer. For the purpose of increasing size and rapid growth, Light Brahmas are being crossed with Dark Cornish. At the age of 12 weeks, 12 Cornish cockerels averaged 4½ pounds each. The hybrid pullets resulting from this union are all red in color, while the cockerels have a mixture of white and black feathers, making it easy to distinguish the sex.

Old Brahma hens are fattened and sold for 40 cents a pound. This fancy price is secured in a manner similar to that employed in marketing the capons—selling direct to a city hotel. Of course Johnson does not sell all his chickens to these two hotels, but they take his fancy stock at high prices. Some capons are marketed by parcel post to individual customers.

While poultry helps keep the pot boiling, Johnson is growing a fine orchard of mixed fruits on his 15-acre ranch, raising vegetables between the trees. He uses water and fertilizer without stint, much of the latter being obtained from his poultry plant, with the result that his trees are very vigorous and thrifty.

Johnson has great faith in avocados, especially the Lyon. Several trees of this variety bore 200 fruits each in their third year. Twenty varieties of grapes are grown and many tropical and deciduous fruits. A row of Verdel figs ripen in December, when fresh figs are scarce and high priced. The fruit is never sour and the meat is a bautiful carnation red color.

Chinese lotus is grown as a root stock for persimmons, a hedge of the latter bordering the front yard. Loquats are grafted on quince roots. Johnson's quinces were so large that the judges at the county fair disqualified them.

The elevated location affords a fine view of the broad Pacific Ocean, but renders windbreaks necessary to protect trees, plants and animals from the stiff salt breeze which sometimes blows from the southwest. Water reed, Athel tree and elephant grass have been tried for this purpose. The reed looks like bamboo and makes an enormous growth, but has one serious fault—the roots extend far in a lateral direction, stealing moisture and fertility from other plants.

VALUABLE WINDBREAK PLANTS

The other two plants named also make an immense growth. The athel tree is preferred for a permanent windbreak, while elephant grass makes a quick, dense growth. The latter needs to be side pruned, to keep it from lopping over and taking up too much space. With the necessary support, it grows very tall.

Owing to the mild, equable climate, a variety of fruits and vegetables can be ripened every month of the year. Winter gardening has been found quite profitable. Plant lice discouraged the pea growers, but Johnson thinks this pest could be controlled if the necessary measures were taken to discourage its propagation.

"What's the matter with early potatoes as a money maker?" asked Johnson. "I have raised 240 30-pound lug boxes per acre and sold them for 6 to 15 cents a pound. This figures a gross return of $400 to $1000 per acre. The highest price was received two years ago last February, but did not last more than two weeks.

"Potatoes at these prices look like good money, but the expense of production is considerable. A ton of chemical fertilizer, costing $55, is needed for each acre. We have tried three standard commercial mixtures and obtained about the same results with each. Frequent irrigation is necessary. Water costs 60 cents per thousand cubic feet.

TRIALS OF TRUCK GARDENING

"It is difficult to grow a good crop of potatoes each year. One winter strong winds blew the sandy soil away from the young plants, weakening them. No sooner had we put the dirt back again than a month of very wet weather came, followed by weeks of cool weather. We did not raise many spuds that year. Of course, that was an unusually unfortunate combination of circumstances, but a farmer has to take such things into account."

Raising corn for roasting ears has been found profitable. One crop was grown which had a stalk nearly every 12 inches in the *(Continued on Page 9)*

ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY
DECEMBER 2, 1923

Adding Appetizers to the Ration of the Tree

Fertilization of Deciduous Fruit Orchards—When Is It Profitable?—Comparison With Field Crops—Scientific Information Summarized for Growers

By E. L. OVERHOLSER
Assistant Professor of Pomology, University of California

AN ACRE of fruit, bearing good crops, producing leaves and making new growth, uses more plant food during a growing season than wheat with twenty bushels per acre, including both grain and straw. This fact was demonstrated by chemical analyses made shortly after the beginning of the Twentieth Century.

It was generally considered necessary to fertilize soil to obtain twenty bushels of wheat; therefore it appeared desirable to fertilize for a crop of fruit. In fact, it was deemed more necessary to fertilize fruit trees because it was not possible to practice rotation of crops.

It seemed an easy problem to attack and solve. Different fertilizers were applied in various forms and amounts to fruit trees. The results obtained, however, were unsatisfactory, confusing, and quite at variance with responses of annual farm crops to fertilizers.

This may be accounted for by the following differences existing between fruit trees and annual farm crops:

(1) Trees have a preparatory period of several years before fruiting, but most farm and truck crops grow, bear a crop and perish in a single season.

(2) Trees begin growth in early spring and grow late in the fall, and the fruit, leaves and wood have a relatively long period in which to develop. The annual and biennial crops, as a rule, have a shorter season of growth.

(3) The buds of the tree are formed the year before and the early tree growth is made from stored plant food.

(4) The culture of fruit trees, such as pruning and spraying, may exert more influence upon the growth and yield than the fertilizers.

(5) The roots of fruit trees penetrate deep into the soil and have access to plant food reservoirs not available to more shallow-rooted crops.

(6) With field crops the entire life cycle can be observed in one or two years. An orchard fertilizer experiment, because of the long life cycle of many fruit trees, should run for at least 6 to 10 years.

(7) Only 40 to 100 fruit trees per acre can be grown properly and the probable error is great. The relatively large tract required makes it difficult to avoid soil variation within plots.

(8) The habit of alternate bearing and the individual variations of trees which cannot be attributed to discernible environmental factors, confuses the yield records.

RESULTS OF INVESTIGATIONS

Nevertheless, sufficient experimental data have been accumulated to enable judgment to be formulated. The tree obtains water from the soil through its roots. Certain elements in combined form, as nitrogen, potash, phosphorus, sulphur, iron, magnesium and calcium, necessary to the growth and continued life of the tree, are in the soil solution and are taken into the tree with the water.

Many think of this as constituting the entire source of the tree's food supply, because only water and fertilizer are applied to the soil, and if the question was raised as whether the wood were composed more generally of mineral elements or of the water, it might seem that the mineral elements must predominate, else how could the wood be so firm or so rigid?

Analysis of the new wood of fruit trees, however, shows it contains about 54 per cent water—a little over one-half of the new wood produced throughout the summer. The leaves contain about 65 per cent water, and the flesh of the fruit as high as 89 per cent water.

Since just a little over one-half of the new wood is water, what does analysis of this solid dry portion reveal? All the mineral or inorganic substances taken from the soil by the plant do not constitute more than 10 per cent of the total weight of the dry substance. What comprises the other 90 per cent of the dry matter, and how and where does the tree obtain it, if not from the soil?

It is ORGANIC MATTER that constitutes the predominant part of the solid portion of plants and it is CARBON that may be regarded as the significant element of organic compounds—carbon with hydrogen and oxygen.

CARBON FROM THE AIR

The water from the soil furnishes the hydrogen and oxygen, but the carbon comes from the air. The tree manufactures this organic matter, and the chief element, carbon, of this organic matter is obtained from the carbon-dioxide of the air and not from the soil. The chief-organic plant foods manufactured are starch and sugar.

The unique process of food manufacture, or photosynthesis, can be defined as the capacity of green plants to make by the aid of light, certain compounds, such as sugar and starch, out of carbon-dioxide and water. In discussing the making of starch and sugar, it is appropriate to describe it in terms of a manufacturing process, as under the following paragraph headings:

(1) RAW MATERIALS—The raw materials needed are carbon-dioxide and water. Carbon-dioxide (carbonic acid gas), exists in the air, in the ratio of about 3 parts in 10,000, and its distribution is nearly uniform. Water, the other raw ma- *(Continued on Page 10)*

Economical production should be the grower's guide to correct application of fertilizers. No amount of fertilization will take the place of correct tillage, irrigation and general orchard management.

California's Famous Highways Deserve Arboreal Adornment

By M. B. PRATT
California State Forester
WRITTEN FOR ORCHARD AND FARM

What State Is Doing Towards Beautification of Roads—All Agencies Urged to Co-operate

THE systematic planting of trees along the State highways of California began in the spring of 1920, when the Lodi Woman's Club planted a mile of European sycamores along the State highway near that city as a memorial to the soldier boys of Lodi. The plans for this planting were prepared by the State Forester and embodied in a permit issued by the State Highway Commission.

M. B. PRATT

This was the beginning of co-operative agreements betwen various organizations, the State Highway Commission and the State Forester, which has resulted in the planting of over 300 miles of trees along the highways of California.

There is no State in the Union that has a more satisfactory method for the beautification of the highways than has California. Due to the joint efforts of the Highway Commission and the State Board of Forestry, a State nursery was established several years ago to grow trees to be planted along State roads.

This nursery, which is under the supervision of the State Forester, now has about 60,000 trees, the most of which are ready for planting during the coming season.

Last year the trees were distributed free of charge to organizations that agreed to plant them under the terms of the permits issued by the Highway Commission. This year a nominal charge is being made for them, based on the cost of production and the cost of preparation for shipment.

PLANTING INCREASES RAPIDLY

Up to this year the trees have been maintained by the Highway Commission from the time they were planted. The mileage planted has increased so rapidly, however, that the expense involved has made necessary a different arrangement. Organizations planting trees in the future will be required to care for the trees the first year, or to deposit a sufficient amount with the Highway Commission to meet this expense. The Highway Commission also will agree to plant the trees if the cost of planting is deposited by the organizations to which planting permits are issued.

It is estimated that it costs about $1.25 to purchase, plant, stake and protect each tree and $1 to maintain it the first year. Trees are generally spaced 100 feet apart on both sides of the highway, making 104 trees to the mile. The total expense per mile is about $234, although this cost probably would be less if blasting were unnecessary.

Since the Highway Commission assumes all responsibility for the trees in cases where deposits covering the planting and care for the first year are made, it is very probable that this procedure will be more satisfactory and economical to the various organizations desiring to plant trees than if they assumed the responsibility from the beginning.

The care of the trees will be supervised by W. E. Glendenning, highway tree expert, who has had splendid results with the trees already planted.

The selection of the right kinds of trees for planting is a matter which is given serious consideration by the highway tree planting committee, which consists of the State Highway Engineer, State Forester, State Gardener and professor of landscape gardening at the University of California.

The principal species of trees that have been planted so far are: California black walnut, European sycamore, American elm, black locust, Lombardy poplar and various species of oaks. In the selection of trees every effort is made to select those which will harmonize with their surroundings. Many regions have charms due to their native trees which can be enhanced by the planting of additional native trees rather than exotics.

One of the favorite trees for highway planting is the European sycamore, which very closely resembles the native sycamore of California. Wherever soil conditions will permit and the right conditions are found—usually in the vicinity of streams and rivers, where the California sycamore is often present—this species is planted.

Another favorite tree is the California black walnut, which, because of its rapid growth and broad crown, is particularly adapted for highway planting. It harmonizes with nearly any landscape and has a high commercial value as well, since it can be top worked to the English walnut.

VARIETIES NOT FAVORED

As a general rule, the highway tree planting committee does not favor the planting of palms and eucalyptus along the State highways, even though they may attract the attention of Eastern tourists. Palms do not provide shade and eucalyptus trees are detrimental to the soil for a considerable distance. The latter species also endangers traffic through the breakage of limbs, which is liable to result when the trees attain large size. Deciduous trees seem to be best adapted for highway planting, since they shed their leaves at a time when the highways are wet from winter storms and do not hinder roadway drying, as would evergreen trees.

The permits issued for planting on the State highways prescribe the method of planting, staking and protecting the trees. Uniform spacing also is prescribed, generally 100 feet apart on both sides of the road, with an alternate arrangement, which gives a 50-foot spacing effect to the traveler. One species is planted continuously for some distance, until a convenient break is found, when another species is planted, to avoid monotony. After regular planting has been accomplished, it will then be possible to undertake landscaping by means of inter-planting with shrubs and flowers.

SPLENDID BEGINNING MADE

A splendid start in beautifying the highways of California has been made, which, if continued, will result in the harmonious treatment of the whole highway system. Concerning this work, Professor Jepson of the University of California says:

"While such improvements increase the pleasure and contentment of the traveler and add large economic values to the regions traversed by the roads, the work serves an additional purpose in giving expression to the spirit of our people, their love for the out-of-doors—the hills, valleys and mountain ranges of California.

"These roads not merely will carry the traffic load of trade, binding city to city, but—ably planned and adorned—they will be sylvan threads worthy to join the wonderlands of California each to each and these in turn with the centers of population. In this manner such work will give a visible sign of the mental attitude and spirit of the Californians."

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Farmer's Viewpoint

THE HORN—A USELESS APPENDAGE?

The practice of dehorning cattle has been criticised, but we believe the best argument in its support is that put forward by a certain "old time" stockman:

"A man with a club is almost sure to find some use for it. If he isn't pounding the fence or throwing it at a dog, he's stripping daisies or knocking the heads off of bull-thistles. He's always doing something with it just because he has it in his hand.

"It's the same way with a cow. If she has horns, she will use them in some way, and they take her mind off her business. There's less to distract her attention when her clubs are gone."

Dehorning mature animals with saw or clippers is disagreeable business, but the method of treating calves by destroying the horn "buttons" with caustic is both practicable and easy. It is better not to let the "club" develop into a "big stick."

SPECIAL COMMUNITY BREEDS PAY.

Many agricultural communities realize the advantage of raising one breed of animals almost exclusively. Waukesha County, Wisconsin, for example, has become known as a Guernsey district, with the result that buyers from all over the United States and some foreign countries come there to purchase purebred animals of this breed. Good prices result.

Breed associations are able to operate to much better advantage where one has jurisdiction over all the purebred dairy stock, for instance, in a community. This makes possible the getting together for mutual benefit and co-operation of all the producers of one kind of stock, such as purebred hogs, in a district.

Elwood Mead and George Kreutzer, eminent community builders, realized the value of breed specialization and organized the State land colonies at Durham and Delhi along these advantageous lines.

WHY FARMERS THINK MORE.

Farmers are the greatest thinkers in the world, because they have the best opportunity for uninterrupted meditation. The city dweller is apt to accept the opinions of others, because he hasn't a good chance to study problems while working in store, factory or office.

Employment in peaceful fields and orchards may be monotonous, but it affords the finest chance in the world for quiet thought, which is the reason why farmers are known as the sanest, most original and independent citizens of this or any other country. They are not compelled to think about their work constantly, but during a good share of the time can devote their minds to other interesting and profitable subjects.

EXTEND FARM ORGANIZATIONS.

Since the Farm Bureau and commodity marketing organizations have helped the agricultural industry more than anything else, why not extend the scope of these very valuable organizations?

Just as the labor unions are hampered and limited in their activities by unorganized workers, so is the farmer who does not affiliate with agricultural associations a stumbling block in the path of rural progress. The way to make such organizations 100 per cent efficient is to secure 100 per cent membership.

Farmers need to "consolidate their gains" in the battle for industrial freedom by linking up their organized activities with similar associations in other communities, States and countries. Perhaps the agricultural millennium will come when all the farmers in the world are completely organized, not for personal gain at the expense of consumers, but for efficient production and distribution.

What's New?—Keeping Abreast of Agricultural Progress

Starting Silver Fox Farm

A SILVER fox farm is being established on the Columbia River highway, thirty-five miles from Portland. Five pairs of foxes have been shipped from Prince Edward Island, five from Conover, Wis., and one from the Clarke County (Wash.) fox farm. It is planned to make the new farm one of the show places of the highway.

Hens Lay Two Eggs a Day

AT the West Virginia College of Agriculture there are two hens, mother and daughter, each of which lays two eggs per day. It is believed the birds possess duplicate ovaries and oviducts, as have hens dissected at Cornell University. West Virginia research specialists believe it possible to develop a 600-egg hen.

Fair Sales Tent Succeeds

THE sales tent maintained by the farm bureau at the Riverside Fair was a great success, according to those who took part in the project. Eight hundred dollars' worth of farm products were sold, principally prunes, apples, walnuts, grapes, olives, grain, honey and goldfish. The cost of the enterprise was $35, which was paid pro rata by the farmers who did business in the tent.

As a result of this experiment, a movement is on foot to establish a public market at Riverside.

Co-operative Cattle Herding

TWO HUNDRED EIGHTY-THREE Colorado stockmen saved 40 cents a head on 23,451 cattle the past season by grazing them co-operatively. The average expense was $1.86 per head, compared to $2.26 each for 18,803 cattle owned by seventy-one independent stockmen.

The co-operatives pooled the expense of hiring riders and other grazing costs. At the end of the season the entire expense was prorated among the members.

Ship Grapes Without Ice

IT is entirely practical to ship California grapes to the Atlantic seaboard without refrigeration, in the opinion of George C. Husmann of the United States Department of Agriculture. Fruit intended for transportation in this manner should be picked at the proper stage of maturity, he advises, as green grapes will wither and overripe specimens decay.

"The great trouble with most refrigerator shipments," declares Husmann, "is the failure properly to precool the fruit before it is iced for transportation."

Raking Hay With Auto Truck

WITH an auto truck, Wesley Kouns, Kansas farmer, gathers up two large rakefuls of hay, hauls it a half mile and drives back again in seven minutes. This feat is accomplished by fastening to each end of the truck a large sweep rake. By means of a lever the driver tilts the front rake up when full, then fills the rear rake by backing up, when it also is tilted, the rakes being held in this position while the hay is transported to the stack.

For two years Kouns has used this implement for raking and hauling the hay crops on ninety acres of alfalfa, claiming a great saving in time and labor is effected thereby.

Cows Thrive on Sawdust

THREE Iowa cows, recently fed on a ration consisting partly of sawdust, maintained their weight slightly better than when given an entire grain ration, while the milk and fat production remained practically the same, according to the Forest Products Laboratory at the University of Wisconsin.

The cows were fed on sawdust 17 days, receiving a mixture consisting of 18 parts of this material, 36 parts ground barley, 30 parts bran and 15 parts linseed meal. During the check period an equal portion of barley was substituted for the sawdust. A similar trial was made in Wisconsin with like results.

Before feeding, the bran was treated with diluted acid under pressure. In this process 25 per cent of the wood is converted into sugar and the rest of the fiber, or cellulose, changed considerably in physical character and solubility. This process is being used on a commercial scale for the manufacture of industrial alcohol.

Saving Stable Manure

BY the use of $1.50 worth of gypsum (land plaster) it is possible to save $2.80 worth of nitrogen, according to C. H. Hutson of the North Carolina College of Agriculture.

"A ton of horse manure," explains Professor Hutson, "contains 14 pounds of nitrogen. Unless the manure is properly treated, half of this valuable fertilizing agent is lost by evaporation, the nitrogen forming ammonium carbonate, which is very volatile.

"The seven pounds of lost nitrogen is equivalent to 66 pounds of ammonium sulphate, worth $2.80. By adding 200 pounds of land plaster to the manure the volatile nitrogen compound (ammonium carbonate) becomes a non-volatile salt (ammonium sulphate), which remains to benefit the soil covered by the manure.

"In addition to the fixation of nitrogen, the use of gypsum adds plant food to the soil in the shape of calcium and sulphur," this authority concludes.

Arizona Poultrymen Organize

ARIZONA poultrymen are organizing a co-operative marketing association and expect to be ready to begin business January 1, 1924. There are 35,000 laying hens in Arizona and a first-class home market for every egg produced. A poultry show is to be held at Phoenix December 12-15 by the Maricopa County Poultry Association.

Shipping Eggs By Water

ELEVEN HUNDRED cases of California eggs were shipped to New York on the Panama-Pacific liner Kroonland, which sailed from San Francisco November 10.

The eggs were stored in a chamber cooled with the brine system of refrigeration. During the 5200-mile voyage the eggs were kept at a low temperature and arrived at their destination in excellent condition.

This successful experiment in transporting eggs by water to the Eastern market is expected to result in large quantities of poultry products going to the Atlantic States by way of the Panama Canal.

The Kroonland, Finland and Manchuria each have refrigeration space for 1,000,000 eggs.

Dairymen Buy Creameries

AFTER a year spent in negotiations, the Arizona Dairy Producers' Association has purchased the plants and equipment of the Hassayampa Creamery Company and the Pacific Creamery Company. Payments are to be made over a term of years from the business turnover of a new manufacturing company which the farmers are organizing.

The association has organized a stock company and obtained from the Farm Land Bank at Berkeley $10,000 for loaning to members.

Since the organization of the Arizona Dairy Producers, farmers have received 12 to 22 cents a pound more for their butter than formerly, while the cost to the consumer has not been increased, according to C. W. Steele, secretary of the organization.

Fined for Spray Damage

CAN a man be made to pay damages for spray injury to trees? This important point recently was settled in the affirmative by Abner McCrary, Riverside County judge, who fined A. L. Roberts $295 for spraying the citrus orchard of Thomas Stack in such a manner that both fruit and foliage were seriously injured, according to testimony offered during the trial. Stack was excused from paying a spray bill of $196.

McCrary claimed it was not his fault the trees were injured, laying the blame onto the Almighty, whom he said sent an unusually hot spell of weather immediately after the trees were sprayed, causing the resultant damage. Stack asserted that his orchard suffered $2000 injury as a result of the spraying.

Let Us Help You Solve Tree Problems

ORCHARD and FARM hopes to aid in making America's most attractive State still more beautiful.

Plant TREES Protect

For, although California is blessed with thousands of acres of virgin forests and is the home of the highest trees in the world, she has also great areas of desert and semi-arid lands.

Hundreds of California farm homes need more trees. Many towns and cities can be made more attractive and livable by intelligent planting of ornamentals and shade trees. Long miles of highway afford the motorist little protection from the blazing sun and present at best a dreary aspect.

Send your tree problems to the editor of ORCHARD and FARM. Whether you have a city lot or are interested in a community project—no matter in what part of the State you are situated—we shall take pleasure in assisting you.

To our farmer readers and those who are developing suburban estates and home places we suggest sending a sketch of your grounds, with information concerning climatic conditions, soils, precipitation (or irrigation facilities) and topography of the land.

Through our close contact with forestry officials and other authoritative sources of information, we are in a position to give specific suggestions as to what kind of trees to plant for different purposes, where to obtain nursery stock, and how best to maintain them.

Another suggestion: if you have beautified your own place with trees or have taken part in community tree-planting work, write us concerning your experiences. Have you worked out a plan combining beauty and utility? Tell us about it for the benefit of other readers.

ORCHARD and FARM wants to hear from all Californians who are interested in tree conservation and planting. —*The Editor.*

Side-Potting to Save Offshoots

THOUSANDS of dollars a year may be saved, according to several date palm growers in Coachella Valley, by practicing the ancient method of side potting date palm shoots on the parent palm.

Side potting is applied to those offshoots that start on the trunk of the tree a distance from the ground and cannot be rooted on the ground, therefore, ordinarily are cut from the palm unrooted and started separately.

The economy of side potting such offshoots is clear, according to one Coachella Valley grower who has developed his date garden with keen scientific interest and approved methods. He declares that rooting on the trees saves 97 per cent of the baby palms, while he has experienced an extremely large loss with other ways of rooting. He has tested side potting a year and a half, in which time he has successfully started 90 offshoots in his garden.

Cutting Date Offshoots

Transplanting the offshoots or "suckers" of the date palm is the only method of obtaining increase of stock true to type. These offshoots are very delicate to handle. Considering that date offshoots cost from $3 to $25 apiece and that the parent tree bears only from 8 to 25 in its lifetime, the loss of even one shoot is a thing no grower likes to contemplate.

The date men of Coachella Valley, aided by United States Government experimentation, are working toward successful date propagation. A practice widely used is to chisel the offshoot from the mother palm and root it in a pot, in the ground or in an offshoot house. This rooting necessarily must be employed with imported unrooted offshoots. A large percentage of loss has been found to result from this method and many growers feel they are demonstrating a very successful method by letting offshoots root on the mother palm and removing them with a good start in life.

A palm offshoot grows from the parent trunk within the axis of a leaf. To start it rooting in the ground while still connected with the mother, its stem is exposed by cutting the supporting leaf from under it.

To side pot the shoot that springs out a foot or more from the ground, a casing of wood is built up from the earth round it and filled with rich manure or rotted date fiber. The case is made water tight, since the baby palm must be assured plenty of water, which is dipped up to it during irrigation. Often a piece of tin is placed under the shoot and against the mother trunk to prevent the new roots from running underneath.

The length of time the young palm remains in the side pot varies, but usually is about four months. When the roots are well formed the stem of the shoot is chiseled away and the young tree taken away to be planted.

Thus by being allowed to draw nourishment from its mother palm until it can depend on its own root system and start life alone, the young palm is given 97 chances in 100 to continue its growth to maturity, according to the experience of this orchardist.—MARY E. WALTER.

Do Trees Inherit Tendency to Disease?

IS root knot always acquired through the ordinary channels of infection or may it be inherent in the stock used for propagating?

An interesting observation, made by C. F. Collins, for thirty years a resident of Tulare County and for eight years Horticultural Commissioner, reopens this interesting question.

Salway pits, taken from trees having root knot disease, were compared with pits taken from trees free of disease.

Trees propagated from the first lot showed 90 to 95 per cent infection; in fact, practically all the trees budded on the Selway roots from the infected lot developed the disease, while those from the second lot developed only 5 to 10 per cent, Collins asserts.

The young trees were grown in the same soil and under similar conditions. Observing that the "sick" trees would be unprofitable, the owner removed them, leaving the holes open and exposed to the hot sun all summer. The following winter new trees from the clean stock were set out in the same holes and these developed into healthy producers without any sign of the disease.

The question arises, then, as to whether the disease was transmitted to the young trees through the pits used for propagating, or whether they simply inherited a tendency to the disease which made them very susceptible.

If plants and trees are like human beings, the latter assumption may be assumed to be correct, for it is quite generally believed by physicians and other scientists that the child cannot inherit from its parents through the blood the actual germs of infectious disease, but can only inherit a weakness or "tendency" which strengthens the possibility of outside infection.

Experiments on a large scale and over a period of years to determine just how plants react to infectious diseases might prove of great scientific and practical value.—A. J. M.

Packers Expect Profits

"WE ARE expecting to make a profit this year," writes R. D. MacManus of Armour and Company. "If there had been any way for us to avoid running our business at a loss during the past three years we would have taken that way.

"It happened, however, that the condition of the market made it impossible for us to buy livestock, pay the wages demanded by labor, the freight rates required by the railroads and the taxes assessed by the Government, sell at the prices we were able to get from the retailers and make a profit. It was an unusual situation brought about by post-war adjustment."

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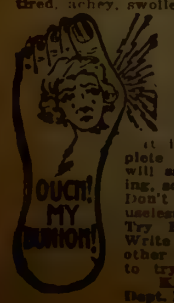

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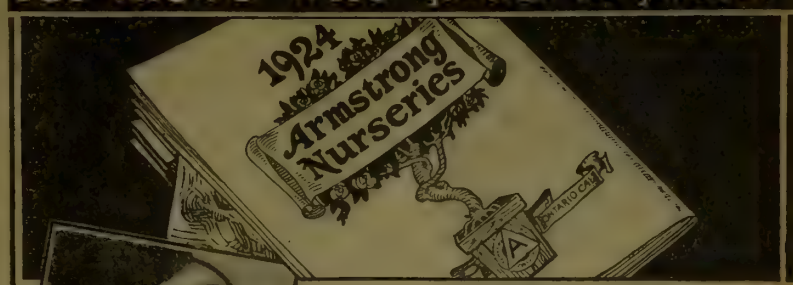

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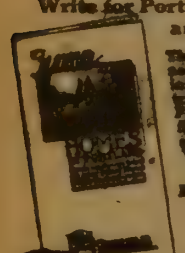

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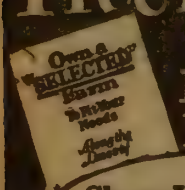

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Among the VEGETABLE *Producers*

By RALPH G. RISSER

WILT RESISTANCE IN TOMATOES

Fusarium wilt is said to be the most serious disease affecting tomatoes grown for fall shipment to Eastern markets in Southern California coast districts, with the possible exception of nematodes. Damage from Fusarium wilt has occured in fields both in Los Angeles and Orange Counties and trials have been made by the University of California of a number of strains and varieties which are resistent. Very striking results have been secured showing that some of our common sorts are much more susceptible than others. Further experiments probably will be conducted next year to test out the merits of these new varieties for shipping purposes.

COACHELLA ONION GROWERS FERTILIZE

Growers of onions in the Coachella Valley of Riverside County are using commercial fertilizers in producing their crops. This is the first season in which the chemicals are being generally utilized throughout the valley. Reports indicate that experiments have shown these complete fertilizers applied after cover crops have been turned under, improve the grade, enlarge the size, increase the yield and encourage early development.

CALIFORNIA LETTUCE SHIPMENTS

For several years California has maintained the lead in lettuce shipments and the movement has been increasing each season. The average daily output of the State for the past year has been 37 cars. The shipments from California for the year ending September 30th were larger than the shipments of the entire United States for the calendar year 1920. The following data give the number of cars originating in each district for the past two seasons:

	1922-23	1921-22
Northern California ..	2498	1127
Imperial Valley	7636	4739
Other parts of So. Cal.	3641	4425
Total.....	13,775	10,291

WASHINGTON ASPARAGUS AROUSES INTEREST

Considerable interest has been manifested lately in the Mary Washington variety of asparagus. This interest has been intensified by the visit of Professor J. B. Norton to California. Professor Norton is the man who has had more to do with the development of this variety than any other individual. While in California, Professor Norton called attention not only to the rust resistence of this improved variety, but also to its other virtues, especially its vigor, its productiveness, and its size. He visited asparagus growers in the Delta of Central California and in the Imperial Valley also.

THE VARIETY QUESTION

For most vegetables there are a few standard varieties which are known to the trade and generally recognized as satisfactory. In growing vegetables for shipment, it is almost always advisable to make the main planting of one or two of these varieties, in many instances one variety being preferable for purposes of standardization.

A multiplicity of varieties is not desirable for a commercial crop and changes of varieties for the main plantings should be made very cautiously. For making progress and advancement it is necessary to try new sorts occasionally, but they should be tried at first on an experimental scale only. Many of the new sorts will be found to be a decided change but not such an improvement as the overenthusiastic reports of the introducers might indicate.

Rid Orchards Now of Carry-Over Blight

PEAR growers should not be lulled into a false sense of security because of the comparative absence of blight at this time of the year, says L. H. Day of the University Farm, Davis.

Even though little infection may be noticed, thorough inspection of the trees should be made in order to prevent a possible outbreak next year. Sometimes a tree or an orchard appears to be entirely free from blight, but the following spring the blossoms are killed by the disease.

At this season leaves on branches affected by hidden blight or on portions of the tree nourished by diseased roots will often change color. The roots of such trees should be examined for infection and those showing discoloration should be cut out and burned.

All hold-over twig blight should be removed and burned. The trunks and larger branches should be carefully inspected and any cankers scarified.

Day has been conducting experiments for the Pomology Division during the past three years in the Sacramento Valley on the control of blight. Growers who have followed his suggestions are making good progress in ridding their orchards of this serious disease.

The scarificaton method consists of paring off the outer bark of diseased areas and treating the wound with a powerful disinfectant.

The formula for the disinfectant is 16 large tablets of cyanide of mercury and 16 large tablets of bichloride of mercury dissolved in one quart of water and added to three quarts of cheap commercial glycerine.

This material should be kept in fruit jars or other glass containers and applied with a paint brush.

In addition to the above excellent suggestions, orchardists should bear in mind the necessity of cutting out not only all discolored tissue, but the healthy appearing bark surrounding blight infestations, as this tissue contains blight germs which have not yet discolored the bark of wood.

When blight is spreading rapidly it sometimes is necessary to remove six inches of bark above and below the discolored spots, while one to three inches will suffice when the disease is comparatively inactive, as during the dormant season. It is always best to risk cutting out too much wood and bark, rather than too little.

Leaves on branches affected by blight turn a peculiar purplish color, which is soon recognized by the experienced blight cutter.

Is Wax Waste Injurious to Fruit Trees?

NOW at the close of a most disastrous season in bee-culture, when hundreds of colonies are dying out, much wax-rendering is being done. A word of caution as to the disposal of the refuse may be of value.

The "slum-gum"—popular name for the cake of refuse from the wax-press—is very rich in sugars and powerful acids, as is also the liquid in which it is boiled. The fertilizing value of the latter is great, but it is in too concentrated form to use on plants or young trees. I have seen young fruit trees badly injured by the waste water from the wax press run in furrows close to them. Better dilute it or run it some distance away.

Use the slum-gum cakes for fuel for the wax-boiler or the fireplace. If laid out in the sun they will soon dry and can be stored for future use.

I once ruined a fine young walnut tree by watering it with sweetened, syrupy water from the washings of honey and syrup cans. The weather was hot, the tree growing very rapidly and needing water, so I supplied it liberally in a "basin" about the trunk. The next day that tree withered up and died as if a fire had scorched it. From appearances, the sweetened water was carried up directly into the leaves and twigs, where the rapid evaporation caused the pores to be quickly clogged with the sugar in suspension, so that the hot sun withered it like a fire.—J. D. B.

Clean Citrus Fruit

What is the best method of removing black and citrocola scale fungus from citrus fruits? Can hot water safely be applied?—A. A. ADAMS, San Diego County.

THE best solution for removing the black fungus which follows black scale on citrus fruits is a washing powder which is known to be free from caustic soda.

The proper temperature of the water depends on conditions and must be learned from experiments. For oranges or grapefruit it should be around 122 degrees. For lemons it appears to vary from 116 to 122, the lower limit applying during time of rainy weather and the upper limit applying during dry weather.

To get the best results the water should be used as hot as can be used without injury to the fruit. Too high a temperature is first indicated by a slight appearance and odor of free citrus oil on the surface of the water in the tank. Injury from too hot water consists of spotting of the fruit and injuring its appearance.—J. ELIOT COIT.

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Home Farm Happenings

By ONE OF US

FOR A BETTER CATTLE SITUATION.

There are several people in our part of the country who believe there is a future in the cattle business, and that the time to get into it is when prices are at the extremely low ebb that now prevails.

W. S. GUILFORD

Good cows are being bought for very little money and many who have handled cattle for years are either getting out entirely or greatly curtailing their operations.

Where plenty of feed at reasonable cost is available, it certainly looks as though these buyers of very low priced cattle were on the right track.

WINTER ORCHARD WORK.

There is a good lot of work planned both for the prune and pear orchards, but some rain is needed before it can be done to the best advantage.

A Fresno scraper team will be kept at work for a month or so as soon as the soil is in shape to handle easily. Every place where it has been hard to hold water until the moisture penetrated to the roots of the trees will be "worked over." Some high spots will be cut down, but for the most part the work will be making heavier and higher levees to hold the water.

A lot of big checks—one or two or even five acres in some—will be made, so the water can be shifted to these at night and the pumps run as near 24 hours as possible.

Some sort of ridges from which the water runs off too quickly will be flattened out—made into a kind of contour checks.

Each year it is more apparent that water is the most important crop factor in the great interior valley of California.

CORNERS IN FRUIT BOXES.

The first picking boxes used for prunes were made without the little triangular pieces in the corners for strengthening them. This year all the new "shook" included corners and others are being put in old boxes. Some orchardists have always used picking boxes with corners; others never.

So great a difference is made in the rigidity of an old box by putting in new corners and it will undoubtedly make so much difference in the life of the box that we commend the practice to all of our neighbors.

BRUSH FEED IS VALUABLE.

There is a fine lot of feed coming up now in the brush land that was cleaned out by the goats last summer, some shoots of oak, elder, roses and such things, of course, but a great deal of burr clover, sweet clover and other fine grasses. Another season of "goat cropping" will make splendid pasture where there was a very thick, dense jungle.

HOGS IN THE FALL.

Perhaps hogs under "wild" or natural conditions had to put on thick layers of fat in the fall when feed is plenty so as to be able to withstand the cold of winter and the less abundant feed available then.

At any rate, it always seems that the fall is the best time of the year for hogs, when they are more contented and "do better." Since the hogs were turned out and given the run of the place, it seems that they are making unusually splendid growth.

COCKLEBURS AND WOOL.

Some land expert—a not too scientific one—has said that when you find cockleburs growing on land you need look for no further signs of fertility—that this plant will not grow on thin, or hard, or too dense and unresponsive land.

This is unquestionably true, but it is small comfort when you have to handle lambs that have been harvesting the cockleburs in their wool. Looking through a bunch of lambs, catching each one to see its flock tag number is a real prickly job in the fall.

RICE RETURNS ENCOURAGING.

Rice on small acreage is a demonstrated success in the Sacramento Valley. In Butte City district there are a number of crops that have made from 40 to 50 sacks per acre, have been threshed early, all warehoused before the danger of bad weather, and proved very profitable.

One of these growers estimates the cost of the crop at about one cent per pound.

As a rotation crop, in connection with livestock and fruit, rice is proving very satisfactory.

L. A. Stockyards Build Up Hog Business

DURING the first year of its existence the number of hogs handled by the Los Angeles Union Stockyards increased from 5820 in November, 1922, to 22,711 in October, 1923. The latter figure represents about one-half the total number of swine slaughtered in Los Angeles during an average month.

During the months mentioned, the number of cattle handled by the yards was 13,506 and 13,004. The total for the year was 130,637, which is about 50 per cent of the number of beeves killed during that period in the southern metropolis.

The yards handled one-third of the calves converted into veal in Los Angeles and 12 per cent of the sheep and lambs slaughtered. The number of the latter sold at the yards decreased from 6565 in November, 1922, to 1576 in October, 1923.

"One of the most remarkable workings of the Los Angeles Union Stockyards was demonstrated last spring, when during the height of the grass season in California, there was a sharp and decided upturn in prices," points out Nelson R. Crow, market expert.

"An exceptionally stable market has been maintained throughout the year, as a result of the active buying and support of the fifteen Los Angeles meat packers and numerous smaller concerns within a radius of 100 miles of Los Angeles. During the entire year cattle with good breeding and finish have been in demand at top prices.

"The highest price paid during the year for load lots was $9, which was bid on the day the yards were opened, Nov. 1, 1923. California grass cattle sold largely for $6.50 to $7.25."

Farm Bureau Membership Drive Succeeds

THE goal of 27,000 California Farm Bureau members, which represents a 20 per cent increase over last year, recently has been reached, under the leadership of H. H. Morrell, without the employment of paid solicitors.

Forty-one counties of the State now have Farm Bureaus. Conditions in most of the remaining seventeen counties are considered unfavorable for Farm Bureau work, largely because of the non-agricultural character of the land. In each of the forty-one counties the request for organization came from the farmers themselves.

The cost of local workers averaged 27 cents per member, while the State organization overhead expenses was 35 cents. Of the $5 dues collected, one-half remains with the county organization, one dollar goes to the State Federation and 50 cents to the National Farm Bureau.

The salaries of farm advisers are paid by the U. S. Department of Agriculture and the State, half and half, while other expenses of adviser work are met by the counties. While the farm advisers co-operate closely with the Farm Bureau, there is no official connection between the two organizations.

The method of securing Farm Bureau members was described in detail in a recent issue of ORCHARD and FARM. Since the old-style plan of hiring paid solicitors was abandoned, much more satisfactory results have been secured, farmers preferring to be persuaded by their neighbors—working without pay—to join the organization.

World's Biggest Butchers

AMERICANS who complain of the monopolization of the meat trade doubtless would "view with alarm" the operations of Vestey Brothers, the world's biggest butchers, who are said to own 2500 retail meat stores in Great Britain and 400 refrigerated steamships.

They also own one-third of the cold storage space in the United Kingdom and ranches in all parts of the Southern Hemisphere. They control 30 per cent of all the meat packing in South America and an equal proportion of all the meat packed in Great Britain.

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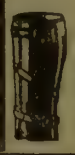

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WOOL SOX Army heavy Sox, 24 in. long; color gray; really worth 50c to 75c; now $2.98 per doz. OF-653. Per pair 27c

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U. S. Army Shirts Genuine U. S. Government Issue shirts, as worn by our boys, made of pure wool serge and cheviot. These shirts have two pockets with flaps, double elbows, breast lined and are equal to any $6.00 shirt. Best shirt on earth. Brand new. Sizes 14 to 19. Order right now $3.23
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Sheepskin lined Vest, moleskin top, new. Sizes 32 to 46..... $4.97
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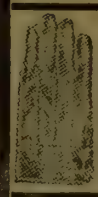
LEATHER VESTS — Fine quality leather; color, russet, dark brown or black; olive drab; moleskin lined. Length 26 in.; wool knit collar and cuffs; 4 pockets; adjustable back straps; wind and rain proof. A godsend for out-of-door folks. Sizes 32-46. No. OF-999. Sale price..... $8.93

SWEATER COAT — Heavy rope weave; silver gray and dark. Sizes 34-44, new. No. OF-902 $1.49

UNION SUITS Lambsdown, wool lined or ribbed silk finish, extraordinary value; limit 3 suits to a customer; new; sizes 34 to 46—OF-908 Per suit $1.97



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Fancy brushed wool Sweaters, the latest thing in sweater coats. Colors, tan, gray and green. Sizes 34-46. Worth $7.50. Our special Price. OF888 $4.47

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New Developments in Imperial Valley

AN INTERESTING agricultural innovation is the plan recently announced by the Cudahy Farm Operating Company (subsidiary of the Cudahy Packing Company, Chicago) for development of its Imperial Valley farm land leases.

A large tract owned by the Fuller Land Company and leased for a period of six years by the Cudahy Company is being offered for sale with the understanding that each buyer is to receive with his deed transfer of the lease, which calls for an annual payment equal to 10 per cent of the cash capital necessary to invest.

According to Kennedy, Hardie & Co., Los Angeles, who are sponsoring the new plan, it is possible for a nonresident buyer thus to share in the large profits which it is claimed may be derived from intensive farming on a large scale.

EARLY GRAPES PROFITABLE

Among the products cited as offering unusual possibilities for profit are early table grapes, dates, figs and other special fruits. The wonderful advantage of the Imperial Valley in the production of table grapes lies in the ability of growers to reach the very earliest (or "hot house") market.

Next only to the hothouse grapes of Belgium and Holland that sell in New York at 75 cents to $1 per pound, because they are "out of season," come the June and July table grapes of the Southwest.

A leading shipper of California fruits and vegetables, who markets more than 4000 carloads annually, certifies in writing to this:

The prices he received in 1923 for Malaga grapes grown in California, outside of Imperial Valley, ranged between $1.25 and $1.75 per 24-pound crate, delivered in the Eastern markets.

But the lowest price he received for any Imperial Valley Malaga grapes in 1923 was $3 per 24-pound crate. The average for all his Imperial Valley shipments throughout the season was $3.28 per 24-pound crate.

REMARKABLE PRODUCTION CITED

There are 83 crates of about 24 pounds in each ton; therefore, $3.28 per crate means $270 per ton—about 100 per cent premium on the average price!

The plan of the Cudahy Company is to lease lands from owners in field crop condition, using their great capital for development instead of tying it up in a large acreage of land.

It is asserted by the Kennedy-Hardie Co. that even with present methods of farming, Imperial County production surpasses the total agricultural yield of any one of several entire States, including Utah, Vermont, New Mexico and Connecticut. Intensive farming, such as is possible in the Imperial, could increase the production to $200,000,000 annually, they point out.

Asserting that speed in farming operations is the principal requirement under Imperial Valley conditions, and that this may be obtained to best advantage by the use of modern mechanical equipment on a large scale, the Cudahy Company proposes to throw its large resources into a vigorous program of planting, producing and marketing.

Katydid Eggs Interesting

KATYDID eggs are often mistaken by pruners for some species of scale insect. Every season pruners discover what are often thought to be some kind of scale insects, as various kinds of deciduous trees are being pruned.

These eggs are very flat, oval, gray colored objects, one overlapping another in two rows laid side by side.

If the portion of the twig with the attached eggs is placed in a fruit jar where it can be observed in the early spring some of the eggs will hatch and the little katydids may be seen. Due to effective parasitism this insect never becomes very abundant and although it feeds upon foliage, there is never any serious damage from it.

Nearly always when observations as suggested are made upon the hatching of the eggs, many little parasites will be seen as well as the katydids.—G. P. WELDON.

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CHRISTMAS name pencils, 50c for 3, $1 doz., prepaid, in nifty cartons. Agents wanted. RALPH W. MADISON, Palo Alto, Calif.

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"THE HOME GARDEN," by L. C. Johnson of Pomona, the largest plant grower in California, tells how, when and what to plant, and how to cultivate. Post paid, 60 cents.

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LEAF TOBACCO—5 pounds chewing, $1.75; 10, $3; 5 pounds smoking, $1.25; 10, $2. Pipe and recipe free. Pay when received. CO-OPERATIVE FARMERS, Paducah, Ky.

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Teacher Capitalizes Spare Time

Poultry Hobby Grows Into Profitable Business—Interesting Experience of School Instructor

CAN a professional man develop a good paying business "on the side" while pursuing a hobby? Stanley S. Foote of San Gabriel, head of the science department of a Los Angeles high school, has a ready answer in the form of actual achievement.

Foote literally went to the head of his class recently when he captured the silver cup for individual high producing hen in the Pomona egg-laying contest. His Barred Rock, "863" led the field with an official record of 260 eggs, beating 470 competitors.

Entered in the contest were 390 White Leghorns, 40 Rhode Island Reds, 20 Light Brahmas and 10 Anconas. Foote's 10 Rocks were the only entries of this breed.

He became interested in the so-called "dual purpose" fowls while developing a city back yard flock. "Ever since I was a small boy," he relates, "I have liked poultry and have kept a few chickens for pleasure and profit. I made a study of the subject from the viewpoint of the city résident and suburbanite and was convinced that such breeds as the Rocks and Reds were best suited to such an environment."

It was only seven years ago that Foote decided to enter the breeding game in earnest by purchasing a few of the best fowls of his chosen breed. Hence he sent east for a small consignment of breeding stock from the Barred Rock flock which captured high honor at the historical Mountain Grove (Mo.) contest of 1916.

ESTABLISHES A "STRAIN"

In addition to these birds he retained one remarkable California hen which, in his little flock, had shown heavy laying capacity. His present Barred Rock holdings are descendents of mixed blood from the Eastern birds and this one old hen. Consequently he feels justified in entitling his flock the "Foote strain." Now he is carrying also several hundred Reds, all hens of both breeds being pedigreed and trapnested.

"My purpose," says the owner," has been to demonstrate that dual purpose fowls can be bred for early, heavy and sustained egg production, without sacrificing their other valuable characteristics."

It was only a year ago that the teacher-breeder acquired a five-acre boulevard tract in a suburban community, and enlarged his plant and flocks upon a commercial scale. Several hundred pullets now developing display excellent vigor and uniformity. Foote now has on hand some 900 fowls, including pullets of both breeds, and is developing all the sales outlets available to the owner of dual purpose poultry.

Sources of income will include sales of breeding cockerels and hatching eggs, market eggs, broilers, fat hens and capons. About 100 of the latter are being fattened this fall. Foote hopes to demonstrate that the heavier hens are as valuable to the general farmer and breeder as to the back yard poultry raiser.

He shares with other dual-purpose boosters the belief that egg-records, particularly flock averages, will mount from year to year until there will be little except size, form and color to distinguish between the so-called "egg breeds" and the dual-purpose types. He points out that the Leghorns have a long start in the matter of trapnesting and breeding for egg yield, especially here in California, and that the next few years may witness some interesting developments along the newer lines of all-purpose breeding.

ADDITIONAL FEED CONSUMED

"True," admits the San Gabriel breeder, "dual-purpose fowls consume a little more feed, but considering the additional income, I do not believe this to be an important factor. No doubt as more heavy fowls are obtainable, local markets will pay a larger premium for meat birds, as is the case in the East. And the capon market in California certainly affords big opportunities for development."

One outstanding characteristic of the Foote stock is long life. This breeder seldom finds it necessary to discard any individuals less than three years of age; in fact, he has a number of high producers and at least one outstanding male, nearly five years old.

The dam of the sire of the heavy-layer which won the cup is still in the flock, laying well in her fifth year. This old hen has been a remarkable producer, having laid 135 eggs by the time she was one year old, according to her proud owner. The dam of the now famous "863" pullet laid 271 eggs during her first laying year, Foote relates.

At the time "863" was entered at Pomona she was but five and one-half months old. She laid consistently during the contest and during October following produced 18 more eggs. Early in November she was still laying.

Other breeders have noted the tendency of heavy-producing Barred Rocks to begin producing at an early age and to continue through a long period. Foote has demonstrated that by proper selection it is possible to fix this tendency so that the momentum of spring production will continue on through the summer and fall and even through the molt without appparent harm.

Trapnest records show that a large number of his hens were well over the 200-egg mark November first.

BOOSTS GREEN FEEDS

Foote is a great believer in green feed, maintaining patches of both alfalfa and kale. He does not believe in the use of electric lights with breeding flocks to force laying.

This young fancier attributes his success in the contest and his increasingly-heavy flock average not to any special methods of feeding and management (for he follows the best practices developed among successful poultrymen) but rather to trapnesting and thoughtful selection of individuals for breeding.

He moved from city to suburbs for several reasons, not the least of which was to establish a home and a healthful environment for his family. His achievement represents the hardest kind of work carried on in addition to his regular teaching duties.

Unlike some professional men, Foote has a keen head for business and doesn't overlook any opportunities to add to his cash revenue. He places a high valuation upon his own time, wastes few words and no precious minutes, and quite apparently is in the poultry game to achieve financial success as well as to gratify his life-long hobby.

The Man and the Hen

Here is Stanley S. Foote, with the Barred Rock hen which won highest individual honors at the Pomona Egg Laying Contest. A handsome silver loving cup attests her ability as a producer.

Carlsbad Capons

(Continued from Page 2)

row, with two ears on most stalks. The corn, like the potatoes, is shipped to Los Angeles and brings 30 to 50 cents a dozen. Green or 'snap" beans are another good crop.

Johnson is a strong believer in the virtues of co-operation. When he came to Carlsbad three years ago he found the vegetable growers had such diverse opinions as to how an association should be run that they were unable to get together. "If any two of you can agree upon a constitution and by-laws," Johnson announced, "sign it and I'll put my name to the document without reading it."

FORMS SELLING ASSOCIATION

A gardeners' association finally was formed and Johnson elected president of the organization. Many men of many minds wanted to run the society in a variety of ways, however, and after experiencing a bad season the association disbanded.

"We need a cannery to take care of our surplus vegetables when the price drops below cost of production and marketing," declared Johnson. "One year we were shipping daily 1150 sacks of Kentucky Wonder green beans, when the bottom dropped out of the market and growers plowed up their bean fields.

"Two weeks later the price rose to 10 cents a pound—but the vines were underground. If there had been a cannery to handle beans during that short period of low prices, growers would have been in a position to take advantage of the market advance later on.

"Canners, however, demand exclusive crop contracts at the lowest prices they can obtain by competitive bidding among growers. After getting the lowest figure possible from one farmer, a canner will go to other producers, from one of whom he may obtain an even lower price. This figure then is used to force other growers to meet their neighbor's price, resulting in a contract that takes all the profit from the producer.

"A cannery was built at Escondido, but farmers could not afford to sell their entire crop at the prices offered. An idle factory is the result. If the cannery would permit growers to sell as much of their crop fresh as the market warrants, taking only the low-priced surplus, both the canner and the farmer would make money.

"It doesn't take much capital—$10,000 to $15,000—to build and equip a cannery. As for expert help, farmers' wives are able to do a first-class job of canning without special equipment, which proves that the process is not difficult."

Johnson spent most of his life in the mining business, traveling from Mexico to Alaska in search of valuable minerals. "It was the continual moving from place to place that finally got my goat," he confessed. "I decided to engage in farming, because it offers a permanent home and furnished employment that is cumulative and progressive, each year's work being built upon past achievements."

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Growers' Convention Looms

Director Hecke Urges Attendance From All Parts of State—Here's Complete Program

IN a communication to ORCHARD and FARM, G. H. Hecke, head of the State Department of Agriculture, urges all fruit growers and general farmers to attend the fifty-sixth annual convention to be held at Santa Ana (Orange County) Thursday and Friday, December 6 and 7. All sessions will be held in Polytechnic High School auditorium.

Writes Director Hecke: "The subjects for consideration are those which were discussed at the convention in 1922 and it is hoped that the present convention will aid materially in finding satisfactory solutions of many of our important problems dealing with transportation, freight rates and farm labor. It is important that every agricultural section of California be represented."

Following is the program in detail:

THURSDAY, DECEMBER 6

MORNING SESSION

(G. H. Hecke, Presiding Officer)

9:30 Address of welcome—S. C. Hartranft, Fullerton, Calif.
Response—G. H. Hecke, Director of Agriculture.
Report of Agricultural Council—James Mills, chairman.
Address—California Farm Bureau Federation and State Department of Agriculture—By A. C. Hardison, California Farm Bureau Federation.
Address—The College of Agriculture and State Department of Agriculture—Dr. H. J. Webber, Dean, College of Agriculture.
Appointment of resolutions committee.

AFTERNOON SESSION

(D. Eyman Huff, Presiding)

1:30—Immigration and Farm Labor—John S. Chambers, vice president and manager, Bank of Italy, Sacramento.
Discussion—Geo. Roeding, president California Nursery Company.
F. B. McKevitt, fruit grower, Sacramento, Southern Representative.

2:30—Windburning of Citrus—W. M. Mertz, of David Hewes Realty Corporation, Orange, Calif.
Discussion—Carl V. Newman, San Joaquin Fruit Ranch, Tulare, Calif.
Willard Smith, director California Fruit Growers' Exchange, Fullerton.

3:30—Recent Plant Quarantine Developments, Federal and State—Lee A. Strong, specialist in plant quarantine, Federal Horticultural Board, formerly chief Bureau of Plant Quarantine, State Department of Agriculture.
Our Interest in Plant Quarantine—C. C. Teague, President California Fruit Growers' Exchange.
Discussion—Claude P. Hancock, member Board of Supervisors, Riverside.
Western Interest in Plant Quarantine—George M. List, president Western Plant Quarantine Board.
Report on Japanese Beetle—L. B. Smith, in charge Japanese beetle laboratory, Riverton, New Jersey.

EVENING SESSION

7:15—Executive meeting agricultural legislative committee.
Meeting transportation quarantine committee.
Meeting resolutions committee.
Meeting County Horticultural Commissioners' Association.

FRIDAY, DECEMBER 7

MORNING SESSION

(A. C. Harrison, Presiding)

9:30—Report of fruit growers' executive transportation committee—C. E. Virden, president Virden Packing Company, San Francisco.
Thos. O'Neil, president California Vegetable Union, Los Angeles.
J. L. Nagle, general manager California Fruit Exchange, Sacramento.
E. G. Dezell, California Fruit Growers' Exchange, Los Angeles.
M. C. McKibben, traffic manager, Poultry Producers of California, San Francisco.
Frank Spinning, Supervisor of Transportation Department of Public Works, Olympia, Washington.

10:15—Western Transportation Problems—Ralph P. Merritt, president Sun-Maid Raisin Association, Rice Growers' Association of California.

10:45—Agricultural Legislative Committee's Relation to Western Transportation Problems and Report of Investigation—R. N. Wilson, secretary agricultural legislative committee.

Adding Appetizers to Tree Rations

(Continued from Page 3)

terial, entered from the soil through the roots, and is conducted up through the trunk, branches and twigs to the leaves.

(2) THE LABORATORIES—The chief laboratories are the leaves. The work of these laboratories is performed by the green coloring matter. This green pigment or coloring matter is embedded or contained in small bodies, which are shaped much like a bun and are thickly distributed throughout portions of the leaf.

Mention has been made as to how the water reaches the leaves. The gas known as carbon dioxide enters the leaves through minute openings called stomata. The minute size of the openings scarcely can be appreciated until they are compared with some visible perforation. For example, a needle-prick made with the smallest sewing needle is about 2800 times larger than the average size of the stomata. Nevertheless, the total maximum area of these openings of an average leaf is approximately one nineteenth of the surface, and the openings are ample to admit five or six times more than actually passes through them in nature.

(3) THE ENERGY—The laboratories obtain their energy, which enables them to do their work, from the sunlight. While the intricate chemical relations of the green coloring matter are yet unknown, one of its physical features is known to be of the greatest importance: that is, its capacity to absorb energy from the sunlight.

The work of these green plants is remarkable, and it is impressive to consider them as the noiseless machines engaged in the manufacture of all the organic material that enters into their own composition, and into the product we eat; in this case, the fruit.

(4) THE PRODUCTS—The first known product that is manufactured is starch. Later the starch may be converted into sugars. The rest of the tree—roots, stem and fruit, and all parts devoid of the green coloring matter, are dependent upon the leaves for their organic food supply; hence the sugars are carried in solution in the sap to all these other parts to be used or stored.

STORAGE OF PLANT FOOD

During the early part of the season most of this manufactured organic matter is utilized in the formation of new wood, twigs, and branches, leaves and in the development of the fruit.

The flowers that bloom and the leaves that push out, and the first early growth in the spring are all at the expense of the plant food, sugars and starch, manufactured and stored in the tree the previous season, largely after the terminal bud was formed.

Kraus and Kraybill have indicated a definite nutritive relation between the supply of nitrates from the soil and of the carbohydrates—as manufactured by the photosynthetic activity of the leaves—for vegetative growth and fruit production. A carbohydrate supply is as essential for the production of new wood, leaves and fruit, as are nitrogen and other essential elements from the soil, and combines with them in a definite proportion for the manufacture of new plant tissue.

These workers found an excess of available nitrogen, as contrasted to a moderate supply of carbohydrates, favored vigorous vegetative growth, but resulted in unfruitfulness. An insufficient supply of nitrogen and a moderate supply of carbohydrates resulted in weak vegetative growth and an unfruitful condition. A properly balanced, moderate supply of nitrogen and carbohydrates in excess of the amount required for growth, favored fruitfulness, but a less vigorous vegetative growth.

This may explain the failure of fertilizer applicatons always to give increased fruitfulness, although vegetative growth may have been stimulated. When the part played by the leaves is recalled, it can be seen that any agency affecting them injuriously, such as insects, diseases or unfavorable environment, may influence fruit production as profoundly as the lack of fertilizer elements in the soil.

ELEMENTS SOMETIMES DEFICIENT

Nitrogen is the element most likely to be deficient in orchard soils, although potash and phosphoric acid also are sometimes lacking.

1. Kraus, E. J., and Kraybill, H. R., Ore. Agr. Exp. Sta. Bull., 149 (1918).

Lime applied on heavy acid soils occasionally may prove beneficial as a soil amendment and in favoring the growth of cover crops, although most fruit trees succeed better on a soil having a slightly acid or neutral, rather than an alkaline reaction.

The application of quickly available nitrogenous fertilizers in orchards grown upon sod land, or in soils lacking in fertility, may result in increased vegetative growth, as evidenced by longer shoots and larger and more numerous leaves of a darker green color.

If the trees are making a weak annual growth because of deficiency of nitrogen in the soil, the moderate use of nitrogenous fertilizers may increase the yield of fruit. However, the application, especially of large amounts of nitrogenous fertilizers tends to lessen the development of the red overlay color of apples, pears and peaches, purely because of the shading from greater vegetative growth.

Generally the maturity of both wood and fruit is delayed and this likewise may lessen color production. If plenty of moisture is available, the size of the fruit is generally increased; but if soil water is lacking, the size may be decreased.

Fruit trees rarely show a direct response to the application of forms of potash, phosphoric acid and lime fertilizers. These fertilizers, however, often prove beneficial to the growth of cover crops or intercrops and hence may be of indirect value to the fruit trees.

APPLICATION OF FERTILIZERS

Nitrate of soda, sulphate of ammonia and dried blood have proved the most satisfactory nitrogenous fertilizers. On an individual basis young trees may be given 1 to 3 pounds of nitrate of soda, and mature trees from 4 to 8 pounds each. The quickly available nitrogenous fertilizers may be best applied in spring just before the trees start into growth.

Caution should be exercised, however, in the application of commercial forms of nitrogenous fertilizers, since when large amounts are applied year after year under California conditions, the salt concentration may be raised to a point where an injurious effect upon the growth of fruit plants may be exerted.

Phosphorus usually is applied as acid phosphate; and potassium either as muriate or sulphate of potash. Acid phosphate may be applied to mature trees at the rate of 6 to 10 pounds per tree, and to younger trees at a correspondingly less rate. Mature trees may receive applications of two or three pounds of murate of potash.

Manure becomes available somewhat more slowly, but is excellent to apply to orchards, in that it adds organic matter, as well as nitrogen, phosphorus and potash. It may be applied at the rate of 8 to 12 tons per acre, and should be distributed before the trees start growth in the spring to lessen the danger of forcing continued growth late in the fall and preventing proper maturity. This is especially to be avoided in a colder climate, with relatively short growing seasons.

Under some conditions in California, coarse organic forms of manure applied to the orchard may offset the accumulation of injurious substances that in arid climates are not leached away.

GENERAL RECOMMENDATIONS

Expensive fertilizers often are applied to fruit trees unnecessarily. Other orchard operations should be conducted carefully and properly in the effort to keep up vigor and fruitfulness. Tillage should be practiced and cover crops grown in the attempt to increase the supply of available plant food, and proper irrigation undertaken where water is available for this purpose.

Farm manures, when economically available, are excellent for the orchard. Nitrogen in some of the more quickly available forms may be applied upon sod orchards, or, as a last resort, upon tilled orchards.

On the unfertile or partially exhausted soils, or sod orchards, phosphorus and potash sometimes may be applied profitably.

Crop Risk Insurance

A BIG Connecticut insurance company has employed a specialist to determine the feasibility of greatly enlarging the field of crop insurance. The farmers of the United States now spend $20,000,000 a year for hail insurance. It is believed possible and practical to insure all kinds of farm crops against numerous other natural causes of damage and loss, such as frost, flood, drouth, hot winds, insect pests and plant diseases.

VICTOR N. VALGREN

Victor N. Valgren, formerly in charge of the division of farm finance, U. S. Department of Agriculture, is the expert who is studying this problem from every possible angle. In addition to corn, wheat, oats and other major farm crops, cotton, citrus fruits, berries, rice, potatoes, flaxseed and numerous other products will be investigated.

Tobacco growers are taking advantage of hail insurance, ten companies joining in extending protection to the tobacco farmers of the Connecticut valley. Results are said to have been very satisfactory, both to growers and the insurance companies.

A beginning has been made in insuring California orange growers against frost injury. Shortage of rainfall or irrigating water and damage from pests may be added. It is conceivable that low market prices will be added to the risks assumed by insurance companies.

CATS KILL MANY BIRDS

Cats in this country kill 10,000,000 birds annually, estimates an eminent ornithologist. Most of the feline depredations occur in the winter time.

Turner Turns Mad River Soil Into Dairy Dollars

One Bull Calf—One Thousand Dollars

THIS progressive Humboldt County dairyman worked for wages twenty-four years in order to get started right in milk production. Now he owns and operates one of the best dairy farms on the north coast of California and is improving his high producing herd with a Guernsey bull, which was purchased as a calf for $1000.
—*The Editor.*

By O. H. BARNHILL

LOW but sure is the motto of successful dairymen of California's north coast country, where it is popularly supposed to rain all the time and the grass is greener at Christmas than Fourth of July. The rule is to work for wages until sufficient capital has been accumulated to buy or rent a dairy farm and then "go to it."

W. W. Turner, Humboldt milk producer, is a fine type of this kind of a farmer. Coming from Canada in 1860, he "worked out" for 24 years, which may seem like a long time to young men of the present day, impatiently waiting until they can go into business "on their own hook." Turner, however, began early and when ready to "shoot" he was able to purchase his father's fine, large farm, which he since has greatly improved.

The land lies along the south bank of Mad River, so named on account of its habit of going on periodical rampages. To curb this unfortunate tendency has cost Turner a good deal of money for levee construction. An occasional overflow, if not excessive, is not considered an unmixed evil, however, because it makes possible the destruction of rodents, which are very difficult to eliminate in any other way. Once while one of his meadows was flooded, Turner with the help of neighbors, killed 1800 gophers.

GROWS BIG ROOT CROPS

The rich, alluvial soil produces prodigious crops of hay and roots The writer deems it scarcely safe to quote figures here, but will state that Turner agreed with J. W. Logan, farm adviser when the latter estimated the average yield of stock beets on such land at 85 tons per acre, with occasional crops running up to 110 tons.

These yields explain why Humboldt dairymen are willing to grow and dig roots for their cows. Land is high-priced, the best being valued at upwards of $500 an acre; therefore, it is advisable to obtain as large per acre returns as possible. Why bother with expensive silos and shredding machinery, they ask, when three times as much feed per acre can be obtained via the root route?

Fifteen acres of beets and carrots supply succulent feed during late fall and winter. Sludstrup, a Danish yellow mangel-wurzel, is considered the best variety of stock beet, while Oxheart is the preferred carrot.

ALFALFA FAVORED CROP

Although most Humboldt valley soils are considered too wet for alfalfa, Turner finds this ancient legume one of his best hay crops. The first cutting is mostly Italian rye grass, which has been grown so universally in that part of the country that it volunteers on most soils. The third crop of alfalfa is fed green in September, when pastures are short. Oats and vetch, rye grass and red clover are two other good forage combinations.

The big barn is 120 feet long and 80 feet wide. The mow in the center extends to the ground and holds 200 tons of hay, the mangers and stalls being on either side. A new cement floored, sterilizing shed is the latest additions to the farm buildings. The need and value of a concrete manure pit is realized, but present dairying profits have not yet provided capital for putting in this improvement.

And yet, Turner does not favor higher butterfat prices, because he believes this would drive people to eat more margarine. He feeds a good deal of cocoanut meal, from which oil has been squeezed to make butter substitutes. Molasses meal is another favored dairy feed.

In spite of the heavy rainfall and frequent fogs, the need of irrigation is felt during the long, dry summers. The adjacent Mad River furnishes an abundant supply of water for this purpose, but applying it to the land has not proved an easy matter. To build an electric line from the road to a point where a pumping plant was installed cost $260, while the minimum charge for current is $180 a year. When this amount of "juice" is not used for pumping it cannot be utilized for any other purpose, which does not seem right.

A 15 h. p. motor lifts water over the levee into an eight-inch pipe, through which the water is run onto the nearby alfalfa meadow. No ditches are used, the pipe being moved to new locations, as the ground is wet. This is slow, laborious work, but leveling the land for irrigation would not pay, in the estimation of Humboldt farmers. Domingo Silva, a neighbor, pumps water onto his land through a six-inch pipe, using a Fordson tractor for power.

Turner is developing a large tract of marsh land near the mouth of the river. Dykes keep out the sea water, while ditches carry off the rainwater, which leaches the salt out of the soil. Reclaiming tidewater lands has been found a slow, expensive process, but the soil is very rich and when properly improved grows immense crops of hay and grain.

HIGH-PRODUCING HERD

So much for land, water, feed and buildings. How about the cows? Milk is obtained from 71 Guernseys, which have average annual records of 408 pounds of butterfat, a splendid yield for a herd of this size.

In order to reach even greater heights Turner is using a bull which he purchased from D. O. Brandt, Los Angeles County Guernsey breeder, for $1000, the sale being made when the animal was a calf. "The thousand-dollar bull," as he is known in local dairy circles, has got a large number of beautiful heifers, perfect types of the Guernsey breed, to justify the price paid for him.

Four hired men are kept most of the time. One of them operates a milking machine, while two others strip the cows. This method is employed for relieving the animals of their liquid riches, not necessarily because machine work is preferred to hand milking, but on account of the impossibility of procuring enough help to perform the latter labor. The men pull down $4 a day and board, regardless of their performances.

Breeding better bossies and improving his fine farm combines business and pleasure for the veteran Humboldt dairyman, who is a familiar figure at county fairs and milk producers' meetings. A good co-operator and a successful farmer, his example well might be emulated by those who choose agriculture as a profession.

D. O. Brandt, Guernsey breeder and dairyman, holding the bull which he sold as a calf to Turner for $1000.

Left to right: E. L. Westover of the Guernsey Cattle Club; W. W. Turner; J. W. Logan, farm adviser; Chris Rasmussen and D. O. Brandt

Herd of Guernsey heifers sired by Turner's $1000 bull. These fine young animals are the pride of their owner and the entire Aracata district.

What Ails the Cheese?

"SINCE cheese makers deal with so few dairymen," Sam Greene asks, "for the love of Mike, why can't they pick out intelligent, high-class ones and get good milk and then make it into good cheese, so the Dairy Council workers can recommend California cheese to the public without blushing for shame?"

Only five per cent of the milk produced in the United States goes into cheese. California annually makes 4,450,000 pounds of cheese. Oregon manufacturs twice this amount, while the total yearly production of Wisconsin cheese is 247,000,000 pounds.

Pistachios in Oregon

Can pistachio nuts be grown in Oregon? We grow walnuts and almonds. Where can pistachio trees be obtained?—JAY I. GORE, Medford, Oregon.

I AM not sure whether pistachio trees will do well at Medford, Oregon, but I believe that if walnuts and almonds do well they should be given a trial.

I do not know if there are any pistachio trees for sale this year, but I would suggest that you apply to the Government Plant Extension Gardens, Chico, Calif., as they have a few for free distribution.

You should get both a male and female tree and plant them near together. They should be planted in the spring, and handled like deciduous trees.—J. E. COIT.

Growing California Avocados Thirty-nine Years

By O. H. BARNHILL

AT CARLSBAD'S Avocado Day visitors who asked for alligator pears were shown by A. R. Rideout, Whittier's irrepressible nurseryman and avocado grower, two small alligators.

Sam Thompson, Carlsbad's veteran worker in the same field, also resents the etymological linking of this luscious tropical fruit with one of the most repulsive of reptiles. He calls avocados "aguacates," which is their Mexican name, signifying "water pear."

To say that Thompson literally loves avocados is not putting it too strong. For more than a third of a century he has nursed and nurtured them, as one would care for a favorite child. In its baby days the avocado was a puny, sickly child, its behavior being what one might expect of an exotic fruit, transplanted from the tropics to a strange, inclement northern clime.

The firm establishment of the avocado in public favor pleases no man more than Thompson, who is showing his faith by planting a 20-acre orchard of this fruit three miles south of Carlsbad. In fact, Thompson may be called the father of the Carlsbad avocado industry, which promises to become another of California's marvelous horticultural successes. Interested persons are taken to Thompson's 8-acre avocado orchard and nursery, a half mile east of town, where doubting Thomases can see for themselves what this fruit will do in that particular location.

Rising above thrifty rows of nursery stock, avocado trees are growing in tropical luxuriance, their glossy green leaves glistening in almost perpetual sunshine. The growth of some of the trees is remarkable. The Guadalajara, an inferior variety grown for seed, four years old, has a top large enough to fill a good-sized room, with a trunk nearly eight inches in diameter. The lower limbs lie upon the ground, supporting and protecting the tree against sun and wind.

A small Sinaloa tree is Thompson's particular pet. Behind the broad laurel-like leaves the great, green fruits already were bending down the tough branches, although the time of ripening was yet six months away. By that time the fruits are expected to weigh a pound and a half apiece and sell around a dollar a pound. In fact, J. R. Newberry is reported to have his Dickinson's engaged to a Los Angeles restaurant keeper for $1.25 a pound.

The only fault of the Sinaloa, says Thompson, is the difficulty experienced in budding it onto other trees, this operation being necessary to obtain trees true to name. The small tree mentioned has been budded only two years.

Thompson was asked which variety of avocado he considered the best.

"That's a hard question," he replied. 'It's a good deal like asking a tractor enthusiast which machine is the best puller. Each machine and each avocado has its faults and strong points. The buyer should familiarize himself with these and then choose the tree or tractor that is best suited to his individual needs.

"If I have any favorites for commercial planting they are Lyon and Dutton. Unlike Rideout, I do not expect to 'ride out to fame and fortune holding to the Lyon's name,' although this variety undoubtedly has great merit. The fruit is large, of fine quality and a good shipper, while the tree begins bearing very early and produces heavy crops regularly, which is unusual for avocados.

"In addition to a tendency to overbear, however, the Lyon has the unfortunate habit of shedding its leaves and blooming at the same time, which is very exhausting. As a result, new leaves sometimes do not appear until June, when they should begin growing in April. It might be a good idea to graft a limb of another variety onto the Lyon, to keep it 'breathing' during this critical period and avoid danger of the pores clogging up and the sap souring."

The Lyon avocado, by the way, was named after a Miss Lyon of Hollywood, in whose yard Thompson found the first tree of this variety growing.

J. A. Palmer, another Carlsbad avocado grower, is planning to set out 1500 trees within the next few months —half Lyon, one-fourth Fuerte and one-fourth Dickey A.

POLLINATION IS DIFFICULT

Thompson is of the opinion that much harm may result from the indiscriminate following of Dr. Stout's avocado pollination discoveries, as recently announced, because the relative time of opening and closing of the blossoms is not the same in all localities.

It is possible, claims Thompson, to obtain early, heavy crops of the Fuerte —standard of quality, but a notoriously shy bearer—by proper pollinating. In proof of this statement, he points to a tree of this variety which in the second year after budding bore 150 fruits. The grafting a limb of another variety into a Fuerte tree is recommended.

Thompson also calls attention to the fact that avocado varieties are apt to vary in behavior in different localities. The Taft, for example, is a desirable sort in Florida, but of no great value in California. Most Florida avocados are of poor quality and have large seeds and thin skins. This is because, Thompson explains, growers in that State were unfortunate in their early selection of varieties. Many of the superior California sorts now are being planted in Florida.

Discoursing further upon avocado varieties, Thompson said:

"Before propagating the Dutton, I kept a record of the original tree for five years. It is self-fertile and a strong grower. The fruit weighs one pound, is of fine quality, has a small seed and ripens during the holidays, when peak prices prevail. The Sharpless, widely recommended, has a vine-like habit of growth and is a very shy bearer. The Ganter is the hardiest avocado grown and should be planted in locations which are not quite warm enough for other varieties."

IMPORT MEXICAN SEED

Rev. Mr. Cook, a missionary whose labors took him to tropical countries, and a man named Stevens brought avocado seed from Mexico for Thompson's experimental plantings. One of the trees planted by the latter is still standing at Tustin. Dr. Francisco was a co-laborer of Thompson's in the early avocado field.

In order to disseminate avocado information and to provide a place for growers to assist each other in solving the many interesting problems connected with the culture of this valuable fruit, Thompson recently organized the Carlsbad Avocado Club, which now has 100 members. J. R. Newberry is president; J. A. Palmer, secretary and Chester Atles assistant secretary.

View in the Thompson avocado orchard, the show place of the Carlsbad district, where everybody talks, thinks and plants avocados.

This is Thompson and one of his pet trees, a Sinaloa. Insert—Two fine avocado specimens.

ORCHARD and FARM

CALIFORNIA STATE LIBRARY

DECEMBER 9, 1923

—Photo by Stage

Ayrshire Cross Improves Humboldt Dairy Herd

Bull Calf Proves Good Buy

WHEN J. A. Genzoli, successful North Coast dairyman, bought during the war at a Red Cross sale an Ayrshire bull calf, he was actuated more by patriotism than desire for profit. Such excellent results, however, followed the use of this new blood that the owner has decided to build up an exclusive Ayrshire herd.

—The Editor.

By O. H. BARNHILL

A DAIRYMAN may win an Ayrshire bull calf as a prize for having the highest testing large herd of cows in California, but of what use is the animal if the owner is a dyed-in-the-wool Jersey breeder?

That is the question J. W. Coppini, Ferndale farmer, asked when he found himself in the predicament described. Rather than let the calf become a "white elephant" on his hands, Coppini gave the animal to the Red Cross Society, which at that time was doing important war relief work and gladly receiving donations of every name and nature.

When the calf was offered for sale at auction it was knocked off at $125 to J. A. Genzoli, Loleta dairyman. The new owner, being also a Jersey dairyman, had little more use for an Ayrshire bull than had Coppini, his purchase having been actuated more by patriotic motives than hope of private gain.

The Ayrshire calf was a likely looking youngster, however, and Genzoli decided to do a little experimenting in cross breeding when the animal was old enough for service.

The splendid animals which resulted from this cross were a surprise to all who were unacquainted with the fine pedigree and individual excellence of Genzoli's new Ayrshire bull. The latter proved to be a real prize, worth many times the purchase price.

Genzoli never tires of showing visitors his fine young cross-bred Ayrshire cows, pointing out their wonderful udders and other good points. So well pleased is he with his breeding experiment that he has purchased another Ayrshire bull calf and is planning to build up an exclusive herd of this popular breed.

Anyone who attributes the success of this enterprising dairyman to chance or luck, however, has another guess coming. Hard work and good judgment alone have placed him in the front rank of Humboldt dairymen. Like many other North Coast ranchers who have made good in the farming game Genzoli came to this country from Switzerland while yet in his teens and worked for wages until he had accumulated enough capital to start a dairy.

He was then 24 years of age, having "worked out" for seven years. He has been milking his own cows for twenty years and now owns 65 acres of first class Eel River bottom land, for which he paid $32,500, and 60 acres of hill land, valued at $4500.

DOUBLES BUTTERFAT YIELD

When Genzoli began testing his 48 cows for butterfat they produced an average of 220 pounds each. By judiciously weeding out poor animals, replacing them with heavy milkers, and supplying the best of care and feed, he increased the butterfat yield to 452 pounds, a remarkable record.

In addition to the usual oats and rye grass hay crops, considerable alfalfa is grown. This crop is irrigated from a nearby pond, the water being pumped with a gas engine and conducted to the land through six-inch galvanized iron pipes. The latter are moved as needed to cover the field. This system of artificial watering entails considerable hand labor, but is the one generally practiced in Humboldt County, where it is adapted to local conditions.

The alfalfa yields secured tax the visitor's credulity. Without batting an eye, Genzoli will tell you he obtains five tons per acre of cured hay from the first cutting. The second crop is only about half as large; the third, one-fourth. Alfalfa, however, is not a long-lived crop in this particular locality. The subsoil seems to become too wet, necessitating the plowing up of the meadow after a few years.

ROOT CROPS REPLACE SILAGE

Root crops are fed in lieu of silage. Carrots and beets produce an immense tonnage of nutritious, succulent feed and are easily grown, requiring no irrigation. Thinning, the bugaboo of the carrot grower, is avoided by planting only two and one-half pounds of seed per acre, instead of four or five pounds. The Half Sugar beet is preferred. Indian corn is grown for a soiling crop and makes a big yield.

Like most farmers who do their own thinking, Genzoli has his own ideas about what is wrong with the country. One thing which he believes might be greatly improved is our educational system.

"Instead of teaching our children how to work and become useful citizens, our high schools and colleges are turning out a lot of idlers, whose sole ambition seems to be to figure out how they can live without labor," asserts this Loleta dairyman.

"Even if a boy does not attend college, four years in high school unfit him for the active duties of real life. He gets into the habit of not working and it is difficult to put him into the daily grind of productive industry. Most high school graduates are looking for 'white collar' jobs, which already are overcrowded.

"Our schools should teach useful trades and professions, so that a graduate would be able to earn his living and perform his share of the world's work. Most of the things taught in our secondary schools are of little use in real life and are soon forgotten—while the graduate is learning something really useful in the school of experience."

This new car was bought with milk money. A modern residence is to be built next summer.

Some of Genzoli's heavy milkers and town of Loleta.

Genzoli sizing up his silage corn, beets and carrots.

A Paint Revival

TURNER COUNTY, Georgia, farmers responded enthusiastically to the Property Preservation Campaign put on by the State College of Agriculture the first two weeks of October. Representatives of 25 school districts met on the first day of the month and agreed to paint every school house in the county.

Paint manufacturers contributed 100 gallons of paint for demonstration purposes, while Atlanta dealers furnished brushes and men to explain the proper methods of applying paint. Local bankers and other business men wrote letters to every resident of the county, urging them to co-operate in this "Save the Surface" drive.

The local newspapers printed a special edition devoted to property preservation. Appropriate posters were put up all over the county. Old pieces of furniture, one-half painted and the other half unpainted, were displayed in store windows. The Southern Railway painted all its station houses and other buildings in the county. Merchants painted stores and a contract was let to paint the county court house.

During the demonstration, while men were at work on the outside of the buildings, women and girls were instructed in interior decorations by experts who journeyed long distances for that purpose.

"A high state of morals, cheer, ambition and earning power exist in well-repaired and painted homes and mills," declares a manifesto issued by the Extension Service, "a spirit and feeling that is deadened and weakened by worn and shabby surroundings.

"The labor of housekeeping may be greatly reduced by the use of paint and varnish, while the health of our families and our livestock are menaced by the disease germs which thrive in places that can be made sanitary with paint."

Cow Testing Service

MEMBERSHIP in the Los Angeles County Farm Bureau Cow Testing Association affords greater service than simply obtaining the production records of individual cows.

The record sheets used by the testers supply the owner with much additional information. Following are the headings under which entries are made each month: Number cows tested; total milk; average milk; total fat; per centage fat; average fat; best heifer; best cow; best five cows; number cows over 40 pounds fat; number cows culled; feed used (alfalfa hay, silage, other feeds, segregated); average cost of feed per cow.

Few associations heretofore attempted to supply data as comprehensive as these. A number of associations in California, however, recently have adopted the Los Angeles County record sheet.

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DECEMBER 9, 1923

Yes, Dread Grapevine Mildew Can Be Controlled

How to Prevent Repetition of 1922 Losses—Why Winter Spraying Is Likely to Be Ineffective—Lessons From Past Experience

By FREDERIC T. BIOLETTI
Professor of Viticulture and Fruit Products, University of California

MANY grape growers, after the disastrous experiences of the past season, are inclined to doubt that vine mildew can be controlled. Oidium or powdery mildew, the only serious fungus disease which attacks California vineyards, was introduced to many grape growers this year for the first time. In nearly all grape districts of the State the onslaught was the fiercest and the loss the greatest that has been experienced for many years.

F. T. BIOLETTI

Ninety per cent or more of this loss easily could have been prevented if the old and well tested method of sulphuring had been properly applied.

Some growers sulphured four, five or more times and still had enough mildew in their vineyards to spoil a large part of the crop. They did not sulphur at the right time or in the right way. Others, under similar circumstances, sulphured only twice and lost no grapes from mildew. They sulphured properly at the right time.

A few who did not sulphur at all escaped injury to vines. Circumstances, however, were different. Their varieties, situation, or methods of irrigating were unfavorable to the growth of fungus. These cases were exceptional.

CORRECT DIAGNOSIS NEEDED

In many cases vine troubles which are unaffected by sulphur were mistaken for mildew. In one vineyard where not a sign of mildew could be found, the owner had been sulphuring six or seven times during the summer, under the impression that his vines had been attacked by this disease. Many of the leaves were yellow and spotted.

The symptoms were not those of mildew, but of some unfavorable soil condition and the sulphur was powerless to remove them. On the contrary, as the sulphurings were very heavy and some of them done in hot weather, the sulphur actually was burning the grapes.

The failure of sulfuring, as commonly done, to control mildew, or what the grower has taken for mildew, has turned attention to the possibility of using other remedies. Many growers now are considering winter spraying as a possible remedy.

A consideration of the nature of the fungus and its methods of attack and of passing the winter makes it very improbable that any winter treatment can be of the slightest use. Moreover, no carefully conducted test has shown any results from winter spraying for vine mildew.

FUNGUS LIFE HISTORY

As the mildew fungus grows only on the green parts of the vine it must pass the winter in a dormant or resting condition. This it does in the form of winter spores contained in "perithecia"—brown or black ball-shaped bodies which contain several transparent little sacks, each of which contains several winter spores. These spores easily can be seen with the help of an ordinary hand magnifying glass and can be recognized by the hair-like appendages, curled at the ends, with which they are supplied.

Winter mildew spores are delicate and if we could get at them they could be killed by many sprays. Perithecia, spore cases, are very durable and resistant. They enclose the spores in a thick, horny case that is impervious to water and even to strong sulphuric acid. They have been found perfectly uninjured after passing through the digestive tract of animals. There is no hope, therefore, of destroying them by any spray we can use on a vine.

Typical grape harvest scene in Great Central Valley of California, where mildew wrought havoc this year

Moreover, most of these winter spores in their perithecia are formed on the leaves. They, therefore, drop to the soil when the leaves fall and remain there to infect the new growth in the spring, even if we succeeded in destroying the few that remain on the vine.

SACKS BURST, SCATTER POLLEN

In the spring the hard cases of the perithecia have become soft. This is probably due to their long contact with wet soil. About the time the vines start growth, or a little later, the spore sacks within the perithecia swell under the influence of the rising temperatures and burst the surrounding case. They then burst and eject the spores they contain with such force that they are thrown far enough to reach the lower leaves of the vines. In this way the vines become infected again.

Mildew spores are very numerous. One-tenth of a square inch of leaf surface may commonly have 1000 perithecia and each of these may contain 50 spores. Thus a single leaf may easily supply many thousand spores and a vine several million.

Most of the perithecia, of course, are buried in the soil or otherwise destroyed. The majority of the spores which are ejected fall on the ground and perish. But if only one spore reaches a leaf, it germinates quickly and, if the weather is favorable, it will, in a few days, produce thousands of summer spores, which soon spread the disease throughout the vineyard.

There is one theory on which some observers base a recommendation for winter spraying that should be considered. It has been stated that the fungus of vine mildew sometimes holds over the winter as a "resting mycelium" under the bud scales. This means that instead of forming the usual winter spores in their thick, protecting perithecial cases, the summer form or "mycelium" of the fungus enters into a dormant or resting stage in which it is capable of surviving the rigors of winter under the protection of the scales, or outer envelopes of the vine buds.

The evidence of this theory is not very strong, but it is rendered probable by the scarcity or absence of winter spores in some locations, such as the hotter parts of the interior, where the summer form occasionally is abundant.

If this theory is correct, a late winter spray just before the buds swell might be of some value. It is conceivable that the fungicide on the buds might kill the fungus as soon as it started to grow with the shoots in the spring, or even that it might penetrate beneath the bud scales and kill the fungus before it started. In the absence of winter spores this might be an effective remedy.

WINTER SPORES INFECT VINES

It has not been demonstrated, however, that the fungus does pass the winter in this form and enough winter spores thoroughly to infect the vineyard in the spring might easily be produced on the vines and still escape the notice of ordinary observers. In any case, if the mildew is controlled as completely as is possible by proper spring sulphuring in these hotter and drier regions, there will be no mycelial form of the fungus on the vines to carry over the winter.

The conclusion, therefore, seems inevitable that the cheapest, simplest and most effective method of control of Oidium, or powdery mildew of the vine, is the dusting of the vines with the proper kind of sulphur, at the correct time and in the correct way.

Circular No. 144 of the California Agriculture Experiment Station at Berkeley, entitled, "Oidium or Powdery Mildew of the Vine," gives an account of this disease and of some experiment work on which the opinions of this article partly are based.

POINTS TO REMEMBER

The chief points in sulphuring vines, the neglect of which causes most of the failures, are:

1. The first sulphuring should be given when the shoots are from three to six inches long.
2. The second when they are from twelve to eighteen inches long.
3. The third just before or at the time the blossoms open. In a vineyard where mildew has been prevalent the previous year, these three sulphurings should be given, regardless of weather conditions and irrespective of the visible presence of mildew.
4. Later sulphurings should be given only if the presence of mildew is detected in the vineyard. These final sulphurings should be confined to the interior and shaded parts of the vine.
5. The first two sulphurings should be done in such a way that every leaf of every vine is reached by the sulphur cloud. The third sulphuring should reach every leaf that has been formed since the second sulphuring—the lower leaves are still protected by the first two applications.
6. The cheapest and, what is more important, the most efficient method of applying sulphur is by means of a good knapsack sulphur bellows.
7. Only sulphur in the form of an extremely fine, impalpable powder is effective.

Changing Deciduous Fruit Varieties by Cleft Grafting

[Note—See illustrations on page 11, rotogravure, showing different steps in top-working fruit trees.]

Directions for Performing Important Operations in Top Working—How to Avoid Failure

By M. J. HEPPNER
Assistant in Pomology, University of California

FREQUENTLY an entire orchard is planted to what proves later to be a variety that either is not adapted to the climate or does not have the commercial importance that the planter expected. It sometimes occurs that an undesirable variety gets into a shipment from the nursery and the bad features do not become evident until the tree has reached bearing age.

Rather than take the trees from the orchard and begin all over again with young stock, it is possible, and in most cases preferable, to make use of the established root systems by working over the trees to new varieties. Other uses of top-working are found in cases where it is desirable to change certain branches of a tree over to another variety for pollination purposes, or where the owner of a back yard tree wants it to produce different kinds of fruits.

In all forms of grafting there are two elements: The stock which bears the roots and the cion, from which the new top develops. The cion wood should be taken from strong, well-matured, one-year-old shoots with strong wood buds. Do not use cion wood carrying fruit buds.

It is preferable to top-work when both the cion and stock are dormant, or when the stock has started new growth. The condition of the stock is not the important factor to consider, but the condition of the cion is very vital. It is necessary that the buds on the cion be dormant. Much of the failure in top-working is due to using cions with buds which have started to grow.

The reason for using dormant cion wood is that transpiration is lower on a dormant branch without leaves than on a growing branch with leaves. As time is required for the stock and cion to unite, the rate of transpiration must be cut down to a minimum in order to prevent the cion from drying out. In California the best months for top-working are January and February.

Before starting the actual grafting process, one must ascertain whether or not there is an affinity between cion and the stock. There are numerous cases in which the cion grows well for a few seasons and then breaks off because of lack of affinity, which results in a poor union. Such is the case when an effort is made to get the almond to grow on the apricot and vice versa.

Certain varieties of plums, such as Burbank and Wickson, make a good union when grafted on peach root, but other varieties, like the Santa Rosa and Tragedy, do not make a good union. There are other cases too numerous to mention, showing how important it is to know in advance whether there is an affinity between stock and cion.

WHERE TO CUT BRANCHES

The first operation in cleft-grafting is to cut off the branch at some selected point. This usually will be on the main scaffold branches about four to five feet from the ground, or at some point along the secondary branches.

If an entire tree is to be worked over, it is not necessary that one branch be left as a nurse branch. Many growers, however, prefer leaving this branch, claiming that it is necessary in order to feed the root system. In sawing off the branch, care should be taken that the bark be not loosened from any portion of the stub.

The next operation is to split the exposed end with some sort of a broad, thin chisel and mallet. The best tool for making the cleft is the common grafting chisel, which can be purchased at most hardware stores. If the stock is very large, two clefts are often made at right angles or parallel to each other.

SHAPING THE CION WEDGE

In most cases, the blade of the chisel is driven into the wood as far as possible. After the cleft has been made, it is held open with the wedge-shaped prong at the end of the grafting chisel, in order that the cions may be inserted.

The cion should have three buds. The lower end of the cion is cut the shape of a wedge about one and one-fourth inches long, one edge being thicker than the other in order to allow the pressure from the stock to be brought upon the outer growing parts of the stock and cion.

It is a good *(Continued on Page 10)*

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

FRIENDLY PHILOSOPHY
By THE EDITOR

THERE'S ALWAYS ROOM FOR QUALITY.—Farm products of high quality usually find a good market even when inferior articles go begging. The attitude of the buying public is summed up in the following statement from an Eastern egg producer who has established his own brand and secures a premium of 2½ cents above the market price:

"To lack confidence in an egg is a serious matter at the breakfast table, and a producer who can insure perfect trust will not lack patronage. Our certificate that an egg is not 36 hours old when it reaches the egg cup makes the extra price of two and one-half cents look small to those who can afford the best."

California co-operatives are working along the same lines on a larger scale. Standardization pays!

ONE MAN'S WAY WITH ANIMALS.

Jones is a good horseman. He handles a team easily, and his roans follow him all over the barnlot. When a horse likes a man, it's usually because he is even-tempered and quiet in his ways. As a rule such a man can milk a cow quicker than other men; the cow just seems to give down more easily for him.

Jones is a good dairyman, too. He always has the stable quiet and darkened. Loud talking, shouting and laughter are not looked upon with favor in his cow barn. On the other hand, he knows the value of continuous, melodious sounds. While working about his animals he has a low croon which could hardly be called a tune, but which certainly seems to please his dumb charges.

We have never known Jones to be quick or sharp, or to make sudden motions or noises when handling animals. Maybe that's one reason he is doing so well!

RIGHT MAN IN THE RIGHT PLACE.

A certain farmer had two hired men. Both had good qualities but neither was satisfied and neither producing the results of which he was capable.

One of the men was a tremendously hard worker, but was of the high-strung, nervous temperament which lacks patience. Most of his work was with horses, but he couldn't seem to handle a team successfully; he had trouble with even the best horses on the ranch.

The other man was of the stolid, plugging, patient type. He could accomplish a good deal in a day without making much fuss over it, but seldom had any ideas of his own. He was set to repairing fences and doing rough construction jobs, but didn't seem to make much headway.

The employer finally decided the fault lay with the work, not the men; therefore, he had them trade jobs. Almost immediately the flighty horses settled into their collars for a steady grind, and in the hands of the phlegmatic driver soon gained weight. The animals actually accomplished more work with less fatigue.

The high-strung man, on the other hand, found the proper outlet for his energies and ideas in the construction work, with the result that the fences soon were in order, properly braced and stretched, while he displayed considerable genius in repairing and constructing several small buildings.

A square peg won't fit a round hole!

What's New? — Keeping Abreast of Agricultural Progress

Farmers to Study Tractors

A TRACTOR school will be held at Covina (Los Angeles County) December 17-22. The enrollment will be limited to 75. Those desiring to attend should notify the Covina Chamber of Commerce or the Farm Adviser at Los Angeles.

Shipping Apples to Cuba

CUBANS pay 10 cents each for Oregon apples, which cost the importer $3.85 per box of 88. California pears sell at similar prices for the 70 size.

Cuban people do not like sour fruit, much preferring sweet varieties, or those which have been preserved in heavy syrup.

Coloring Citrus Fruits

DURING the past season the ethylene method of accelerating the coloring of citrus fruits came into general use. This method was developed in Los Angeles by the U. S. Department of Agriculture. It is considered fully as effectual as the stove and generating plant method and more easy of application.

Scrub Hogs Cost $4,000,000

IT is estimated that the scrub hogs of Collin County, Texas, sold in 1922 for $4,000,000 less than purbred swine would have brought, although the former cost more to produce.

In order to reduce this large unnecessary loss, leading breeders offered to give a purebred boar to any farmer in exchange for a scrub boar.

An effort also is being made to replace much of the grain and cotton growing of that district with a diversified system of farming.

Cull Lemons Are Scarce

BECAUSE of the high quality of the 1923 lemon crop, the California Lemon Products Company obtained only 1500 tons of cull fruit, compared to 15,000 tons one former year. As a result, the company has been greatly handicapped in its attempt to hold the citric acid trade it has built up in former seasons.

In order to supply customers, 100 tons of citrate of lime was imported from Italy and manufactured into citric acid at the Corona plant.

City Conducts Meat Plant

BROWNSVILLE (Texas), which has a population of 13,000, recently voted $36,000 for the construction of a municipal abattoir and cold storage plant. This meat factory has a daily capacity of five tons, which is more than twice the amount of flesh food consumed by the city.

Farmers are given a local cash market, with killing, dressing, five days' storage and delivery to the block for only one cent a pound. Butchers get better meat than they could themselves furnish and without large outlay for killing and storage equipment.

Cotton Growers Co-operate

IT costs the organized cotton grower 2 per cent of the value of his crop to market it compared to 10 or 12 per cent paid by the independent grower, according to C. O. Moser, secretary of the American Cotton Growers' Exchange.

Government records show there are 40,000 persons engaged in marketing the cotton crop. It is estimated that each one makes an average of $3000 a year. This means that cotton growers pay an annual tribute of $120,000,000 to dealers.

Growers paid the Arizona Pima Cotton Growers' Association a cent a pound for marketing the 1922 crop. One farmer figured he saved $116 by belonging to the organization.

University Lands Winners

THE University of California's fat wether lambs, in the first showing by the University at the American Royal Show in Kansas City, won first, second and third in individual classes; first and second on pens; champion on lamb and grand champion wether of the show, according to advice received from Professor Gordon S. True.

This is practically a repetition of the winnings of these lambs at the Pacific International Livestock Show at Portland the first of the month. From Portland the lambs were sent to the American Royal Show with Bullard Bros.' Rambouillets, en route for the International Livestock Show at Chicago. George Phillip, College shepherd, is in charge.

Growing a Holly Orchard

A 600-ACRE holly orchard has been developed by P. H. Peyran near Tacoma, Wash. Chickens keep down the weeds and grass, being enclosed in a wire netting fence, which is moved from one plot to another in the grove.

The trees are 10 years old and are just beginning to produce salable holly. Holly trees continue in profitable production for hundreds of years, the trunks sometimes attaining a diameter of two feet.

Holly is shipped by parcel post in various sized boxes, one of which holds 100 10-cent sprays; another, 70 15-cent sprays and still another 45 25-cent sprays. Green holly for wreathes is packed in 20-pound baskets.

British Columbia sells California $25,000 worth of holly annually.

Drink Pure Orange Juice

THE total number of Sunkist electrical fruit juice extractors now in use is over 12,000, of which 7000 were manufactured and sold by the California Fruit Growers' Exchange the past year.

It is estimated that these machines will use 1,500 carloads of citrus fruit annually, counting one box of lemons or oranges per week for each extractor.

Reduce Freight on Oranges

THE recent reduction in the transcontinental freight rate on oranges will save California growers more than $3,000,000 annually it is estimated. This saving will be more than enough to pay the entire advertising and marketing expense of the California Fruit Growers' Exchange, according to C. O. Corswell, traffic manager of the association.

In order to obtain the new rate of $1.55 per hundred pounds, it is necessary to put at least 462 boxes of fruit in each car. Under the old rate—$1.73—a minimum car was 343 boxes. California orange and lemon shipments now amount to 60,000 carloads annually.

Organizing Grape Growers

THE conspicuous success of California raisin growers in packing and marketing their crop co-operatively has led the growers of table and wine grapes to take steps to emulate their example.

The need of a standardized product, storage warehouses, an efficient sales force and a national advertising program is keenly felt by leading vineyardists. It is believed that no grapes having a sugar content of less than 20 per cent should be sold.

It is said that the average retailer of California grapes does not know even the names of the varieties he sells, which indicates the need of educating the public regarding the character and value of this fine fruit.

Blueberries in Florida

ALTHOUGH most of the blueberries harvested in the United States are grown in the northern part of the Nation, successful culture of this fruit in Florida indicates that blueberries may be produced successfully in California, where climatic conditions are similar.

M. A. Sapp has for 33 years grown blueberries on his farm near Crestview, Fla., never having had a failure in all that time. At first the berries were disposed of locally for five cents a quart, but during the past few years the price has been increased each year, the 1923 crop bringing 25 cents. Picking cost 5 cents and other harvesting expenses 2 cents.

Two hundred eighty bushes on one and one-half acres bore 1400 quarts the past season—over $1000 worth.

Ben Gonnadooit Says

Seems like some people resent it when ye try t' help 'em. Take my neighbor, Bill Jenkins, fer instance'

Bill broke his wagon t' other day. Not havin' anything in partic'lar t' do, I climb th' fence, walked over t' his place an' offered t' fix it fer him pervided he'd let me use it a day or two t' gather up some of th' implements an' tools scattered around my fields during the past summer.

But did he appreciate my kindness? He did not. All he says was, "Ben, if you'll bring back my hammer and saw ye borrried, I'll fix it myself." And here I was intendin' t' return th' hammer an' saw in a day or two anyway!

Then, there's another case o' rank ingratitude. This happened right in my own family—no other person than my wife bein' involved.

She keeps after me t' turn th' wasshin' machine for her ev'ry Monday, and not havin' th' time t' spare fer sech work, I postponed a fishin' trip especially t' rig up a engine t' run that machine.

I got th' ol' portable motor out'a th' woodshed, cleaned it all up, schemed out a system o' belts, pulleys an' gears that showed considible mechanicle genius, of I do say it myself, an' showed her jest how t' run it.

But was she satisfied? The answer, as ye might expect, is NO! She said th' belt kept comin' off, th' engine stopped ev'ry little while, an' th' gears throwed oil all over th' clothes.

Said she wasted half of wash day trym' to use my power plant an' then finished by hand! Not a word t' indicate she knowed my intentions was good! Oh, well, I'm gettin' used t' ingratitude. Seems like th' more ye do fer some people, th' less they appreciate it.

It don't pay t' do good, an' yet ef ye do wrong ye get in trouble. Ef ye try t' help people, yer a meddler, an' ef ye don't help 'em, yer cold-hearted. It's gettin' so a feller kaint do anything harmless but sleep. Well, I'm thankful I kin always do that. Good night!—BEN GONNADOOIT.

Methods of Salvaging Waste Pomegranates

Important Conclusions Reached as Result of Laboratory Tests at University of California—Market Problem Serious

By J. H. IRISH
Division of Fruit Products, University of California

THE pomegranate is not widely known in this country; consequently there is no general demand for it. It is indeed surprising to find so many Californians who are not familiar with this fruit. Frequent inquiries are made as to how to use it. The following call came in recently; "I have bought a pomegranate; how shall I eat it?" This person had lived in California 20 years.

The chief demand for the fruit at present is for use as an ornament to decorate the fruit basket and the table.

Above—Real fruit syrups and beverages sold by the Fruit Products Laboratory of the University of California, Berkeley. Right—The basket type fruit press, described by Mr. Irish in center.

In districts inhabited by natives of Southeastern Europe and Asia Minor it is enjoyed as a fruit eaten out of hand. These districts seem to be the natural market for the fresh fruit.

The total production of pomegranates in California is conservatively estimated at 1200 tons. The production has assumed such proportions that the industry now is facing a serious marketing problem.

FORMER METHOD OF SHIPPING

During the early days of the industry when the total production was only a few tons marketing was done by shipping a few boxes at a time in cars with citrus fruits. By this method the fruit reached the markets in such small quantities that it was quickly consumed and commanded high prices.

The present production, however, is too great to be marketed in this way. Whole carload lots have been shipped recently. This seems to supply the fruit faster than it can be absorbed, with the result that the market is soon glutted. The experience of many pomegranate growers who have shipped in this way has been "red ink" returns.

It has been found by experience that only perfect fruit can be marketed profitably, fresh. A small amount of blemished or imperfect fruit mixed with the perfect fruit reduces the price of all so as to render it unprofitable.

This condition emphasizes the problem of utilizing the inferior grades in some manner other than by marketing as fresh fruit.

Investigations conducted with pomegranates as a possible source of dye material have shown that the dye produced was more expensive, and of quality inferior to that obtained from other sources, so this has been abandoned as a possible outlet. The production of juice and syrup for beverage purposes is now being investigated as the most promising outlet.

One great objection to pomegranate juice has been the "puckery taste" which is due to the presence of tannic acid, found mostly in the peel and seeds. The solution of the problem seems to be the development of a method of extraction of the juice which will give a minimum of tannic acid.

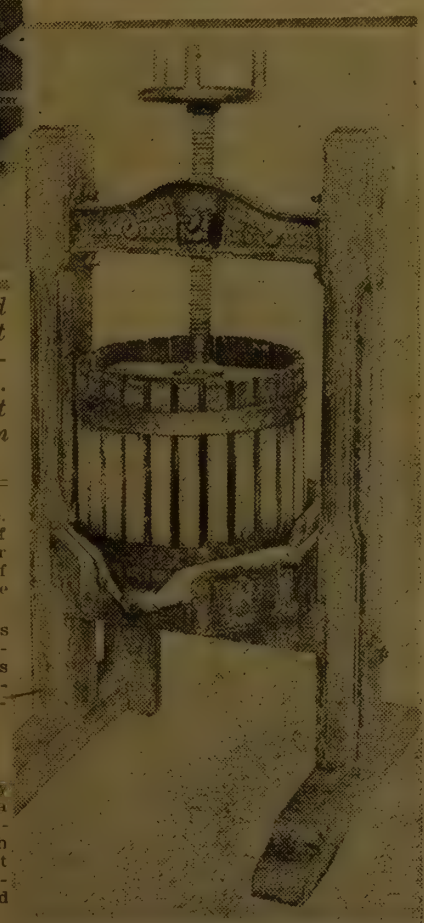
Various methods have been tried, as follows: 1—The arils (the pulpy seed coverings of the interior of the fruit) were removed from the fruit by shelling them out by hand, and the juice expressed from them, apart from the peel. This yielded a juice almost free from the puckery taste. The excessive amount of labor involved in this method, however, rendered it impractical.

A mechanical device for the "threshing" out of arils broke up the peel and gave an excess of tannic acid in the juice. This was not considered satisfactory.

2—The fruit was crushed or grated by running it through an apple grater or crusher. This ground the fruit finely and a maximum of tannic acid was present in the expressed juice. This juice had an excessive puckery taste.

3—The fruit was cut into pieces—quarters or halves—and pressed in this condition. Juice obtained in this manner contained an excess of tannic acid and could not be used without first removing the excess by precipitation with gelatin.

This method was not considered entirely satisfactory, although it is practical. It was noted, however, that the less the peel of the fruit was broken and crushed the less pronounced was the puckery taste.



4—The last and most satisfactory method tried was as follows: The whole fruit was placed in the press and the pressure applied. The common basket type of wine press was found suitable for this purpose. The cloth and rack type also was used with success.

The juice expressed in this way contained so little tannic acid that when it was diluted to the proper strength for beverage purposes and sweetened, the puckery taste was so slight that it was not objectionable. In fact, it gave a slight zest or "tang" to the juice that was quite pleasing.

Pomegranate juice has a peculiar thirst-quenching property which makes it especially well adapted for use in hot, dry climates.

EQUIPMENT FOR JUICE PRODUCTION

The equipment necessary for the production of pomegranate juice is simple and inexpensive. The common cider or wine press is easily adapted to it. The basket type press is more easily operated, although the cloth and rack type may be used with success.

The equipment for the handling of pomegranate juice must be so constructed as not to permit the juice to come in contact with iron or other corrodable metals. Wood, glass, block tin, agateware, stoneware, monel metal and aluminum are satisfactory. For permanent storage, wood, glass, agateware and stoneware are best.

As the juice flows from the press it is well to allow it to pass through a cheesecloth strainer into the temporary container. This removes any coarse material which might be present in the juice and will facilitate subsequent filtration.

There is a certain amount of protein present which must be removed to obtain a clear juice. This may be accomplished by heating the juice to 175° F. in a non-corrodable container and allowing it to stand from 12 to 24 hours to settle.

Fining materials may be used in clarification, but this has not been found necessary with pomegranate juice.

Filtration may be accomplished by various types of filters. For small quantities the "Cellulo" suction filter has been found satisfactory. For larger quantities any filter suitable for apple juice or grape juice filtration may be used.

PRODUCING SYRUP

There are three possible methods of producing syrup for use in the manufacture of beverages: (1) Concentration in a vacuum; (2) concentration by freezing, and (3) the addition of cane sugar.

Final conclusions on concentration in a vacuum will not be available until next year.

Concentration by freezing gives a product of very high quality. The initial cost of a refrigerating plant for freezing would be high. The cost of production and practicability of this method remains to be determined.

The production of syrup by the addition of cane sugar is the simplest method. It consists in dissolving cane sugar in the clarified juice. By increasing the sugar content of the juice to 35 per cent the best results were obtained. If made to a higher sugar concentration the amount of dilution necessary to reduce the syrup to beverage strength caused too great a reduction in color and flavor.

A delightfully refreshing "still" beverage may be made by diluting the syrup with water. By the addition of carbonated water a refreshing carbonated drink is produced.

It is the opinion of the writer that only perfect pomegranates should be marketed as fresh fruit and all other grades should be disposed of in the form of by-products.

The production of syrups for beverage purposes and the production of fruit beverages, still and carbonated, seem to present the most promising outlet for second grade fruit.

This can be accomplished best by close co-operation of the growers.

SELLING REDWOOD SAWDUST

Sawmills in the vicinity of Arcata (Humboldt County) annually sell 100,000 30-pound sacks of redwood sawdust, which is used for packing grapes in casks.

The only place dirt can get into the motor of the 2-Ton "Caterpillar" Tractor (Model T35) is through the carbureter and it *will* not enter there if proper attention is given the air cleaner. This is just one of many Holt quality features insuring long tractor life.

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The medicinal properties of Kow-Kare affect just these organs. Its toning, stimulating action is quickly apparent. Sluggish cows have improved appetites and assimilation and better milk flow is sure to follow.

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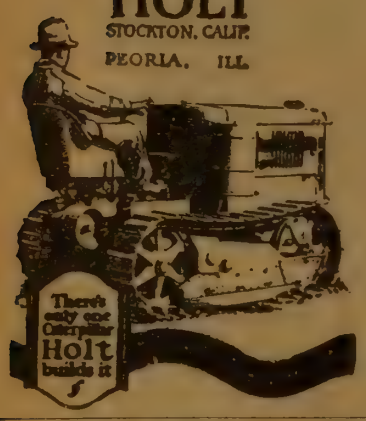

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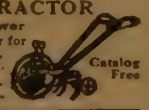

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Your Garden of Flowers

By HELEN TEMPLE

GROWING EVERGREEN PERENNIALS

A few evergreen perennials among the shrubs, or perhaps in a corner of their own, will furnish flowers for the house throughout the year. We all have the ever-blooming rose and many of us manage to keep a few carnations in bloom, but we are apt to forget all about blue marguerites, penstemons, gaillardias and coreopsis. These are only a few of the perennials which may be made to bloom winter and summer with a little care, but these few will give us a good start.

HELEN TEMPLE

Another satisfactory perennial which will bloom almost constantly is the old-fashioned mourning bride or scabiosa. I had an abundance of bloom from this flower throughout spring and summer, then let the seeds ripen. After the seeds had been gathered I cut the plants back about a foot, dug in some fertilizer and irrigated them well. On Christmas day I was rewarded with a large bouquet of lavender and white-and-pink blossoms.

Penstemon is a very satisfactory perennial which will bloom the first year from seed, if planted early. In Southern California it may be sown now, where there are no frosts, but for interior and northern planting it should be sown in flats for early blooms. It grows easily, but needs a little protection from heavy frosts. The new hybrids offer a wide assortment of colors and are much larger than the old varieties.

Gaillardias and blue marguerites furnish an abundance of bloom, winter and summer, if they are trimmed back after their first season of heavy blooming, and fertilized. After a two weeks' rest they should be well watered and cultivated. Gaillardias and marguerites make splendid vase flowers when combined. The double, quilled gaillardias may be had in fine shades of red and yellow.

Two other evergreen perennials are found in the ever-blooming delphinium and the perennial coreopsis, which combine well in a mixed border. They make splendid cut blossoms and provide house flowers almost constantly.

Many of the evergreen perennials start readily from cuttings in early spring or late fall. Do not use either very soft or very hard wood for slips, which should be buried at least three-quarters their length in the soil.

PLANT LILY OF THE NILE

"Why haven't we more agapanthus, or lily of the Nile?" asks a correspondent. "They are so beautiful I want some of them. How shall I plant them, or aren't they grow in California?"

The last question comes first, of course. Being a loyal native, I must say, emphatically, "Certainly they will grow in California." And I must add, Southern California is especially adapted to the growing of agapanthus out of doors, providing they are sheltered from severe winds and planted in a warm situation.

Being a native of South Africa, agapanthus must not be exposed to frosts and cold and it must not become dry during the growing season. Set them out doors about five inches deep and two feet apart. Start them from October till February and they will begin blooming between July and September.

In using them as house plants in the cold regions, provide a loose, rich soil, free from animal matter or manure. A leaf mold and sand mixture is good. Plant bulbs in large pots, keep them moist until blooming begins, then water freely. Agapanthus blooms, which are bright blue and white, are called the love flower in Africa, where it is cultivated freely by rich and poor.

CACTUS REPAYS GOOD CARE

Catalogues say, "Cactus will grow in any light, sandy soil and need little care." Quite true, but the cactus which is prized in our gardens for its wonderful blossoms will not stand treatment of this sort. The plants will live, but refuse to bloom under such conditions. Leaf mold, sand and protection are necessary.

"Treat cactus as you would ferns," advises Mrs. O. P. Cook of Ventura. Mrs. Cook has a large collection of cacti and has had wonderful success with all of the rare varieties. At this time she has a wonderful lobster cactus which is loaded with blossoms of a beautiful peach-blossom pink. The coral cactus is another difficult plant to grow, but Mrs. Cook has had remarkable success with it in her greenhouse, where it grows in leaf mold and sand and has abundant protection from the elements.

The hardier cacti in Mrs. Cook's garden are treated as well as any plant in the garden. Among these we find the quaint, little Old Man Cactus, the Old Pipe Organ cactus, also several varieties of the Cereus and the thick-stemmed relatives of the cactus family which usually are classed as cacti. And not one of them is grown in sand or a dry situation.

MAKING A PRIVET HEDGE

"How far apart shall we set our privet plants?" ask several new home builders. Twelve inches for the small-leaved varieties is correct; two feet for the large-leaved kind. We have planted both varieties around our new home, using the small-leaved variety in front and the large-leaved kind in the rear of the lot.

The large-leaf privet provides an excellent wind-break in two or three years' time and will soon grow higher than one's head unless it is trimmed back. If it is not cut back after it has reached three or four feet it grows slender and leaves open spaces near the ground. For a fence that will keep out chickens and dogs, keep the privet cut back until it thickens up at the bottom, then let it grow to the desired height and trim back.

The small-leaved privet is daintier in appearance and grows a little more slowly than the other, but it is an excellent hedge plant, either in formal or informal garden work. Privet does not sap the strength of the soil, as does a cypress hedge. Privet does well in almost any good soil and will grow rapidly if it is irrigated and cultivated once or twice a month.

DON'T NEGLECT THE POPPY

We seldom see a clump of our native Matilija poppies in our gardens of flowers, unless the grounds have been laid out by a landscape gardener; yet in England and other flower-loving countries they are highly prized. The Matilija Canon poppy grows very luxuriantly, in fact, it grows larger and stronger in this section Ventura County, than any other of the State. As a background border or a screen, the Matilija poppy is especially fine, making a very good dust barrier along the roadway.

The poppy grows in scattering groups from Santa Barbara County to Mexico and is particularly abundant in Lower California, where vegetation is rank and the soil rich. In fertile soil the poppy often reaches a great height. It is easily propagated from root cuttings, or may be started from seed, although the seed germinates very slowly. Seed often has remained in the soil two years before germinating. The quickest method is purchasing rooted plants from the large seed houses that advertise in ORCHARD and FARM.

PEONIES ARE HEAVY DRINKERS

The discussion of peonies in California has often come to the front in our department. "They won't grow here," declares one flower lover, who has been unfortunate with this flower. Peonies will grow in all sections of California if they are given proper care and planted at the right time of the year.

There are wild peonies in almost all sections of the State. They usually begin blooming in mid-winter, after the rains.

The wild peony is not particularly beautiful. Its size and color depends largely upon the location in which it grows. The colors usually run from red to nearly black. The plant grows about fifteen inches high.

A Mexican volunteers the information that peony roots make good medicine. He uses them raw as a cure for dyspepsia and boiled, for colds and throat trouble.

The theory that peonies won't grow in California is exploded in the fact that wild ones thrive here. Many of the finest varieties are grown in our interior gardens.

This is a very good time to set out peony root clumps, in all sections of the State. Plant in a good, well-drained soil and do not cover the tops of the plants with more than two or three inches of earth. Provide a mulch of old manure or leaf mold. In the semi-tropical and warm sections apply an extra heavy mulch.

The failure of peony planting in most sections of California is due to the fact that the plants are not given enough water. It is a heavy drinker. California does not have the showers of the East, where the peony is famous. However, I have seen a garden of several varieties, all of them in excellent condition and producing a wonderful display of flowers, in Southern California, where rain seldom falls.

Do not lift peonies oftener than once in five or six years and do not plant too close together. Place them three feet apart. Provide food and water in great abundance in May. Put a little bone meal into the soil about the roots.

BULB FLOWERS FROM SEED

Gladioli, as well as many other well known bulbs, produce seeds as well as bulblets. The seeds may be sown very much as any other flower seed, although it is necessary to keep the seeds of bulb flowers in a warmer location for germination than is necessary for most common flower seeds. Cover the seeds lightly, then cover the entire seed box with a piece of brown wrapping paper, which must be kept moist. Then place glass on top. Keep the glass covered with cloth or paper until germination is completed; then remove it gradually.

After the seedlings appear, remove the damp paper, but keep the plants moist with a whisk broom which makes a handy flower sprinkler. Keep the glass over the seedlings until they are quite well established, then gradually accustom them to the atmosphere of the greenhouse.

When planting the baby bulbs that form about the large one, grade them and plant each box with those of a size. Do not cover too deeply. Keep them moist. These tiny bulblets will provide the future blooms, so we must treat them tenderly. In two or three years they will repay us with a wealth of blossoms. Do not attempt to plant them until they are at least as large as seconds or thirds.

Save Wild Flowers

WELL-MANAGED stock grazing in the National Forests never has done appreciable injury to wild flowers, asserts Chief Rachford of the Forest Grazing Service, who points out that most of the delicate annuals are past their best bloom and are beginning to seed before the cattle grazing season opens and many showy perennials are not eaten by domestic animals.

"The camper and tourist constitute the really serious menace to our wild flowers," declares Charles S. Sheng, California forest examiner.

"When you see an automobile decorated with thousands of California poppies; when a temporary camp is decked with handful after handful of cream-cups, baby-blue-eyes, maiden-hair fern, just because 'my child simply just love to pick flowers'; when another camp, recently deserted, shows dozens of plants dug up by the roots—rare ferns and bulbs, evidently on the theory that they would be taken home and planted in the garden, but because they drooped were deserted—then it is time for all wild flower enthusiasts to rally.

"There are the graves of more of our beautiful wild flowers than a thousand mountain cattle would destroy in three seasons. I have noted this waste of flowers and talked to campers for twenty years about it. The chief remedy is more study of botany and of conservation—more education."

MILLION-DOLLAR VINEYARD

Wylie M. Giffin, former president of the San Joaquin Raisin Growers, recently sold for $1,210,000 a 1100-acre Thompson vineyard five miles from Livingston (Merced County). The vines were planted seven years ago by the American Vineyard Company and sold to Giffin a year and a half ago for $936,000.

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Special Price Offer

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For Longer, Better Service Use Red-Top Steel Fence Posts.

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Agricultural Leaders of the Pacific West

XIII CHARLES C. TEAGUE

President California Fruit Growers' Exchange

TO BE the president of the largest horticultural co-operative marketing association in California would seem to be enough to keep any one man reasonably busy. Charles C. Teague, however, is not only president of the California Fruit Growers' Exchange, but holds more than twenty other responsible positions. He is president of the California Walnut Growers' Association and president or director—or both—of banks, water companies, irrigation companies, land companies, orchard companies, and many other organizations.

Teague comes of New England stock. The family moved to Salina, Kansas, in 1882, and later to Santa Paula, California.

This move launched Charles C. Teague on his career as a citrus orchardist. He was so attracted by the lemon industry that he and his father, together with some friends whom they had interested, purchased forty acres of fertile valley land, which they planted in lemons.

Young Teague started to work for a pioneer Santa Paula lemon grower with the twofold purpose of earning money and learning the citrus industry from every possible angle. With the death of his father a year later, the whole task of making a home for his mother and two sisters devolved upon his shoulders. Charles Teague worked hard for two years in his own orchard, always seeing a vision of the great possibilities of lemon farming.

SAVES CROPS FROM DROUTH

Throughout his rise from ranch hand to a recognized leader, Teague always seems to have been impelled by an indomitable pioneer spirit. This spirit did not prompt him to plunge blindly nor wildly, however, nor without consideration for those who were his fellow workers. When a drought threatened crops, he urged farmers in his community to pool their water rights; to those without water rights, he offered to irrigate their orchards on a crop-percentage basis. Those who accepted his offer had normal crops in a year when orchards without irrigation were almost a total loss.

When the first freeze came Teague's orchard was equipped with coal baskets. These he cast on the scrap heap later, substituting the more efficient oil pots. Consequently, the big freeze of 1913 left practically no lemons in California but those in Teague's orchards and he realized a large profit from his crop that year.

He was the first to put into operation his discovery that lemons "handled as carefully as eggs" would keep better—that air-tight packing houses shriveled lemons and made them liable to decay;

Chas. C. Teague

and first to build the open-air lemon houses in California.

He financed an investigation by the State College of Agriculture to discover a remedy for brown rot, and the resultant disinfection of lemons has practically done away with this disease. He suggested and had built the first submerged lemon washer, now in general use.

HELPS SOLVE PEST PROBLEM

Teague joined the California Fruit Growers' Exchange in 1911, thus placing in the hands of this large marketing organization the handling of the fruit from the great Limoneira and Teague-McKevett orchards. He gave as his reasons for joining the fact that, with the increase of crops threatening overproduction, the future of the lemon industry would be assured by the development of a co-operative growers' organization which could best effect proper distribution of the crop and could handle the larger problems, such as advertising and traffic relations.

Teague became president of the Exchange Sept. 8, 1920, on the retirement of the veteran, P. H. Dreher. His management of this organization, as executive officer of 11,000 growers of lemons, oranges and grapefruit, is marked by an open-mindedness, a broad grasp of basic policies and the total absence of thought of personal business advantage.

Planting the Winter Vegetable Garden

ONLY the hardiest vegetables should be planted at this time of the year. Such things as tomatoes, cucumbers, sweet corn, beans, egg plant and squash can successfully be grown in frostless localities only.

Many people do not know that peas can be grown very successfully during the winter months. If planted now they will fruit the latter part of February and March. Peas are rich in food value and are prolific bearers.

The tall, wrinkled varieties are best for winter planting, because they produce a larger crop than the dwarf or smooth varieties, although the latter are much sweeter.

The proper time to plant the dwarf varieties is late in the spring, because they mature quickly and when the season is advanced a crop can be produced before the weather gets too warm.

It would be an excellent idea to sow radishes among the slower maturing varieties of vegetables, thereby saving space, extra work and water.

There are both early and late varieties of beets, radishes, carrots and turnips. The early varieties are usually from two to four weeks in advance of the late varieties, but are smaller in size.

The best early sorts are the Early Blood turnip and Eclipse beets; Early Scarlet turnip and Early Scarlet Globe radish; French Forcing, Little Gem and Oxheart carrot; Snowball and Golden Ball turnip.

There is only one really good head lettuce for outdoor winter planting in California and that is the Los Angeles Market.

The prickly seeded or broadleaf variety of spinach is best for winter. Cabbage and cauliflower plants can be obtained now from almost any seed store or nursery. These should be planted immediately to insure best results.

Thorough cultivation is absolutely necessary during the winter months to insure good crops. Particularly is this true of cabbage and cauliflower. When the ground is thoroughly saturated with water and we are having heavy nightly frosts it is necessary that ground should be well aerated in order that the soil does not pack and that there may be free root action.

Cabbage and cauliflower should not be allowed to become stunted in the least during their heading period, because they will invariably "shoot for seed," instead of heading out, if stunted. Cultivating should be done as soon after a rain or irrigation as the soil will admit working without being mucky.

Both onion sets and onion seeds should be planted now; both can be planted in the same row, if care is taken not to have them too thick. When onion sets are all gone the young seedlings will be ready to pull, giving nice, tender onions for table use in the spring.

It is possible to have a succession of crops from early in the fall until the early summer months by planting seeds every four to six weeks, thus constantly supplying the table with delicious fresh vegetables from one's own garden.

Try gardening and see how much pleasure you will have; what interesting and valuable experiences you will have by coming in contact with Mother Earth.—M. K. ZIMMER.

POTATOES YIELD WELL

From three pecks of certified White Rose seed W. T. Williams of Clear Creek (Nevada County) the past season raised 1395 pounds of potatoes, of which 1295 pounds were sold for $50. In 1915 Walter Parsons, Grass Valley rancher, was credited with growing the largest yielding patch of potatoes in the United States.

Remove Bark Scale

BARK scales should be removed from old apple trees as an aid to the control of codling moth. The trunk and larger branches of apple trees become rough as the trees get older, on account of the bark scaling off.

Underneath the scales of bark is a favorite hiding place for the apple worm or larval stage of the codling moth. These larvae may be found in tough cocoons of silk any time during the winter season.

By scraping away the bark it is possible to destroy the larvae in the cocoons and thus to lessen the spring infestation of the pest. The work may be done with a knife, trowel, small hoe or special scraper made for the purpose.

Under certain conditions where the above-mentioned pest is abundant, the scraping of the bark is a great aid in supplementing the work of spraying. This job may be done during the winter season when other orchard work is not pressing.—GEO. P. WELDON.

Offers Prompt Rate Relief

THAT shippers who believe they are being discriminated against by transportation companies now are assured of a prompt hearing, is the encouraging message issued by the American Farm Bureau Federation.

The most recent case to engage the attention of the transportation department of the organization was the protest of Southwestern shippers against a proposed increase of $9 a car in salt and icing charges, which, according to representative shippers, would have amounted to a total of more than $1,000,000.

The Federation filed a sharp protest with the Interstate Commerce Commission, with a request for a suspension on the rate until a hearing could be held. In several cases, opinions favorable to shippers, representing an enormous saving to farmers, have been secured.

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Leather Puttees — Solid horsehide; color mahogany; high luster polish finish; loop or strap style. No. OF-818. Sold elsewhere for $6.50. Our smash-sale price, per pair... $2.98

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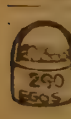

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WE are now taking orders for this winter and spring plantings. Place your orders now, while we have a complete assortment of trees and vines, and assure yourself of getting first-class stock.

Write for price list.

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FRUIT AND ORNAMENTAL TREES—Most complete line offered Southwest. Buy direct from growers. Catalog free. Express paid. Consolidated Nurseries, Houston, Tex.

IF you want world's greatest commercial Everbearing Strawberry order Johnson's Improved Superb; $25 thousand, $3.50 hundred. U. S. N. JOHNSON, Nevada City, Nevada County, Calif.

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WILL trade my $1000 equity in 10 lots in Pindale, 7 miles from Fresno, as first payment on rabbit ranch near Los Angeles. 312 G St., Bakersfield, Calif.

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TYPEWRITERS, all makes, $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. PAYNE COMPANY, Rosedale Station, Kansas City, Kan.

BEES AND HONEY

BEEKEEPING pays. Instruction booklet free with prices. Supplies, queens, nuclei, pkg. bees. Hale Spencer Apiaries, Sawtelle, Calif.

POULTRY *Pointers*

By W. J. DRYDEN

NO SET RULES FOR FEEDING.

Feeding, like any other phase of poultry keeping, cannot be handled by any set rules and regulations. Different birds under different conditions will require different feeding methods.

Each poultryman must watch his flock and by their general condition he can determine if they are being fed the right ration. If the flock has the appearance of being too fat, then the food containing carbohydrate, fat and protein should be reduced according to the amount of fattening material in each.

Or in case the flock has lost too much weight, additional rations of fat-producing feeds must be given.

Good food and good feeding, however, will not force heavy laying by hens that are not breed to lay, nor will the high-producing, pedigreed hens lay unless they are kept under favorable environment.

RATION AFFECTS EGG SIZE.

The size of eggs produced by any strain usually is the result of breeding, but it is true also that food and feeding influences the size. Rations deficient in protein as well as scanty feeding will produce undersized eggs.

IMPORTANCE OF AN ANNOYING JOB.

To clean the droppings every day takes a lot of valuable time, but that is of little importance in comparison with the results obtained. In case wire netting is placed under the roost boards so that the hens are kept off of the dropping board it may be satisfactory to clean every other day.

ELECTRICITY FOR INCUBATION.

A new argument now being given out for the use of electricity in the incubator is that the process of electric incubation has been brought to such a basis that it produces a soft, moist heat similar to the body heat of a hen.

There is no doubt but what poultrymen who have electric power in their plants would prefer the use of electricity if the cost and results were equal to coal or kerosene. The cost, of course, will depend upon the rates in each locality.

EFFECTS OF ELECTRIC LIGHTS NOTED.

Experiments conducted at the California Agricultural Experiment Station indicate that the use of artificial light to lengthen the working day of the laying hen during the short days of fall and winter will stimulate increased production over this period.

The pens of fowls so treated also are very apt to slump in their production the following spring, and perhaps go through a secondary molt, according to the station's findings.

COLDS—CAUSE AND TREATMENT.

It is getting about the time of the year when the poultry flocks will begin to show indications of having roup or colds. This will result from poorly-constructed houses, with too little fresh air, damp surroundings, or drafts.

If a large percentage of the fowls have colds, Epsom salts can be added to the drinking water, about a pound for each 125 adult birds. Other water should be taken away so that the fowls will be forced to drink the salts solution. Following this, potassium permanganate may be added in sufficient quantity to produce a deep purple color. As soon as the solution changes to a brown color it should be taken away and a fresh supply given.

OAKLAND POULTRY SHOW LOOMS.

The eyes of the poultrymen of the Pacific Coast will be directed toward Oakland when the Poultry Show is held in December. The various special breed representatives and clubs are sending out letters calling for larger and better exhibits than in previous shows and present indications are that the awards will exceed those of last year.

The educational features are to be given special attention this year, with exhibits by various companies and organizations showing methods of feeding, housing, management and operation.

Pittards' Turkeys

MR. AND MRS. H. A. PITTARDS' success with turkeys in Arizona should encourage others who wish to engage in poultry husbandry, but have little capital and no experience. The Pittards started by trading four bales of alfalfa, then worth $2, for two bronze turkey hens.

That was less than three years ago. They raised 1000 turkeys the past season and have such fine birds that dealers pay two cents above the market for them, according to the Associated Arizona Producer.

The slump in cotton caused the Pittards to abandon this crop, seed most of their 40 acres to grain and alfalfa and raise turkeys. Eight acres is devoted to turkey pasture, a variety of green fodder being grown. The birds were fattened on a special turkey ration prepared by a Phoenix feed company.

Most of the eggs were hatched in incubators and the young birds brooded in anything from shoe boxes up. There never has been any disease in the flock and practically 100 per cent were raised to maturity. The turkeys are very tame and the feeding and caring for them affords the owners much pleasure as well as profit.

BUYS OREGON ORCHARDS

The Sunnyest and Mira Vista orchards, in the Rogue River Valley, Southern Oregon, comprising 634 acres—mostly planted to apples, pears and peaches—recently were purchased by L. A. Banks, of Hollywood, California, for $200,000.

The California White Leghorn Breeding Farms

SUPERIOR ENGLISH LEGHORNS—INTERNATIONALLY KNOWN

The World's Best

Write for mating list on pedigreed chicks and hatching eggs.

ECKMAN & MILLIGAN, Lankershim, Cal.

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OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land; deep, rich, tried soil, complete irrigation with cheap water, thorough drainage, rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

IMPROVED POULTRY and fruit ranch in Rio Linda poultry district near Sacramento. On highway near Townsite. Good income. Electricity and plenty of water. Also 10 acres unimproved at $400 per acre. R. COLYER, Rio Linda, Calif.

POULTRY and BERRY FARMING in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land. Near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

SELL your property quickly for cash, no matter where located. Don't pay big commissions. Particulars free. REAL ESTATE SALESMAN CO., 576 Brownell, Lincoln, Neb.

FARMS WANTED

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNOWN, 567 Wilkinson Bldg., Omaha, Neb.

FARM wanted, immediately. Send particulars. Mrs. Roberts, Box 83, Roodhouse, Ill.

PATENT ATTORNEYS

HAZARD & MILLER—Herman Miller, formerly eight years member examining corps U. S. Patent Office. Hazard's Book on Patents free. CENTRAL BLDG., Sixth and Main, Los Angeles, Calif.

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YOUR Christmas problem solved by giving Patterson's superfine pack of raisins, figs and nuts in California redwood boxes. 5 pounds to any address, $5. Agents and dealers wanted. W. B. PATTERSON, 2232 Fresno St., Fresno, Calif.

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EARN $110 to $250 monthly, expenses paid, as railway traffic inspector. Positions guaranteed after completion of 3 months' home study course or money refunded. Excellent opportunities. Write for free booklet C-91, Stand. Business Training Inst., Buffalo, N. Y.

BOOKS FOR FARMERS

"THE HOME GARDEN," by L. C. Johnson of Pomona, the largest plant grower in California, tells how, when and what to plant, and how to cultivate. Post paid, 60 cents.

TOBACCO FOR SALE

LEAF TOBACCO—5 pounds chewing, $1.75; 10, $3; 5 pounds smoking, $1.25; 10, $2. Pipe and recipe free. Pay when received. CO-OPERATIVE FARMERS, Paducah, Ky.

PATENT ATTORNEYS

FRED S. WEBSTER, Savings Bank Building, Stockton, Calif. Long established organization. Send for free book on patents.

FARM TRACTORS, MACHINERY

NEW and rebuilt implements, at special prices. Call and see them. ARNOTT & CO., 114 S. Los Angeles St., Los Angeles.

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES
Contributing Editor

WHAT SHALL WE DO WITH KELP?

The kelp that comes up from the sea seems a frightful waste. During the war kelp gained some attention as a source of potash, but there are cheaper sources now. Some day an inventive genius will devise a means of using this curious sea weed and will found a new and permanent industry on the Pacific.

CALIFORNIA WINNERS AT PORTLAND

Much of the news from Portland while the Pacific International Live-Stock Show was in progress was about California people or animals. The boys from the University Farm at Davis won many judging awards and Grover Turnbow and William Regan, who trained them, have reason again to be proud. California animals were prominent in the horse show and in the cattle judging rings. Some day California will have a big fall livestock show where her own actors can perform. It should and will be in line with Portland where our friend Plummer has built a great and lasting international institution.

THE DAIRY CONGRESS

Back from the World's Dairy Congress and the National Dairy Show, Sam Greene of California Dairy Council has brought much of interest which will reach the public from time to time. It was a great congress, the first in seven years, an epoch marker in dairy history. It was managed most successfully by a California man, H. E. Van Norman, formerly dean of the University Farm School at Davis. It is generally conceded that Van Norman was the only available man who could have put it over successfully. Nearly 50 countries were represented, and California sent 50 delegates in a special train. All branches of California dairying were present—producer, manufacturer, dealer, educator and welfare worker.

OROVILLE'S OPPORTUNITY

Oroville was out early with oranges again this year. In spite of this advantage, however, Oroville virtually has stood still in orange production. For years the writer recorded Oroville's early shipments with interest and wondered secretly why the citrus growing did not gain more converts there; why the groves were so run-down.

Land was and is cheap; water abundant, yet the Oroville district boasts few more trees than it did a decade ago. The reason I cannot give, but I can say this, that the Oroville district has just as good conditions for citrus growing as any other part of California—if not better. This statement is made on the best authority.

The fact is that most growers of the Oroville district have not yet learned how to grow oranges. They will not give their trees the care and attention which the southern grower gives as a matter of course. Oroville's opportunity is unbounded, but cannot be realized without better understanding and care of trees. Perhaps Oroville has been ungrateful and undecided in the midst of plenty, like Sacramento, which for a half century was content to wish for better domestic water while river, underground and mountain supply were so easily available.

THE MARKET DIRECTOR

It is reported that James Mills of Hamilton City, formerly of Riverside, is to be State Market Director. This office was made famous by the late Harris Weinstock, one of California's really big men.

One sometimes wonders, though, how much California's progress in marketing has been due to the office and how much to private initiative. Certain it is that most of the outstanding cooperatives were well under way when the office was created.

Mills has made a big record in horticulture and has been a member of Governor Richardson's Agricultural Advisory Council. The office of Market Director is one that depends much upon the man. A big man will make it a big job and Mills is nothing if not sizable in his life's accomplishments.

Persimmon Prices Don't Please

Excessive Retail Costs Curtail Consumption, While Underpaid Growers Restrict Persimmon Output

By O. H. BARNHILL

THE persimmon, one of the rarest of commercially-grown fruits, is no exception to the rule which governs most farm products—consumption is restricted by high prices, while the grower is paid so little that production frequently is unprofitable.

This was the consensus of opinion at the persimmon growers' meeting held by the Farm Bureau at Fullerton, Orange County, recently. Orchardists told of seeing displayed for sale at 12 to 20 cents a pound fruit for which they had received but seven cents. While practically everybody who tastes them likes persimmons, few persons can afford to pay the prices charged by retailers.

Dealers offer the time-worn alibi—"We have to pay wholesalers such high prices." Much "passing of the buck" makes it difficult to fix the blame for the unfortunate condition of the persimmon market, but growers are inclined to regard commission merchants as the chief offenders.

Producers obtained 10 to 12 cents for persimmons last year and—despite rumors that lower prices would prevail this year—many resolved to hold the 1923 crop for similar figures. The dealers got wind of this prospective price stand and beat the growers to it by getting on the ground early and buying large quantities of fruit at seven cents.

GREEN FRUIT HURTS MARKET

Many of the persimmons thus bought were so green that the pucker never let loose until strangled by decay. Meanwhile, much fine fruit could not be marketed, because dealers calculated that if they handled a superior product the poor stuff they had on hand would not sell. They were unwilling to take present losses in the hope of future gains, even though the unfortunate condition of the persimmon market was the result of dealers overreaching themselves.

Growers, therefore, faced the unpleasant prospect of being forced to take even less than seven cents for their fruit. It is just such unsatisfactory experiences as this which force the formation of commodity marketing associations.

It is considered probable that the persimmon growers of Southern California next year will arrange with some dealer to handle all their crop, in much the same way the California Avocado Growers market their fruit. It also is likely that an organized attempt will be made to educate the public to the value of the persimmon as a food, as well as to furnish a standard, well-graded pack.

Those who partook of the luncheon served in connection with the Fullerton persimmon meeting were surprised and delighted at the variety of ways in which this fine fruit could be served. The average person eats a persimmon out of hand and has no idea of the many delicious dishes which can be prepared with this fruit—salad, ice cream, cake and bread, for example.

Interested persons should write to the Los Angeles County Farm Bureau, Hall of Records, for persimmon recipes.

LOCAL MARKET TAKES CROP

The local market absorbs most of the output of Southern California persimmon though considerable fruit is shipped. Placer County growers ship large quantities to Eastern markets, principally New York and Chicago. Transportation charges absorb much of the profits on such shipments. Trial shipments of 50-pound boxes, on which the express was $1.07, were made to St. Louis this year.

Placer growers pack persimmons in two-tier peach crates of 22 to 25 pounds and on their first Eastern shipments this year received $3.90, $2.40 and $1.25. The first figure was obtained for first-class Hachiyas, the last for—"just persimmons." Southern California growers are going to try to show the public the advantage of buying a basket of persimmons at a time.

One place where California growers have "the edge over" Florida producers is in the ripening season. Eastern fruit matures in August, September and early October, while the Pacific coast product is not ready to pick until the latter part of October and lasts until November and December. The late fruit brings the highest prices, since the public is willing to pay fancy prices for Thanksgiving and Christmas fruit. Placer persimmons last year brought $4.40 to $5.50 in New York.

Florida persimmons are sold by growers for $2.50 to $2.70 per crate. The Louisiana crop brings $1 to $1.75 per 50-pound bushel, which is only three cents a pound, unpacked. Texas retail prices are 30 to 50 cents a dozen. In Washington, D. C., the fruit retails for $9 a crate, or two fruits for a quarter.

The Persimmon Growers' Department of Southern California Farm Bureaus is planning to standardize the pack. For fancy fruit a shallow crate holding a single layer of fruit is favored. From 24 to 32 specimens usually fill the package. They are placed stem down and arranged very much the same as apples in bushel boxes.

If all the California persimmon orchards were placed together they would cover little more than one square mile, the total acreage being estimated at 680 acres, of which more than one-half has been planted in the last three years. In 1920 California had 21,000 persimmon trees and Florida 17,000, while all other States had only 14,000 trees.

The total production for the year mentioned was estimated at 137 tons for Florida and 536 for California. The average yield per tree in the entire United States was 50 pounds, while California trees averaged 75 pounds.

Good mature trees yield 150 pounds of fruit. At G. W. Sherwood's ranch, near Fullerton, 22-year-old trees bear 500 to 600 pounds each. Four trees 32 years old at the Thales ranch, Fullerton, have produced as much as a ton of fruit in a single year.

HACHIYA VARIETY LEADS

Ninety per cent of the new plantings are of the Hachiya variety, which is considered by far the best of all the sorts grown in California. The fruit is large, lucious and seedless and has a skin of tissue-paper thinness.

The Tane-nashi is considered the second best variety and is later than the Hachiya. The Hyakume is also fairly popular. The Tamopan has a thick fold near the perimiter of the fruit and a skin so thick that specimens may be halved and eaten with a spoon from the shell. Specimens of this and other new varieties were shown by the U. S. plant introduction garden at the Fullerton meeting. G. W. Sherwood, A. F. Manz, T. Danner and the Thales ranch exhibited fine Hachiyas.

In California lotus roots are used as a stock on which to graft persimmons, although in low, wet places the wild persimmon sometimes is used, because it delays blooming and thus lessens the danger of frost. The native root is the standard stock used by growers in the Southern States. The root of the wild Kaki persimmon from China is considered a superior stock, but is not readily obtainable.

While the persimmon is remarkably free from insect pests and fungus diseases it is not without its enemies. In the Southern States, bird injury is one of the limiting factors in the production of this fruit. The persimmon borer does considerable damage in Florida. This pest has been intercepted in four California counties, on trees shipped from Florida.

San Jose and black scale attack persimmon trees, while mealy bugs prove serious occasionally. No serious nematode infestations have been found. The roots seem to be fairly immune. Crown gall is common, especially on lotus stock.

The cause of the heavy dropping of persimmons this year is not thoroughly understood, but is believed to be due to fluctuating moisture conditions and improper pollination. Heavy pruning is inadvisable.

Knowles Ryerson, assistant farm adviser of Los Angeles County, does not believe California persimmons growers need be discouraged, in spite of unsatisfactory market conditions. These can be remedied by known methods of organization and education.

"Placer County growers say they can make money growing persimmons for a nickel a pound," states Ryerson, who made the principal speech at the Fullerton meeting and from whom much of the information contained in this article was obtained. "Mature trees yield 150 pounds of fruit and should prove profitable in many districts at even the low price quoted, although proper organization and management may result in somewhat higher returns."

Causes of Splitting of Navel Oranges

AT this season of the year many inquiries are received in regard to the cause of losses of navel oranges from splits which occur on the tree.

There are several distinct causes of splitting. In the first place the navel is a double orange and the inner orange varies in size according to the position the fruit occupies on the tree. Outside fruit, particularly that near the top of the tree commonly has thick, coarse skin and a greatly enlarged inner orange, the growth of which causes splitting.

On all groves there is a very common fungus known as aetermaria citri, which grows on the dead stigma of the blossoms, and in the case of navel oranges works its way into the fruit. This produces navel end-rot and is also the cause of a stoppage of growth of the skin, which results in splitting. The life history of this fungus is such that it cannot be prevented or controlled by spraying.

Many oranges have folds or creases in the skin, due to only partial development of one segment of the fruit. This results in a weakening of the skin over the crease and as the fruit approaches maturity side splitting results.

The most commonly accepted idea of the cause of splitting is that irregular soil moisture results in stresses due to unequal growth. Undoubtedly much in the way of prevention can be accomplished by having deep soil and regular and skillful irrigation. And yet it is my belief that no practical way is known of eliminating all or even any large part of navel splits.

Unquestionably a considerable portion of them must be considered as individuals which were destined to fall during the June drop, but for one reason or another were prevented from doing so.—J. ELIOT COIT.

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Citrus Prunings for Fertilizer

IT has long been recognized that citrus prunings make good fertilizer for the reason that the same plant food elements are returned to the soil as were withdrawn by the tree.

In addition, the humus value of the leaves is considerable and the finely-cut twigs and small limbs are quite effective in improving the physical condition of heavy or compact soils.

In view of this it is surprising how few growers make use of this economy, for a large proportion still follow the old custom of hauling out the brush and burning it at the roadside. All humus-forming materials such as manure and legume hay or straw are growing more expensive as time goes on, with no immediate prospect of lower prices.

The total amount of trash burned, if properly used as fertilizer, would represent the saving of a large amount of manure. It costs very little more to cut the brush in the grove than to haul it out and burn it. For best results the brush must be cut while it is still green and full of sap.

The main difficulty confronting the owners of five and ten acre groves is that they can ill afford to own a brush-cutting machine for such a small acreage. Most small growers make a practice of hiring their pruning done by itinerant crews.

Such a crew could own and operate a brush cutter as a part of their regular work, and no doubt many would do so if there were sufficient demand —which there should be!

Prunings, chopped by machinery and spread in an orchard for fertilizer.

The accompanying illustration shows the appearance of the cut brush after it is spread over the ground ready to be plowed in.—J. ELIOT COIT.

Heppner—Topworking

(Continued from Page 3)

plan to cut the cion so the lowest bud will come just at the top of the wedge and facing outward. In most cases this bud will make the best growth.

When inserting the cion into the cleft, great care must be employed. It is absolutely necessary that the cambium layer, which is just inside the bark of the cion and stock, touch each other. There should be a maximum contact between both cambiums, as all new growth starts here.

In order to make this contact of the cambiums doubly certain, the cion should be set at a slight angle with the stock. It does not matter whether the outside of the cion is flush with the outside of the stock or not -the vital point is to get the growing layers, just inside the bark, in contact with each other.

After the cions are properly inserted, the wedge of the grafting chisel is removed, the pressure from the cleft holding the cions in place.

COVER WOUND WITH WAX

All exposed surfaces now should be carefully covered with grafting wax or asphaltum, grade D. The latter probably is the best to use, as all that is required is heating and applying. Most of the grafting waxes must be made by the individual for the sake of economy.

Newly-set grafts should be watched carefully. Suckers should be removed from the stock in order that the grafts may receive sufficient sap for starting and growing. It often happens that grafts grow so rapidly that breakage occurs before the union becomes strong. In such cases the new growth should be supported by fastening a lath alongside both stock and cion. To prevent sunburn, the entire stock should be whitewashed.

Lifting Pigs by Tails

TO prevent squealing on the part of a small pig, lift it by the tail. A squealing pig excites the sow.

If two pigs are lifted together, they may be held by the body without making much fuss, provided they are held close together but as soon as they are separated, each will begin squealing "bloody murder."—TULARE FARMER.

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Cows Make Record

ONE of the most practical Holstein herds the writer has visited lately is that owned by Wesley G. Clark of Hanford. The herd originally established by his father has been developed along definite blood lines for years, and the blood of the great foundation cow, Juliana De Kol, being most prominent. The older cows were sold off last year, leaving a young herd of unusually good type.

Accepting the proposition that all of the bulls from the herd would be sold to dairymen owning grade cows, the herd was made a member of the cow testing association. Last year with twenty head milking from 9 to 12 months, many of them first calf heifers, the herd averaged 455 pounds of butterfat, a splendid showing.

The milk records made by Clark's cows have resulted in a steady sale of young bulls at fair prices. Most of them have been sold at six to nine months of age. This is one of the ways in which a Holstein breeder can be of greatest service in building up the grade herds of his community, and at the same time make his stock profitable for dairy purposes. C. L. HUGHES.

Starting Bougainvillea

How do you start Bougainvillea? Will it start from cuttings? MRS. K. G. W., Los Angeles County.

THE common bougainvillea is started from cuttings. Start them in a cutting box, using sandy loam. Keep soil moist and in partial shade. Bury cuttings half or three quarters their length in soil. They should be six or seven inches long. About half of the cuttings should root and make plants, if they are given ordinary good care. —H. T.

Some Ton Litters

VICTOR HILL, whose farm is located near Waco, Texas, this year raised a litter of pigs which lacked only 102 pounds of weighing two tons, winning the prize for the heaviest litter of pigs grown in Texas the past season.

His twelve purebred Duroc Jersey pigs averaged 325 pounds at the age of six months, a remarkable record.

When weaned, the pigs were fed daily six pounds of a commercial grain mixture 24 pounds of corn feed meal and 60 pounds of skim milk. This amount was increased until at the age of 180 days the pigs were consuming 20 pounds of chow, 112 pounds of meal and 100 pounds of milk.

They were given all the feed they would clean up twice a day. The pigs had the run of an 18-acre Bermuda grass pasture, which contained a pond of water and some shade trees.

The cost of the pigs was estimated at $5.83 per hundred pounds and they were sold for $9.50 per hundredweight. This left a net profit of $144. The cash prize money amounted to $335.

Part of the corn was charged against the pigs at $2.30 and the mixed feed at $3, yet the production cost was kept below $6 and a handsome profit earned when the pigs were sold at $9.50.

J. M. Martin, another Texas swine grower, raised a litter of 10 purebred Poland China pigs which averaged 333 pounds at six months of age.

W. S. Anderson and Son, of Riverside County, raised a litter of 11 purebred Poland China pigs which averaged 248 pounds at the age of 180 days. They were sold to Los Angeles packers for $11.50 per hundredweight.

A Tribute to Weldon

A WRITER in the Pacific Rural Press, an agricultural journal published in San Francisco, pays a glowing tribute to Professor George P. Weldon, for nearly five years associate editor of ORCHARD and FARM.

Says our contemporary: "George P. Weldon of the Chaffey Junior College at Ontario, is one of the best authorities on, and closest students of, the various factors involved in fruit growing, in California today."

The writer of the article reports in detail Mr. Weldon's discussion of pruning, as given at a recent meeting of fruit growers. He also devotes considerable space to points covered by Mr. Weldon in an article which the latter prepared especially for Orchard and Farm, and which appeared in a recent number of this publication.

BOYS AND GIRLS AT DAVIS

More than 500 boys and girls, winners in agricultural club contests, recently attended a convention at Davis, where they were entertained by the College of Agriculture with a two-day program.

Carnation Record Cow 10 Years Old

THIS is Segis Pietertje Prospect, famous record-breaking producer of the Carnation Stock Farm (Washington), Holstein herd.

At 10 years of age she completed a yearly record of 35,550.4 pounds of milk and 1133.197 pounds of fat.

This yield is exceeded only by her own previous achievement, giving her the world's milk record for two lactation periods.

In addition to receiving her grain mixture of oats, bran, cornmeal, hominy feed, cottonseed meal, soy bean meal, oil meal and ground flaxseed, she had salt and charcoal before her at all times.

She depended largely upon roughage, however, averaging daily throughout the year 40 pounds of beets, 6 pounds beet pulp, 1½ pounds molasses and 30 pounds of alfalfa hay.

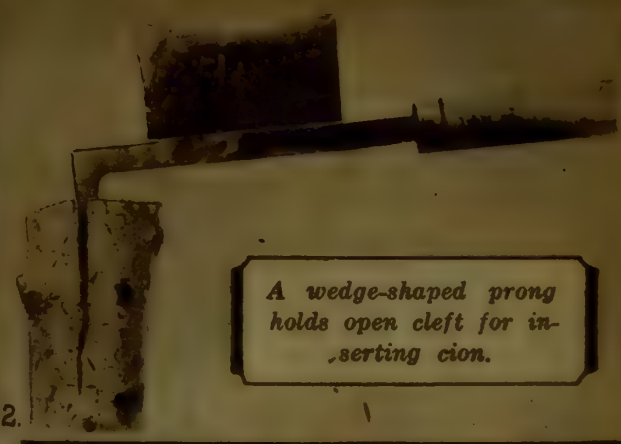
The use of molasses to increase the palatability of roughage is growing among breeders and dairymen. The syrup also possesses great feeding value in itself and has constituted an important part of the rations of many noted producers during recent years.

TOP WORKING FRUIT TREES

SEE ARTICLE ELSEWHERE IN THIS ISSUE

1.

After branch has been severed the grafting chisel is used to make a cleft.



2.

A wedge-shaped prong holds open cleft for inserting cion.

3.

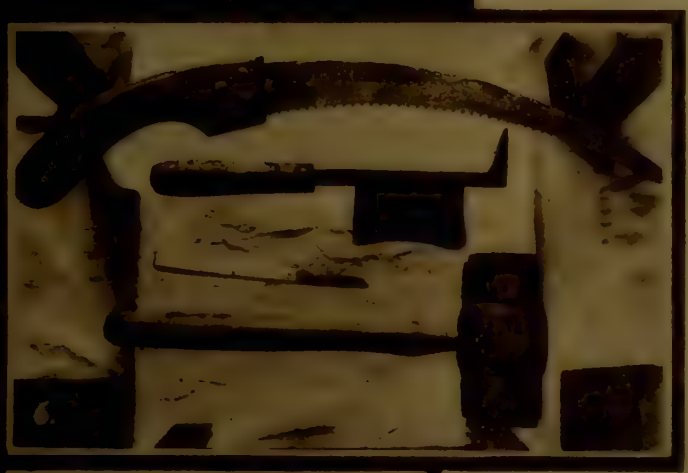
Two cions in place. Those at right show method of cutting.

4.

The job finished and all exposed surfaces waxed.

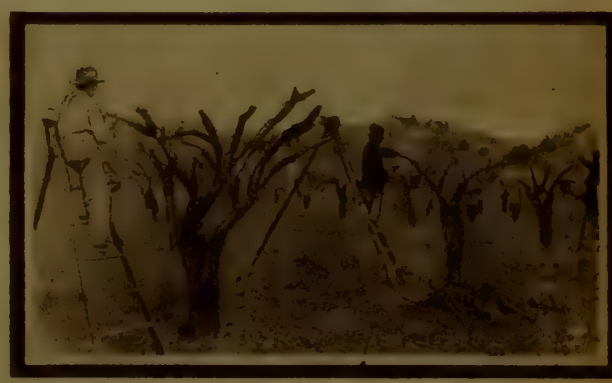
A rapidly growing graft fastened to a lath for protection.

5.



6.

Saw, grafting chisel, knife and mallet.



Crew of three. One cuts branches, second inserts cions, third applies wax.

8.

A two-year-old graft. All sucker growth removed, allowing plant food to nourish graft.

9.

Negligence. Sucker growth has robbed newly-set grafts.

10.

Placing cleft graft in upper part of tree to facilitate pollination.

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These letters may be an inspiration to you—read them!

M. R. Inez of Oakland, Calif., in a letter, says: "I have been very neglectful in writing you since leaving your school, but I can truthfully say that I have been very prosperous in my trade and have been employed here as a first-class mechanic.

"I started at $5 a day, but they soon advanced me to first-class machinist at $1.00 an hour and we work 10 hours a day.

"I am very glad to recommend my friend, Mr. Yalao, to your school, and he will start with you soon."

Wright D. Fernley, of Bountiful, Utah, writes: "I have been talking things over with Mother tonight and thinking of the two short years ago before I attended your school. I well remember how I used to dream of earning 75c or $1 an hour and of paying an income tax, and now all my dreams have come true.

" . . . In a few short months you started me on the upward trail. I have not only increased my earnings 100 per cent, but have a fine vocation and am absolutely unafraid of being out of employment.

"I certainly found your school a 'Friend in Need'."

Marion Hudson Reid of Los Angeles has this to say: "I am proud to say your training brought me from nothing to my present position as owner of this business. I was a farmer, 25 years old, but the war put me back to nothing. It is just since March, 1920, that I finished your course and have accomplished so much. I built all the equipment in this place myself—did my own wiring and everything—and owe it all to National Training."

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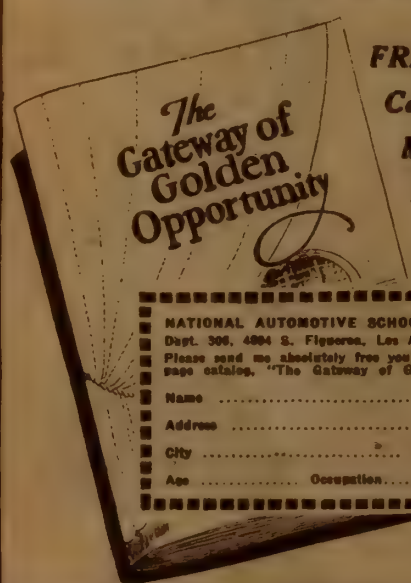
Remember, there's a big-pay job waiting for you when you finish training. And only a few weeks of interesting, fascinating auto training stand between you and the big-pay envelope. Make up your mind that you'll make your success in the auto business. Mail the coupon now—and we'll rush the big FREE catalog to you, postage prepaid.



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ORCHARD and FARM

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DECEMBER 16, 1923

HAWAII—America's Sugar Bowl

Railway for hauling cane on Hawaiian sugar plantation.

Showing how sugar cane "joints" are planted in trenches.

A typical scene in the "Magic Isles." Great rice fields add to picturesqueness of landscape.

Left, a busy harvest scene at height of the sugar cane season.

One of the Island raw sugar refineries.

"Close-up" of sugar cane, showing dense growth and "blossoms."

ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY
DECEMBER 16, 1923

The Nematode, a Growing Menace to Agriculture

Description of the "Beast"—Soil Type Has Direct Bearing on Infestation—What Is Known About Control of Pest—Helpful Suggestions

By ROBERT W. HODGSON
Agricultural Extension Service, University of California

WHILE it is generally recognized that agriculturally California possesses many unique advantages and opportunities over other sections, which in a large measure are responsible for the predominant position which she holds in the agricultural world, occasionally it is worth while to pause and consider some of the problems and menaces, fortunately few, which possibly may hazard the future greatness of our agriculture.

ROBT. W. HODGSON

Among these potential menaces, none looms up more important on the California agricultural horizon than the nematode. Long known in the older developed sections of the State, this pest has spread gradually until at the present time it is believed to occur in nearly all agricultural communities. In this respect California is not unique, as the nematode has for generations been one of the principal pests in the Gulf Coast States, to the point where over large areas it is now impossible to produce many crops formerly profitable.

The problem of nematode control, therefore, long has since assumed national proportions. It must be admitted, however, that although it has received much attention at the various Agricultural Experiment Stations and at the hands of the Federal Department of Agriculturre, the situation at the present time with respect to control or eradication is far from satisfactory.

SCIENCE OF NEMATOLOGY

Among the newer sciences few is more fascinating than that of nematology, developed by Dr. N. A. Cobb of the Bureau of Plant Industry, during the past ten years. Dr. Cobb is undoubtedly the greatest expert in the world on the subject of nematodes, having devoted a considerable part of his life to an exhaustive study of these peculiar microscopic worms, and having during that time discovered many dozens of new species and uncovered many of the mysteries concerning their activity.

But what is a nematode? Nematodes are eel-like worms or animals belonging to a very simple order of life, which occur in countless millions in all forms and shapes and in almost every situation. By far the greater part of them are microscopic, being visible only under powerful lenses, but there are representatives of the order which can be seen with the naked eye, one of the most common of which is the vinegar eelworm, occasionally found in old vinegar.

Common banana squash growing in a California garden. View of roots shows work of garden nematode, resulting in very pronounced "galls."

MANY KINDS EXIST

There are many hundreds of kinds of nematodes, many of which are entirely harmless so far as man is concerned; some, however, are decidedly harmful, existing as animal or human parasites, or attacking the roots of plants. Ordinary soils abound in nematodes. Some of these worms even prey on their own kind so that we have herbivorous, carnivorous, omnivorous, and even cannabilistic nematodes.

So varied are the nematodes in their shapes and forms and so beautifully do they respond to the absorption of certain dye-stuffs that they furnish most excellent material for the study of some of the profoundest mysteries of life itself. Dr. Cobb has found species in which the male and female are quite different, such as for instance in the case of the common garden nematode; others where physical differences are practically nil, and others where the two sexes are combined in a single individual.

In some species eggs are laid; in others the young are born alive; while in others both occur. So the nematode offers a wonderful field for the study of many problems of interest, particularly to students of heredity and evolution.

Of the many crop-attacking nematodes, undoubtedly the most widespread and most destructive is the common garden variety—Heterodera radicicola—found practically everywhere, although very much worse in some places than in others.

This nematode attacks all sorts of garden and truck crop plants, but is especially bad on beets, turnips, tomatoes, potatoes and other root crops. The list of crops attacked by the common garden nematodes is a very large one, there being comparatively few crops not attacked to a certain degree.

Another and especially serious one in sugar beet producing sections is the sugar beet nematode—Heterodera Schachtii—which annually causes very large losses and which has practically wiped out the sugar beet industry in certain localities.

The damage done by nematodes is due to several causes, among which are the formation of characteristic galls and knots on the roots, which interfere with the absorption of water and food nutrients and which as they grow larger actually choke the affected roots to the point where ab- *(Continued on Page 8)*

Sweet Bonds of Sugar Industry Link California and Hawaii

Tremendous Island Production of Greatest Economic Importance to This State—Molasses, By-Product

CALIFORNIA affords no more remarkable or interesting example of producer co-operation than the great refinery of the California and Hawaiian Sugar Refining Corporation at Crockett, Contra Costa County, on the Carquinez Straits, above San Francisco Bay. This enormous plant, said to be the largest of its kind in the world, is owned by 33 of the 52 plantations producing raw sugar in the Islands, and represents about 80 per cent of the total production. These plantations have a capital and surplus in excess of $120,000,000.

More than 1500 employes are required for the various intricate processes of refining.

The Hawaiian sugar industry in its various branches affords employment to many thousands of men and women.

In addition to the refining end of the business, there are many associated industries. Agriculture is benefited or affected by nearly every one of these. For instance, where there is sugar cane, there is always molasses, which in this case is removed at the raw sugar factories in the Islands.

MORE MOLASSES USED

This molasses is becoming increasingly important for feeding purposes. According to the W. H. Young Company of San Francisco, who handle much of the molasses shipped from the Islands, the demand from California dairymen and livestock feeders is increasing every year. The popularity of Hawaiian cane molasses is due to the fact that it not only makes a valuable feed in itself, but also adds palatability to cheap roughage and other inexpensive by-products which animals might not otherwise be induced to eat, but which actually possess much feeding value.

Owing to improved facilities for handling, and the increasing popularity of molasses for animal feeding, the California-Hawaiian Company, through the W. H. Young Company, has effected a reduction in price this year which makes this material available in carload lots at about one-half the cost of alfalfa hay. It is distributed to large users in tank cars and to others in barrels.

The "C. & H." Company recently completed the construction of a 25,000-barrel steel storage tank and barreling plant at San Pedro (Los Angeles Harbor) to facilitate the distribution of molasses in the Southwest.

Among California stockmen who use molasses is C. H. Hartwig of Yuba City, who fed his hogs ground barley (or milo) and tankage mixed with molasses and stated he had never seen hogs do so well or grow so fast as on this ration.

Another enthusiastic user is A. L. McCulloch of Alpaugh, who has fed it to cows, calves and horses, in this way getting full value out of alfalfa stems which otherwise would be wasted.

R. Heckley of Santa Rosa found that calves were very fond of the molasses fed with skim milk and seemed to thrive on the mixture.

VALUABLE HOG FEED

An interesting experiment in hog feeding was conducted by E. J. Fieldsted, swine specialist of the Oregon Agricultural College, with the following conclusions: "Hogs fed molasses as a supplement to barley consumed more grain than they would have taken normally, as well as 2.10 pounds of molasses, with resultant daily gains one-pound greater than normal. The total digestible nutrients indicate a feeding value of molasses of approximately three-fourths that of barley, but when used as a supplement the results indicate equal feeding value, pound for pound, with barley."

A large Southern California swine feeder asserts a mixture of 40 per cent alfalfa meal and 60 per cent molasses puts on firm, solid flesh, without the use of grain.

One feeding authority says cows may be fed a quart (3 pounds) a day; steers one to two quarts; calves one-half to one pint; hogs, one pint to each 300 pounds live weight. This amount should be mixed with the grain mixture, or may be diluted with water and sprayed over the roughage.

Nearly all animals seem to find molasses palatable, but it is suggested that if they are not accustomed to it the syrup be added to the ration gradually.

REFINING RAW SUGAR

After the molasses (which is carried to Pacific Coast ports in tank ships) has been removed at the Hawaiian factories, the raw sugar, in burlap bags, is brought to the California refineries. This material is brown in color and contains many impurities which are removed in the refining process. At the refinery the sugar is melted and carried through the various processes in liquid or semi-liquid form.

Nine operations are necessary in order to produce the white sugar in granular form, with all impurities removed. George M. Rolph, in his book "Something About Sugar," lists these as follows:

(1) Washing—Removal of superfluous impurities.

(2) Melting—Changing the raw sugar into liquid form by melting with water.

(3) Defecation—Precipitation of suspended and insoluble impurities.

(4) Bag and Bone-char Filtration—Removal of suspended impurities, solor and soluble impurities.

(5) Crystallization — Production of crystals by concentration.

(6) Partial Drying—Purging crystals from syrup in centrifugals.

(7) Final Drying—Driving off all remaining moisture.

(8) Sorting of Crystals—Sorting of grains according to size to meet market demands.

(9) Packing—Putting in various forms of containers.

TREMENDOUS LOCAL INDUSTRY

The California and Hawaiian refinery at Crockett started operations in March, 1906, and now has an annual melting capacity of 640,000 tons. With sugar selling at $7 per hundred pounds the gross returns of the California refineries would be about $75,000,000 a year.

What this co-operative enterprise means to California is emphasized by the following additional facts and figures.

Approximately $6,000,000 has been expended during the past three years upon construction and improvements at Crockett. About $2,000,000 per annum is spent for supplies. The annual payroll exceeds $2,500,000. Gross payments to railroad companies for hauling the refined product to market exceed $2,000,000 a year, and about one-half million dollars is paid to Bay and Pacific Coast steamship lines. California produces many of the important items of supplies, such as bone-char, chemicals, barrels, boxes, cartons, tins, bags and pipe.

Where, indeed, is a more romantic or far-reaching agricultural enterprise?

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TO SERVE All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Farmer's Viewpoint

THEORY, MONEY, PRACTICAL KNOWLEDGE.

A wealthy man who wanted to engage in poultry raising as a sideline cast about for a working foreman or manager. He finally selected a man who, as the employer related it, "surely had a lot of practical knowledge of the business because he had failed in it twice."

Any amount of theory and enough money to prevent disaster were the owner's contributions to the deal, and, strange to relate, it proved successful!

THE FARMER'S SHARE OF TAXES.

Since farmers pay only one-fourth the taxes of the United States, although they own one-half the property, there is a widespread conviction that agriculture is not doing its part in supporting the Government.

Income, however, must be considered in determining the amount of taxes a citizen should pay. The average American farmer is taxed 17 per cent of his income, while the town man is assessed only 12 per cent of what he earns.

HIGH COST OF CREDIT FARMING.

Farmers continually are hampered by lack of operating capital. This is partly due to imperfect financing facilities, but is partly our own fault. We Americans are natural speculators and bonanza operators. We like to farm on a big scale and take the largest possible advantage of ever increasing real estate values.

When a farmer has accumulated sufficient capital properly to conduct his business, with a comfortable balance in the sinking fund, he is very apt to mortgage his farm to buy the adjoining "forty." This often results in putting a cramp in his work during crop failures and low price periods.

If we were content to play safe and bore with a smaller auger, we would, in most cases, make more clear money in the end.

CALIFORNIA AIR FARMING.

The maintenance of soil fertility by the fixation of atmospheric nitrogen, through the growing of leguminous crops, has become an established practice in all the older agricultural districts.

European countries, notably Norway, have developed great factories for electrical fixation of atmospheric elements, and American scientists have worked out new and improved methods.

California has more water power, developed and undeveloped, than any other large agricultural State in the Union; hence is in the best position to extract needed fertility from the air. It is possible, therefore, that the air, as well as water and soil, will play an increasingly important part in future California farming. Such projects already are under way in this State.

BANKERS ENDORSE CO-OPERATION

The American Bankers' Association, at its recent Atlantic City convention, strongly endorsed co-operative farm marketing. Heretofore the money lenders have, as a rule, backed the middlemen. Why this change of heart?

Those who know the financial mind say this action was taken in an effort to forestall a Farm Bloc raid upon the Federal Reserve Banking System, which has been called the bankers' cellar, or house of refuge.

The bankers are said to be trying to discredit the government land banks, which loan money on agricultural land at a low rate. The financial mind regards this as unfair competition and the law creating the banks as a "political nostrum." In order to gain the sympathy and support of the farmer they have endorsed co-operative marketing of farm products, according to some shrewd observers.

All of which indicates the scepter of power is passing from Wall Street to the farm.

What's New? — Keeping Abreast of Agricultural Progress

Coarse Soils Injure Alfalfa

THE Farm Adviser has made a study of alfalfa fields in sub-irrigated districts of Riverside County to determine cause of stands dying out. Coarse sand subsoils of poor water holding capacity explained the decline in some instances.

Chemical Controls Woolly Aphis

THE use of paradichlorobenzene for the control of woolly aphis on apple tree roots has given very effective results during the past season in Sonoma County, according to Farm Bureau officials. Amounts as small as one-half ounce per tree have proved effective.

Wilt-Resistant Varieties Tested

RESULTS of wilt-resistant tomato variety tests in San Diego County recently were checked up. The farm adviser reports that the Stone variety was completely killed by wilt early in the season, while three resistant varieties showed little blight and good yield, especially the Norton variety. This type, judging from this year's test, seems to be a promising one to grow under wilt conditions.

White Yolo Yields Well

A DEMONSTRATION in harvesting white Yolo, (the new grain sorghum developed by the University farm) with a small combine was carried on successfully at Ball's Ferry on October 17. White Yolo promises to take the place of milo in the county on account of the ease in harvesting with machinery. One grower of Yolo and milo maize reports a yield of forty sacks of Yolo per acre as against thirty sacks of milo.

Save Money on Fence Posts

AN example of savings through co-operative buying by farm bureau members is the recent purchase from Mendocino County sources of seven carloads of fence posts to replace those destroyed by fires in Napa County. These were secured at 16 cents each for the 4x4x7 posts and 24 cents for the 4x5x7 posts. This represented a saving compared with local prices of $650 for 15,000 posts, according to farm bureau officials.

Colorado Imposes Spray Rule

FRUIT shipping associations in Colorado require growers to sign invoices bearing a guarantee making them responsible for excess spray material left on fruit, according to reports to the Bureau of Chemistry, United States Department of Agriculture, which has made investigations of this problem.

Such a requirement seems to have a good effect, as an investigation this year in one of the principal fruit-growing centers of that State showed little spray residue on the fruit ready for shipment.

Grain Duster Cheaply Built

COPPER carbonate dust will be used on a large scale for the control of grain smut in Fresno County. At Mendota one grower will treat about 2000 bushels of seed grain with dust, and others are treating smaller quantities. Bluestone and bluestone-lime treatments are being arranged by the Farm Adviser in other grain plots to serve as a check for comparative purposes. The Squaw Valley farm center has constructed a duster, capacity 120 pounds, at a cost of $8.94. This machine is being used in the community for treating seed grain for about 300 acres.

Queen Bees Prove Gold Mine

E. B. AULT, Nueces County, Texas, apiarist, earns $50,000 a year raising and selling queen bees. By the use of artificial methods 100 queen bees per hive are secured, instead of the usual number, which is one.

Ault's method consists in providing large cells and transferring to them ordinary worker larvae. Once inside the large cells, the larvae are provided by the other bees with "royal" food, which makes possible the transformation of a worker into a queen bee.

Farm Bureau Protection

A NEW way in which the Farm Bureau can help its members is being tried by the local organization in Madison County, Illinois. Members post their farms with cards bearing these words:

"Protected by Madison County Farm Bureau. The Farm Bureau will pay $50 reward for the arrest and conviction of any person stealing property up to the value of $10 from any member; $100 will be paid if the property is above $10 in value. These rewards will be increased 50 per cent where a jail sentence is secured."

Largest U. S. Lemon Crop

THE coming lemon crop will be the largest ever harvested in the United States, according to reliable estimates. It will be one-half larger than last year's crop and the quantity of fruit harvested will equal the total amount consumed in this country and Canada during any previous year.

Italy imported 13,045 carloads of lemons into the United States the past fiscal year, the tariff of two cents a pound having had no material effect in reducing shipments, because of the high prices which prevailed.

Eggs By Boat to New York

RECENTLY the steamships Nepouset and Wheaton carried from San Francisco to New York 20,000 cases of California Nulaid eggs. The rate by water is $1.50 per hundred pounds, including refrigeration, compared to $2.60 for rail service, plus $90 per car for refrigeration.

The even temperature maintained by the ships and the absence of jarring during transit resulted in the eggs arriving at port in excellent condition.

Producers Donate Apples

A CARLOAD of extra fancy Jonathan apples recently was donated by Yakima, Washington growers to the poor people of New York City. Although the motive of the donors was purely philanthropical, the gift proved a very effective advertisement of Northwestern apples.

The Yakima Fruit Growers' Association sold this year over 1000 carloads of apples, which averaged over $1000 per car.

Subdividing Stump Land

FOURTEEN hundred acres of cutover land near Laurel, Mississippi, is being cleared of stumps and will be subdivided and sold in small tracts to farmers who are able to make cash payment of $400 or $500.

Expert advice is to be given regarding the cropping and management of the land. A market is to be established and arrangements made to sell everything the land produces.

Chinese Eggs in New York

A SINGLE shipment of Chinese eggs recently received in this country and inspected by the Bureau of Chemistry of the Department of Agriculture was estimated to be worth approximately $5,000,000.

The shipment, which came in at the port of New York, consisted of 43,369 cases and 128,262 tins of frozen eggs from Nanking and Hankow and 16,009 cases of dried eggs exclusive of egg albumen.

The total was equivalent to 43,000 cases of shell eggs. The shipload of eggs represented a year's work for perhaps one and one-half million hens.

"THEY SAY"

J. E. BERGTHOLDT

J. E. Bergtholdt

Widely-known Fruit Grower, Horticulturist and Nurseryman, of Newcastle (Placer County), California.

I HAVE observed for four or five years greatly increasing deterioration in plum sizes, due large to the adoption of long pruning incorrectly applied.

It is safe to assume that the past two seasons over 50 per cent of plums shipped were 5-5 and smaller.

In our own orchards we have applied a modified form of long pruning, varied somewhat according to the requirements of the individual varieties, and last year we worked out a still more radical modification.

In addition, last year—that is, on the crop of 1923, we did some radical thinning and otherwise employed strenuous efforts to raise the standard of quality and pack.

As a result, our season's average on the Eastern auction markets was $242 per car more than the average of all other shipments sold at auction from our district. We do not quote this fact in order to boast of our achievement, but merely to give an example of what can be accomplished by persistent effort in the right direction.

During the past three years the shipping plum crop of the State has been sold at less than the cost of production, picking, packing and marketing. This applies particularly to the shipments of 1922 and 1923. The majority of California plums are picked so green as never to be fit for human consumption, while at least one-half are so undersized as to be unattractive.

A recent analysis of more than 2500 carloads of shipping plums disclosed the startling fact that returns on the tree, after all harvesting and marketing expenses had been deducted, and without deducting production expense up to time of harvesting, were as follows:

4-4 averaged on the tree 72c per crate
4-5 averaged on the tree 41c per crate
5-5 averaged on the tree 24c per crate
5-6 averaged on the tree 11c per crate
6-6 averaged on the tree 11c per crate

What I say of plums is true, to a degree, of shipping peaches also. There is altogether too much fruit hogging.

The remedy is simple, easy of accomplishment and altogether in the hands of the individual fruit grower.

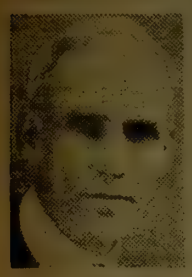
It is up to him as to whether this important branch of the industry be continued in the red or be re-established on a profitable basis.

Building for Big Profits in the Bulb Business

San Fernando Valley Farmer Taking Advantage of Favorable Situation in Flower Industry—Demand for First-Class Stock Exceeds Supply

By O. H. BARNHILL

THE trite saying about a wind that blows no one any good being a mighty mean one, was well exemplified in the experience of M. G. Bridgeford, former Eagle Rock (Los Angeles County) nurseryman, whose stock was killed by the freeze of 1913. As a result of this calamity he began growing bulbs and has built up a bigger and better paying business than the one from which he was ousted by Jack Frost.



O. H. BARNHILL

Having been a Chicago florist before he became a California nurseryman, Bridgeford was in a position to realize the possibilities of propagating flowers in the sunny Southland. The embargo which the Federal Government had placed on certain kinds of foreign bulbs was the determining factor which caused him to grow a crop which matures under ground, beyond the reach of the frost king.

"For many years Holland has supplied the bulk of the flower bulbs used in the United States," explains Bridgeford. "Foreign growers permitted their stock to become diseased, however, which resulted in its being refused entry into our country.

BULB DEMAND IS STRONG

"This situation spells opportunity for American growers, because the demand for bulbs far exceeds the local supply. Those who have a large crop of flower roots ready for market are in a position to reap a rich harvest."

From a few square rods of flowers, Bridgeford gradually increased his plantings until it was necessary to acquire more land. Then two years ago he began a search for a new and larger location, visiting promising districts in various parts of the State. He finally bought ten acres on Sherman Way, a short distance north of Van Nuys, suburb of Los Angeles, in the San Fernando Valley.

Bridgeford's attention was called to the fact that the climate of this section is dry, hot and windy, whereas that of Holland—the home of the world's greatest bulb farms—is just the opposite: moist, cool and calm. The big, burly floriculturist was not disturbed, however.

"Southern Europe is the home of the grape," he remarked; "northern Africa of the date, Turkey of figs and Angora goats, northern Europe of Jersey and Holstein cows. It used to be thought that no other place in the world could produce fruit, cows and mohair equal to those grown in the old world. Pacific Coast farmers, however, have proved otherwise, beating the foreigners at their own game.

"It is the same with bulbs. If Dutchmen had kept their stock clean we might never have known that finer bulbs could be grown in America than in Europe.

LOCAL CONDITIONS FAVORABLE

"The quality of our bulbs proves that conditions here are favorable for their production. The fact that dealers are willing to pay top prices for my goods and demand far greater quantities than I can supply indicates that my bulbs grade A No. 1.

"Come around in blossom time and see for yourself. After inspecting our flowers, Government experts say no finer bulbs are grown than those produced in the San Fernando Valley.

"An important point in favor of this locality, compared to colder regions, is the extra long growing season we enjoy. Bulbs grow as much here in 12 months as in two or three years in the Eastern States."

Bulbs increase by division, something like "Multiplier" onions. In fact, some kinds of flower bulbs greatly resemble onions, and tulip bulbs are edible, cull tulips having been dried and used to make flour during the war. Readers are advised, however, not to experiment with flower bulbs for food, as some are poisonous. Even a gopher can't eat a narcissus bulb.

GOPHERS ARE WORST PEST

It would be fortunate if all bulbs were poisonous, because gophers are the greatest pests with which the bulb grower has to contend. These rodents sometimes will destroy a large number of valuable bulbs in one night, carrying them through their tunnels and storing the succulent food for winter use. To control this pest Bridgeford uses a gopher gun, which is placed in a subterranean tunnel, where it automatically is discharged by the rodent.

Some bulbs multiply very slowly. Gladioli, for example, will only double themselves in one season, needing two years for a profitable crop. A hyacinth bulb on the other hand can be made to yield a dozen or more new plants in one season.

This is accomplished by cutting off the top of the bulb, leaving a saucer-shaped depression. A bulb which had been treated this way was dug up and found to have divided into 23 bulbs and bulblets. The smaller bulblets are replaced in the ground, where they increase in size and number.

"Digging and planting is all there is to the bulb business," explains Bridgeford. "Dig and dry, like onions; sort and replant—that's all there is to it. Of course, the crop should be cultivated and watered.

"Sounds simple," admitted the visitor. "But isn't it a fact that some persons fail in the bulb business, same as any other?"

SOME FAILURES EXPLAINED

"Certainly," Bridgeford admitted. "If you don't use common sense and 'tend to your knittin' you can fail at anything. One bulb grower dug his crop a month too soon, because he was in a hurry to take his vacation. Another neglected to pull off the tops, hoping they would dry out while heaped together. But the whole pile rotted and now this man says there's no money in bulbs.

Mr. Bridgeford sorting flower bulbs for market and planting

"Another grower with a lively imagination obtained a large amount of capital and wasted it in buying expensive tractors, establishing a purebred dairy—to furnish fertilizer—and in other unnecessary ways, before his bulb business was on a paying basis."

Bridgeford was content to grow—rather than go—into the bulb industry, taking ten years to build up his flower farm to its present proportions—between five and six acres. Instead of seeking unlimited financial backing, he went bulb hunting, picking up job lots of fancy flowers at bargain prices wherever they could be found, in this way making the best possible use of his resources.

NO EXPENSIVE EQUIPMENT

He has no expensive buildings or equipment, using his dwelling for a packing shed. "We haven't time to keep house," explains the veteran floriculturist's daughter, Miss Jessie E. Bridgeford, to whose capable assistance a large part of the success of the business is due. "We work with flowers all day long and part of the night. They require a great deal of detail work, but it is interesting and we enjoy every bit of it."

When it is considered that the bulbs are set only two inches apart, "staggered," in rows a foot from each other, the vast number required to plant an acre can be realized. There are 134,000 "baby" gladioli alone.

There are more than 2,000,000 bulbs altogether, on the place, comprising 200 different varieties. Miss Bridgeford is making a set of exquisite oil paintings, life size, showing the exact shape and color of each flower. In addition to this art work, Miss Bridgeford plays seven different instruments, being an accomplished musician and composer of considerable ability.

LITTLE HELP IS NEEDED

The only other worker on the Van Nuys Bulb Farm is a Mexican laborer who plants or digs 8000 bulbs a day—1000 per hour. Flowers are cultivated with a wheel hoe, the ground being an easily-worked sandy loam. An overhead sprinkling system is to be installed in the spring.

"Yes, it will cost a lot of money," admitted Bridgeford, "but I calculate it will pay for itself in one year. Not only is an overhead system of irrigation a great time and labor saver, but crops always grow better after a rain or artificial sprinkling than when watered with ditches."

Last year one of the floods which sometimes sweeps over portions of the San Fernando Valley covered the newly planted bulb farm. After the waters subsided it was found that a layer of valuable leaf mold had been deposited. Commercial fertilizers are to be applied in limited quantities, being considered more economical, in spite of their greater cost per ton, than barnyard manure.

FERTILIZATION IS IMPORTANT

"The science of soils and plant fertilization is very important," Bridgeford points out. "If I had a son I would have him study chemistry, which is destined to remake the world."

Lilies are the only flowers grown that need frost protection, which is provided by a late growth of grass and weeds. The rest of the farm is kept scrupulously clean.

"Bulb growing is the only business in which you can eat your cake and still have it," declares Bridgeford. "Last fall, for example, I planted 15,000 freesias. Within the year I sold that many and had 75,000 left for planting—five times as many as I started with."

In one bed of ixias, the importation of which is prohibited, there are 20,000 bulblets. Another bed contains 18,000 sparaxis, while in still another there are 3000 Spanish irises, which cannot be shipped in from other countries. Twenty thousand poeticus ornatus, similar to narcissus, occupy another block.

But the strain on the visitor's imagination is too great at this time of the year, when there is nothing but dry, onion-like bulbs to indicate the profusion of beautiful blossoms which soon will cover the barren looking fields. An inspection of the account books, neatly kept by the talented daughter, proved more interesting.

SOME PRICES AND PROFITS

"Those three little bags, each holding about a gallon of bulbs, could be sold for $75," related Bridgeford. "From four rows of freesias we sold $160 worth of bulbs. That patch out there"—pointing out of the window—"is only about four rods square, yet it contains 75,000 freesia bulbs, worth $12 a thousand—$900."

The books show that during the past year Bridgeford sold about $2000 worth of bulbs and $3000 worth of cut flowers, a total gross income of $5000 from less than six acres. (One of his neighbors grew only $300 worth of pumpkins on the same amount of land.) Everything is sold at wholesale, time being considered too valuable to bother with retail trade. On Mother's Day Miss Bridgeford cut 3000 tulips.

"The $3000 worth of blossoms we sold was all clear velvet," Bridgeford pointed out. "We haven't begun to realize on our bulb crop, even if our total sales this year amounted to nearly $1000 an acre.

"Next year we intend to begin to 'clean up.' Here is an order for 100,000 Nana gladioli, which occupy a quarter of an acre and will bring approximately $2000. In two or three years we expect to have a comfortable fortune and be able to retire. Then," with a tired sigh and a far-away look at the blue mountains, *(Continued on Page 8)*

HOME FARM HAPPENINGS

By ONE OF US

NOT MUCH GRASS AVAILABLE.

The beautiful, open fall weather has been wonderful for the rice and bean harvest but there is now every indication that there will not be much feed on Sacramento Valley ranges until well toward spring.

W. S. GUILFOY.

Even if there should be abundant rainfall during the winter, grass would not amount to much until the comparatively warm weather of spring. Unless rain comes before the ground gets cold and the night temperature goes down toward the freezing point, there is not much fall and winter feed. Grass must get past the "washy," green stage in order to have sufficient strength to be of much value to stock, in order to make growth and fat.

In the Davis-Dixon country there are lots of alfalfa fields on the last crop of which there is good feed now. There are some stubble fields on which there is some feed left, but stockmen are beginning to worry about conditions.

Everyone should have some hay or silage as an insurance against just such a situation, but very few of us have.

The two bad times are August and midwinter; that is, midwinter most years. These "short feed" periods cause stockmen more worry than everything else connected with the business, finance always excepted, of course.

DEVELOPERS DOING BIG THINGS.

Scott Hendricks came over from Marysville yesterday to see the donkey engine which Jackson James has been using to clear land in the river bottom. This rig—a regular logging steam donkey outfit—has been used to splendid advantage.

James has cleared as much as an acre a day of big trees, pulling them out by the roots and leaving them so they can be burned, making the land ready for leveling and planting.

Scott Hendricks and his brother Will are developing a big area on the Yuba River near Marysville, taking a river bottom jungle and converting it into some of the highest producing alfalfa and orchard land in the world.

As Scott says, instead of making two blades of grass grow where there was only one before, this river bottom development is making tons of fruit where nothing grew before.

There is a close bond of sympathy between those who carve farms out of these river bottom areas. Fighting constantly stumps and brush and undergrowth, first to get it out, then to keep it from coming again, each man who does it thinks he has the hardest job in the world until he sees what some one else has had to contend with.

Jim Cremin, editor of the Marysville Appeal, friend of agricultural progress, philosopher, politician, is one of us. He carved a farm out of the wilderness on Bear River. But the fine thing about it is that when you do get the nature growth out and conquered and plant trees or vines or other crops they grow as luxuriantly as the wild things did.

THE INTERIOR PRUNE SITUATION.

Had a long talk with U. W. Brown, Sacramento Valley director of the Prune Association.

"The early estimate of both the association people and the independent packers was too low," he said. "The fact that Santa Clara and Sonoma counties had a short crop was responsible for the estimate.

"No one had any idea, apparently, of the total tonnage the large number of young trees coming into bearing in the Sacramento and San Joaquin valleys would produce. And on these same young orchards there was some of the best quality fruit grown this year."

FAT COWS AND OTHERS.

Speaking of short feed. There are times when even this situation seems to be of benefit. On a recent visit to a neighbor's ranch, a number of very fat cows were seen in his herd of registered Shorthorns.

"You have some wonderful cows," was the comment. "You could stage a stock show right here in your pasture that would be a credit to the breed."

"Yes," he said, "but the sad part of it is that these fine looking cows do not produce calves as regularly as many of the other cows, plainer looking and with far plainer pedigrees. And another strange thing is that some of these plain cows raise the best calves and do it without the aid of nurse cows.

"They are good to look at, these big fat cows, and they have cost us more than the others, but I am wondering if it is worth while to have them around just to please the eye," he continued.

"The animals referred to have never known what 'short feed' is. They have had the best of grain and hay and pasture from birth. Their 'insides' are literally lined with fat.

"The contrast between these and our Shorthorns at once occurred to us.

"We have been at times during the past four or five years short of feed and the cattle have been far thinner than we have liked. At such time the layers of internal fat must have entirely disappeared.

"Now the question is, has it or has it not had anything to do with their regular breeding? For it is a very rare thing for one of our cows to go more than eleven or twelve months between calves."

These cows are on pasture all the time, some of them have never seen the inside of a barn, and have never been fed any grain. Yet they grow big and when feed is plenty get fat. And they surely produce calves regularly.

THAT FALL PRUNING JOB.

The pruning job is about over. In the prune orchard a few broken limbs have been taken out, some suckers taken from around the trunks of the tree and some root suckers cut off, and that's about all there is to it.

It's a short job soon over. In spite of the big crop of fruit, the prune trees made a big growth of new wood and are going into the dormant period in splendid condition.

Satisfied Consumer Best Advertisement

"EVERY student must be satisfied," remarked J. A. Rosenkranz, president of the National Automotive School of Los Angeles, recently, in epitomizing the policy of the big institution of which he is the head.

J. A. ROSENKRANZ

There is a lesson in this statement for other lines of business, including agriculture.

"Every man with whom I deal must be satisfied," is the keynote of the success of a certain farmer of our acquaintance. He has created specialized markets for most of his products, which are diversified and intensively grown. His satisfied customers have no ear for the siren songs of other producers, even when the bait of a lower price is temptingly displayed. And he leaves no stone unturned to make them satisfied!

"Must" is the word, but Rosenkranz means what he says. Perhaps that is why the Los Angeles educational institution has grown in a few years from a small organization, in rented quarters, with a handful of students, to one of the largest and finest schools of its kind in the world, owning its own beautiful building, and having an average enrollment approaching 500.

Any farmer who has taken his car or tractor to a garage for repairs and has had to pay for botched work by unskilled mechanics, will appreciate the good that such schools can do. With the increasing use of motor power by farmers, there is more and more demand in rural districts and small towns for scientific automotive knowledge. Many farm boys, in fact, are taking automotive and electrical courses and using the knowledge thus gained to good advantage right at home.

But no matter whence he comes, nor what his future location, the student at this unusual school must feel that he is getting his money's worth and leave with the certainty that he is fitted to increase his earning power.

To this end he is taught by "doing," whenever possible. Instead of simply studying from a book the method of grinding valves, making electrical repairs, or performing other important operations, he is first shown by a competent instructor and then actually performs the work in a completely equipped shop. Incidentally, of course, he uses text books—but in no case does he rely upon them entirely.

Such special training schools as this are raising serious doubts as to the practical value of "general" education which does not fit the student for any particular vocation. In this age of specialization and intensive production, the young man without any particular training finds it difficult to find his niche.

"Big business" is constantly on the lookout for men who know; men who are already trained for waiting jobs, and are ready to tackle big problems and solve them.

Rosenkranz, in starting upon the road to success hundreds of men and boys who previously had no definite aim in life, has done a big work. And ORCHARD and FARM, chosen by this school to carry its messages to hundreds of thousands of readers in rural California, is proud to have had a part in the development of "National Automotive."—J. C. K.

Cheap and Easy Way to Make Bordeaux

HOMEMADE Bordeaux mixture is the best and cheapest spray for the control of fungous diseases. It is a particularly good spray for peach blight or shot-hole fungus on peaches, nectarines and apricots in the fall (November and December). It also is a good spring spray for the control of the same diseases, together with brown rot and curl leaf.

Recently there has appeared upon the market commercial forms of Bordeaux powders and pastes. These cost from 14 to 16 cents per pound. In the amounts which are recommended by the manufacturers the cost of materials for a 200-gallon tank amounts to from $4.50 to $6.

In 1923 price for copper sulphate has been 8¼ cents per pound and for the best grade lime (Colton), 2 cents per pound. Therefore, for a 5-5-50 mixture of Bordeaux the cost for 200 gallons is $2.05. Thus we see that for materials alone we can save from $2.45 to $3.95 on each 200 gallons of spray.

The method of making Bordeaux mixture at home always has been a more or less expensive and time-consuming task. The grower was told to construct a platform for mixing the Bordeaux and have special tanks or barrels for running the diluted stock solutions into before the same was admitted to the spray tank. Lacking this arrangement, he was told to use two men for pouring the two diluted stock solutions in a single stream into the spray tank at the same time.

Here is a method which gives a mixture just as satisfactory and one which is quicker and cheaper:

1—Prepare the stock solutions by dissolving the bluestone in water at the rate of one pound to one gallon and by slaking the lime thoroughly and then diluting with water to make the ratio one pound to one gallon. Keep separate until ready to spray.

2—Fill spray tank three-quarters full of water. Place the screen over filling hole. Add the bluestone stock solution to the tank. Start the engine in order thoroughly to mix the solution.

3—Pour the lime stock solution through the screen into the tank, using a paddle to break any lumps. Wash through any residue.

4—Finish filling the tank with water.

Two men easily and quickly can do this job and have time enough to run the engine. There is a certain amount of time wasted in waiting for the tank to fill and this can be utilized profitably by mixing Bordeaux.—W. P. Duruz, Instructor in Pomology, University of California.

Open New Date Library

THE most complete library in the world on date raising and the date industry is housed in the building recently completed at the U. S. Date Experiment Station, Riverside County.

Dr. Walter T. Swingle, director of the station, has gathered much date literature in every accessible date region in the world.

Some of this material was obtained through Department of Agriculture men working under him in date investigation in foreign countries.

An important part of the library consists of British government publications relating to the most thickly planted and most famous date region in the world, Mesopotamia, whence come the Halawi, Khadrawi and Zehedi varieties of dates now flourishing in Coachella Valley, grown from imported offshoots. Other literature concerns Egypt, the home of the famous Deglet Noor variety, which has shown special adaptation to the soil and climatic conditions of leading date district.—MARY E. WALTER.

HARTFORD DRINKS MUCH MILK

The average consumption of milk in Hartford, Conn., a city of 150,000 is one pint per day, the highest in the United States.

Canada's

1923 Crops Beat All Records

SHARE IN CANADA'S OPPORTUNITIES

In 1923 the wheat crop of Canada exceeded the 1922 crop by almost 100,000,000 bushels. In Alberta, the average yield was 26.5 bushels per acre and there were many individual cases where yields of 50, 60, 75 and 80 bushels were returned. Other crops showed a corresponding increase over previous years with equally high yields. These enormous yields on moderate priced land even at average prices for farm products have placed many farmers on the road to success.

AMAZING NEW FARM OFFER

LEAVES YOU A SURPLUS FOR COMFORTABLE LIVING

The Canadian Pacific Railway now offers you a Farm Home in Western Canada on a New Long-Term Plan of Easy Payments that is Extraordinary. The plan makes it possible to own a farm home without taking all profits to meet land payments and leaves a surplus for the comforts and enjoyments of life.

PAYMENTS EXTENDED OVER 35 YEARS

FIRST YEAR FREE USE OF LAND

Under this plan all the settler pays down is 7% of the purchase price—One year's free use of the land without any interest chargeable whatsoever. The balance of principal and interest will be amortized on an easy payment plan of 34 equal annual payments which makes the second payment fall due two years after the purchase of the land, which is figured on the basis of 7% (including principal and interest) of the balance of the cost of the land. For example, on a purchase of 160 acres costing say, $3,000, the down payment will be $210 and the annual payments, commencing at the end of the second year, will be $195.30. After 35 years the settler will get clear title to the land—unless, of course, he wishes to pay sooner, which is his privilege.

NO TAXES ON IMPROVEMENTS

Taxes are moderate and there are no taxes on livestock, buildings, improvements, implements or personal effects. Good markets, modern schools, roads, churches, amusements make farm life in Western Canada desirable and attractive.

IRRIGATED FARM LANDS

In sunny Alberta—a district that is especially adapted to mixed farming and where irrigation has been proved beneficial—a vast irrigation system with an unfailing supply of water administered under the direction of the Government, has been constructed.

Irrigation in Southern Alberta—insures you a crop every year—increases your crops each year—makes you independent of weather conditions—produces great quantities of coarse grains, pastures, alfalfa, roots, etc., thus developing the livestock industry which is safer and ultimately more profitable than wheat farming—tends toward closer development, well-cultivated farms, good neighbors.

These lands are also for sale upon the same amortization terms as our other farm lands. Full details on application.

YOU CANNOT BUY UNTIL YOU INVESTIGATE

You must inspect the land before buying in order to judge of its fertility. Special inspection trips from points Chicago and West will leave on the first and third Tuesdays each month. Single fare plus $2.00 for the round trip. Let us arrange details. Send this coupon now. It will give you without obligation complete information on this new and amazing plan. These terms are so easy that you can own your own farm home—instead of renting.

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Inducing Avocado Fruitfulness

Point Loma Tests Indicate That Condition of Tree Is More Important Than Cross-Pollination

By ORANGE I. CLARK

IN the Point Loma (San Diego County) Homestead's orchard there are about 20 budded varieties of avocados in bearing and a considerable number of fruit Mexican seedlings. An apiary with seventeen swarms of bees is in the orchard. All the trees are healthy and first-class in appearance, but not large. Three Fuerte trees are on poor soil, but have been made fairly vigorous by liberal irrigation.

When avocado trees are in such a vigorous, sappy, but not richly-nourished condition, they cannot bear well. This year, contrary to their usual habit, none of our Fuertes have borne as well as most of the older varieties, which are seriously overbearing.

The studies and records of avocado blossoms made at Point Loma while Dr. Stout was making his investigations in Los Angeles County confirm many of the facts the latter published. But, as he pointed out, such blossom studies are incomplete until subjected to practical tests.

It is not therefore surprising that the same tests, made here, later were advocated in detail by Dr. Stout after he had proven hand pollination impossible.

The Homestead's tests with nettings and bees are practically the same as tests made by the State University on prunes and plums in California.

USE BEES AND NETTING

At the beginning of the last blooming season, parts of three Fuerte trees were covered with netting on framework, to test self-pollination in comparison with cross-pollination. Considerable care was taken in placing the nettings so that half of each tree should be inside the netting and half outside. A swarm of bees was kept under each netting.

The bees were fed an abundance of honey and kept in good condition. No bees could get into or out of the nettings. The blossoms on the half trees under the nettings could get only Fuerte pollen. The nettings isolated the covered parts of the trees as completely as though they had been growing in an orchard composed only of Fuertes. But the half of each tree which was not covered was open to cross-pollination from the many adjoining varieties and great numbers of bees were at work in all parts of the orchard. The fruits produced were as follows:

1st Tree	Inside the net,	48 fruits
2nd Tree	" " "	6 "
3rd Tree	" " "	12 "
Total	" " "	66
Outside the net		56 fruits
" " "		5 "
" " "		4 "
Total		65

It is well known to those who have studied pollination of fruits that many deciduous fruits drop worse while immature, if only self-pollinated, than they do if cross-pollinated. Since midsummer successive counts have shown that there was no dropping whatever from those parts of the Fuerte trees which had been inside the nets and received only pollen of their own variety. But until autumn, the half trees which had been open to cross-pollination continued to drop quite a number of fruits from no visible cause. If cross-pollination had been needed, an opposite result would have taken place.

WHAT THE TEST SHOWED

The purpose of the Fuerte tests was to determine whether or not some other variety must be planted or grafted close to Fuertes, or whether that trouble and expense is unnecessary. The result shows that the Fuertes tested would have borne just as well with no other variety within miles.

One tree of the Katherine Tingley variety was tested. The part which was open to cross-pollination produced a fair crop. The part from which all cross-pollination was excluded overbore, as this variety frequently does.

There was one netting covering two trees. On one of the trees, two varieties are growing, so that under the netting there were three varieties: The Fuerte, the Blakeman and the Katherine Tingley, with a swarm of bees. Presumably these trees received much more cross-pollination during most of the blooming season, than any other trees in the orchard.

CROSS POLLINATION FAILS

But the crops resulting were not heavy. In fact, the fruits on them were much less than the crops on part of one Fuerte and the part of a Katherine Tingley tree from which all possible cross-pollination was excluded. These varieties which were under the same net together produced less than the general average for the orchard. If increased cross-pollination had been a help, they would have borne more fruits than any other trees.

Thirty-five per cent of the Blakeman fruit dropped between the middle of August and the middle of October, whereas a portion of this Blakeman tree which was outside the net and therefore received only an ordinary amount of cross-pollination, did no dropping after July. Evidently Fuerte pollen was no help to the Blakeman and did not make it hold its fruit.

Part of one Dickinson tree was under a netting with bees. The number of fruits now on the tree are less on the part which had only self-pollination than on the part which was open to cross-pollination. The effect produced on this tree by the slight shade of the netting was such as to make the value of this test doubtful. The shading decreased the growth and affected the appearance of the foliage. There is evidence that it also decreased the crop inside the netting.

VARIETIES SELF-FERTILE

Our blossom records and Dr. Stout's show that the Dickinson receptive and pollen-shedding blossom periods overlap very little, less than any other variety commonly planted. Yet the Dickinson and the other varieties tested for self-fertility produced immense numbers of small fruits under the nets, and a large proportion of these small fruits contained seeds. The Dickinson, separated by the netting from all other varieties, received a great abundance of its own pollen.

Half of another Dickinson tree was under a net with no bees under the net and none could get under it, nor were there any other insects in this net, except possibly a few thrips. This half of a tree which no bees could visit has no fruit. But the other half of the same tree was freely visited by bees and has a crop that is heavy for so small and young a tree. A study of the blossoms shows that many varieties are like the Dickinson and require bees or other insects.

In 1918 a Fuerte limb was budded onto one side of a Challenge tree. Dr. Stout's blossom records and ours show that these two varieties are adapted to cross-pollinate each other. Previous to this year this fine, large Fuerte limb had borne only one fruit. It set a very heavy crop this year, but dropped most of it, notwithstanding being on the same tree with Challenge.

TEST CHALLENGE AVOCADO

Records show that previous to this year this Challenge tree produced the least fruit of any of the forty in the orchard. This year it has 133 fruits, which is only half as much as the average for the nearest half-dozen other Challenge trees. Most of its crop is located on the side of the tree farthest from the Fuerte limb.

In 1918 and later the Katherine Tingley variety was budded onto several Harmons. These varieties overlap each other freely in their daily blossom periods, yet the Harmons have borne practically nothing.

There is one fine Northrup limb on the side of a six-year-old Puebla. The Northrup has a small crop; the Puebla has two fruits; last year it had none. None of the varieties grafted together as yet have increased each other's crops.

We hear of avocado trees located at a considerable distance from all others, which have a heavy crop this year. In view of the cross-pollination problem, it would be very interesting to know whether there are many such and of which varieties.

THEORIES HELD VALUABLE

The writer holds the opinion that the need for avocado cross-pollination is a reasonable hypothesis and worth an effort to prove. But on the varieties tested the results secured so far are very unfavorable to cross-pollination.

It is evident that the source from which pollen came was not the important factor. It also was evident that the variety of each tree and its vegetative condition before and while blooming determined the amount of the crop, irrespective of the pollination tests.

More and more detailed evidence has accumulated to show that it is the avocado trees and the branches whose foliage is well matured and well nourished, but without too much sappy new growth, that bear the heavy crops. We believe this fact heretofore has not been sufficiently recognized. We believe a full recognition of it gives great promise for the future of avocado productiveness.

A mature, well nourished condition of foliage, with a moderate amount of well-distributed new growth, can be secured by the right amount of irrigation, fertilization and proper management of the soil. It is necessary to have accurate control of the amount of irrigation and the amount of soil moisture and also to recognize that the requirements of different varieties are not the same. It is apparent that we must follow the methods known and recommended by the horticultural experts in the public service and also study the condition of our trees.

Believes in Pomegranates

FIFTEEN HUNDRED pomegranate trees on 10 acres is the planting on the Bert Colville ranch at Terra Bella. The trees which are of the "Wonderful" variety are grown in bush form.

A yield of nearly 10 tons was obtained when part of the trees were in their third and part in their fourth year.

The market problem is the principal one confronting the pomegranate grower, according to Colville, who is a firm believer in co-operative selling.

Stanislaus Peaches to the Front

By A. A. JUNGERMAN

Stanislaus Farm Adviser

THE sudden rise of Stanislaus County to the position of second canning peach growing county in California is perhaps a surprise to many, and with many young orchards coming on it will closely rival Sutter County. At present it has in full bearing 3324 acres of drying peaches, 1662 acres of shipping peaches and 4986 acres of canning peaches. The number of non-bearing trees that will bear next year is 26,411; trees under two years, 184,600; trees under one year old, 261,000. The later plantings are mostly of the canning varieties, or the total acreage planted to peaches is about 20,000.

Stanislaus has an advantage over Sutter County in that it raises both the drying and canning peach. When the markets of Central Europe are again on their feet there will be a stronger demand for drying peaches.

In the 1923 peach growers contest W. N. Winter of Hughson was awarded the sweepstake cup, his orchard of seven-year-old Lovells yielding 19.3 tons of No. 1 fruit per acre. Hughson Center was acclaimed the premier peach growing section for 1923, winning most honors in form of cups and ribbons.

Fifty-two awards were made altogether, 13 of which were trophies and the remaining 39 were in the form of ribbons for winners in various classes.

The awards were made in three parts: 1, judging the condition of the orchard after the fruit was harvested; 2, the tonnage of No. 1 fruit secured; 3, the record turned in complete, which covered detailed information on the orchard and the crop. The tonnage was based on amount of No. 1 fruit per acre. The standard for No. 1 fruit was 2⅜ inches in diameter, as against 2¼ inches last year, a grower being penalized for No. 2 fruit.

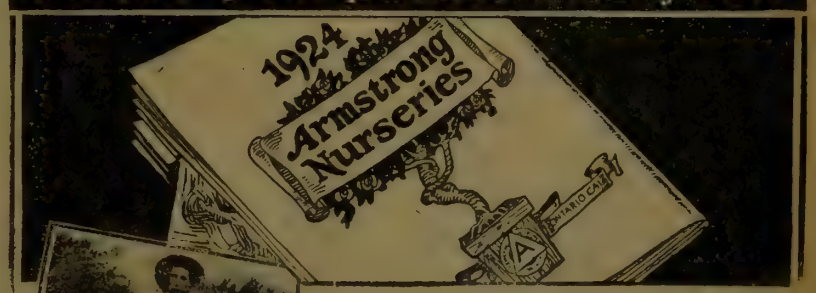
Full bearing orchards were scored as follows: 15 points for condition of orchard; 80 points for yield of No. 1 fruit; 5 points for record.

The contest benefited both the grower and the community. It benefited the grower in going around and learning from his fellow grower just how things were done. It has helped the grower in stimulating interest in having a high class orchard producing a good quantity of No. 1 fruit.

The canning peach growers have been brought into contact with one another and the interchange of ideas has resulted in a greater participation in activities along the lines that mean for better peach production in Stanislaus County.

It has helped the communities in that they have received benefit indirectly through the advertising value of prize winning orchards, which is resulting in giving the industry and growers more consideration than they previously received.

before you plant this year



—make sure

to get our new 64-page beautifully illustrated descriptive catalog

The planting of fruit trees, shrubs and roses needs to be taken seriously. Don't just buy anything that "*looks* like it might grow!"

The only way to make certain of success is to get the Armstrong catalog—make your selections from it; then you can count on getting just what you order. Everything just as represented in the catalog.

Our 35 years of successfully serving thousands throughout tht Southwest is positive proof that we can satisfy you.

But get your name on the coupon *now* to be near the top of the list for 1924 catalog. We will mail them out to names in the order in which received.

Enjoy a visit to our nurseries—drive out any week day (not open Sundays).

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Advertisements must reach us 15 days before date of publication.

Address ORCHARD and FARM, Broadway at Eleventh, Los Angeles.

POULTRY

CERTIFIED White Leghorn quality chicks from selected free-range, heavy-laying utility hens mated to double pedigree cockerels with authentic trapnest records. Our breeding flocks are inspected and accredited by the Sonoma County Farm Bureau. Safe arrival and full count of live, vigorous chicks guaranteed. Booking orders now for the spring season of 1924 delivery. Send for catalogue and attractive prices. MUST HATCH INCUBATOR CO., INC., the World's Largest Electric Hatchery, 432 5th St., Petaluma, Calif.

WERE BOOKING CHICKS for most winter and spring weeks from some of world's highest egg-producing Leghorns, Anconas, Reds, Minorcas, Rocks, Brahmas, Wyandottes, Andalusians, Orpingtons, reasonable. Reduced if booked ahead. Capacity, 300,000. "Never saw such size, vigor, rapid growth, egg-yield." PROFITABLE POULTRY, 15 North Fair Oaks, Pasadena. Mail only.

CHICKS, only the better grade, at popular prices. Hanson White Leghorns, Br. and Buff Leg., Reds, Barred Rocks, Anconas, Blk. Min., Blue Andalusians. Now booking orders for spring. COCKERELS, $5 and $10; Hanson Wh. Leg., Tormohlen Br. Leg., Blk. Min., Anconas and Blue Andalusians. Free folder. McDonald Poultry Ranch and Hatchery, Rt. 1, Box 245, San Jose, Calif.

WHITE LEGHORN BABY CHIX of unusual value, from especially well culled hens mated with full pedigreed males. Prices per 100: January, $16; February, $15; March, $14; April, $12.50; May and June, $12. 100% live, strong chix guaranteed. We are accredited by the Sonoma County Farm Bureau. THE PIONEER HATCHERY, 476 Sixth St., Petaluma, Calif.

CERTIFIED BABY CHICKS from inspected flocks. All hens have undergone rigid inspection; mated with males having authentic trapnest records of at least 200 eggs on the sides of both parents. Certified by Alameda County Poultry Breeders' Assn. Now booking orders for fall and spring deliv. Utility prices. Chanticleer Elec. Hatch., Inc., Hayward, Cal.

BABY CHICKS—White Leghorns, R. I. Reds, Barred Rocks. Over 200 eggs per year—that is record behind our White Leghorn stock. Write for circular and 1924 price list. Booking now for Jan., Feb. delivery. Safe arrival guaranteed. THE J. H. STUBBE POULTRY RANCH AND HATCHERY, P. O. Box 67-C, Palo Alto, Calif.

RUSSIAN ORLOFF TURKENS—A royal Christmas present. Trios and settings of eggs at special holiday price. Now booking orders ahead for hatching eggs for spring dates; also incubator lots. Circular. Only genuine stock and only breeder in America. GEO. SCHAEFER, Halo Sacredo Breeding Farm, Rt. 122-K, Menlo Park, Calif.

WHY DELAY? Place your order for 1924 chicks with the White Hatchery, the hatchery with a reputation for good chicks. Safe arrival, full count guaranteed. Member of Accredited Hatcheries, Sonoma County. "A" and "AA" stock. Price right. Send for catalog. WHITE HATCHERY, Petaluma, Calif.

CALDWELL'S REDS, trapnested nine years, bred for production and exhibition qualities. Mated pairs, trios, pens a specialty. Husky dark red cockerels, out of 305-egg male, will improve your stock. Write for circular. Satisfaction guaranteed. T. S. Caldwell, 335E West Broadway, Glendale, Cal.

CHICKEN HATCHERY for sale; over 20,000 capacity; modern 4-room house, outbuildings, 3 brooder houses, electric pumping plant, with 3 acres or less within city limits of Petaluma, on State highway. Ideal location for a show poultry place. Apply on premises, 837 MAIN ST., Petaluma, Calif.

PETALUMA HATCHERY. Established 1902 by L. W. Clark. Accredited by Sonoma County Farm Bureau. White Leghorn chicks every day. Guaranteed safe arrival and full count. Free circular. L. W. Clark, 615 Main St., Petaluma, Calif.

HANSON'S Pedigreed S. C. White Leghorns. Trapnested for 15 years. WORLD'S RECORD Contest Strain. We are offering for sale some valuable individual pedigree cockerels for sale. Send for interesting catalogue. J. A. HANSON, Corvallis, Ore.

TRAPNESTED WHITE LEGHORNS—Hollywood and O. A. C. stock. We offer 75,000 chicks, 25,000 hatching eggs, 5000 pullets, 2000 pedigree cockerels. Booking orders now. Send for price list. INWOOD LEGHORN FARM, Corvallis, Oregon.

FREE—1924 DAILY EGG RECORD—FREE. Contains poultry pointers, calendar, and ruled pages for the daily egg yield. We want you to have a copy, so mail postal today and record will be mailed in December. GOLDEN EAGLE MILLING CO., Petaluma, Calif.

PULLETS, selected White Leghorns, from heavy-laying, trapnested stock, raised on free range. Ready for delivery at three months old, November 25th. FREEMAN PULLET FARM, Hayward, Calif.

PEDIGREED S. C. W. Leghorn baby chicks and hatching eggs. Our large selected hens are mated to Hanson strain cockerels, 240-265 on dame, 285-311 on sire's side. Prices reasonable. Dixie Hatchery, Petaluma, Calif.

BABY CHICKS, all kinds, hatching each Monday. Duklings, turkeys, hatching eggs. Pullets, pigeons, rabbits. FANCIERS' EXCHANGE, 640 S. Main St., Los Angeles.

BABY CHICKS—Thoroughbred White Leghorns, from heavy-laying strains. No dead or weak ones charged for. SCHELLVILLE HATCHERY, Sonoma County, Calif.

FREE BOOK "Chickens from Shell to Market," on application to COULSON COMPANY, Petaluma, Calif.

SPECIAL prices on guarntd day old pullets. Fall and winter delivery. Write for particulars. EUREKA HATCHERY, Petaluma, Calif.

BEES AND HONEY

BEEKEEPING pays. Instruction booklet free with prices. Supplies, queens, nuclei, pkg. bees. Hale Spencer Apiaries, Sawtelle, Calif.

POULTRY

WEBB'S S. C. WHITE LEGHORN CHICKS
You will get plenty of eggs if your chicks come from
WEBB'S CACKLE FARM
2500 choice selected hens mated with cockerels from trapnested hens with records of 200 and better.
13 years Santa Cruz' largest poultry breeder.
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227 Parkway Santa Cruz, Calif.

WHITE LEGHORN BABY CHICKS from high prod. flocks, mated to male birds with best blood lines on Pacific Coast. Write for prices. Rio Linda Hatchery, Rio Linda, Cal.

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BLOOD WILL TELL. Let a wild-blooded tom head your flock and see increase of vitality. Where no inbred birds prevail in 10 years' raising of turkeys. JENKINS, the Veteran Breeder American and Mexican Wild Blooded Toms and Hens, Route 3, Box 1178, Burbank, Calif.

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WE are now taking orders for this winter and spring plantings. Place your orders now, while we have a complete assortment of trees and vines, and assure yourself of getting first-class stock.
Write for price list.

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P. O. Box 984, Modesto, Calif.
M. L. DOW, Mgr.

BERRIES and SMALL FRUIT PLANTS: Fruit Trees, Roses and Grapevines. All varieties for immediate delivery. Plant early for best results. My 27 years of experience as a practical fruit grower and nurseryman will assure you delivery of large, thrifty, well-rooted stock, which can be depended upon for quality and reliability. Write for price list. Descriptive catalogue sent on request. M. J. MONIZ, P. O. Box 477, Sebastopol, Calif. Phone 23-F3.

BEFORE YOU BUY! Get our prices on fruit trees; grape vines, both domestic rooted and grafted on resistant root; berry plants, etc. We will save you money in addition to supplying you with fully guaranteed stock. Write us list of your wants and request price list. Wholesale and retail. J. F. MILLER & SONS, Healdsburg, Calif.

CHOICE AND RARE BERRY PLANTS. Red Raspberries, Black Raspberries, Purple Raspberries, Blackberries, Cory Thornless Macatawa, Mammoth, Himalaya, Phenomenal and Red Logan, Dewberries, Currants, Gooseberries. Ten varieties of Strawberries. Wholesale and retail. Send for free catalog. STANFORD BERRY PLANT NURSERY, Box 75, Palo Alto, Calif.

BERRYMAN Bushes Bear Big Berries. Why? Selected plants from choice varieties, is the answer. The unequaled Del Rosa everbearing red raspberry, also the mammoth thornless blackberry. Both varieties giant size and heavy bearers; also finest flavor. L. J. MORTON, Lessee, Rt. 2, Highland, Calif.

EXCLUSIVE growers of Stuart Prune trees; also California Black Walnuts and Kadota Fig trees and other fruit and nut trees. Wholesale and retail. Write for prices. RIPON NURSERY CO., P. O. Box 153, French Camp, Calif.

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IF you want world's greatest commercial Everbearing Strawberry order Johnson's Improved Superb; $25 thousand, $3.50 hundred. U. S. N. JOHNSON, Nevada City, Nevada County, Calif.

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SUPERIOR STRAWBERRY PLANTS
Certified BANNER, GOLD DOLLAR, NEW OREGON IMPROVED, MAGOON, WELLINGTON MARVEL.
DODDS & HUDSON, CANBY, ORE.

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SEEDS WANTED. Growers having Sudan seed, Sorghum seed or Hubam Clover seed for sale, please mail samples to BOMBERGER SEED CO., Modesto, Calif.

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WILL trade my $1000 equity in 10 lots in Pindale, 7 miles from Fresno, as first payment on rabbit ranch near Los Angeles. 312 G St., Bakersfield, Calif.

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PERCY S. WEBSTER, Savings Loan Building, Stockton, Calif. Long established organization. Send for free book on patents.

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PUREBRED TOGGENBURGS from recently imported stock. Heavy milkers. Raised under ideal conditions. Sure to please. CANYON GOAT RANCH, Redlands, Calif.

Nematodes Menace Farming Industry

(Continued From Page 3)

sorption is practically nil. In certain cases where gall formation does not occur, as for instance with the citrus nematode, the damage seems to be due to the sucking out of the juices from the roots. Opportunity for infection of the roots by decay-producing organisms is also afforded through the work of nematodes.

METHODS OF CONTROL

Nematodes are a particular menace in the Southern States and in California, due to the fact that in these sections the soil never freezes in winter. Freezing effectively keeps this pest in check in most parts of the world where winter temperatures are low. In warm climates and under suitable soil conditions, they continue to increase until very few crops need will succeed on badly infested soils.

Nematodes find the lighter, sandier soils much more congenial than the heavier clay soils, where they rarely become serious. For this reason sandy soils should be avoided for crops subject to serious attack by nematodes. In badly infested soils it sometimes is possible to grow satisfactory crops by interplanting with a "trap" crop which is especially susceptible to nematode attacks, such as beets or turnips or other similar root crops. There are later pulled up and destroyed.

A rotation of crops, including several not bothered by nematodes, so that a nematode-infested crop is only on the land once in several years, is calculated to keep down the pest. Deep plowing and tillage, exposing the land to the elements, aids in killing a large part of the nematode population.

Experiments in controlling nematodes through the use of chemicals, such as cyanide, as yet have not proved satisfactory. As a matter of fact, where soils are badly infested and climatic conditions not adapted naturally to keeping down the nematodes, there is not much to do but to grow crops not subject to attack.

There is some promise in the development of resistant varieties but comparatively little has been done along this line as yet. That it is possible to develop such varieties, however, is shown in the case of the cowpea grown extensively in the South and badly infested with nematodes. A selection known as the "Iron" has recently been found to be practically nematode resistant.

EXPERIMENTS WITH CHEMICALS

With orchard fruits, the nematode is particularly serious, and it is found attacking most sorts of fruit trees, among which in particular are the fig, the peach and the walnut. "Hairy Root" and "Root-Knot" on deciduous nursery trees are conditions not at all uncommon, and caused by nematodes.

With the fig the nematode is especially serious. A large part of the commercial fig acreage in the State is on sandy soil, which furnishes a congenial environment for nematode activity. In addition, the fig root seems to be especially well liked by nematodes.

A few years ago it was reported that a newly discovered nematode on citrus trees was the cause of the mysterious mottled leaf disease, but subsequent investigation has failed to confirm this statement.

Bridgeport's Bulbs

(Continued from Page 5)

"we're going to take a trip around the world and see some of the wonderful things we've been reading about all our lives."

Two million bulbs at only a penny apiece would bring $20,000, and less than two-thirds of the 10-acre farm has yet been planted.

It is unusual for a successful business man to invite others to enter the same line of work, but Bridgeford expresses himself as not only willing but anxious to help others embark in the bulb industry.

"Danger of oversupplying the market? Why, it will be years before American growers can catch up with the demands," he declared. "A single Chicago florist buys a quarter of a million bulbs of one kind every year.

"To everybody who is willing to take pains with his work and wait awhile for profits I would say, 'Come on in, the flower water is fine.'"

Railroad and Water Rates

COMPARATIVE rail and water rates from ten Pacific Coast shipping points to Atlantic ports are as follows, the first figures being railroad freight and the second, steamship rates per ton:

Grapes, $42-$20; apples, $44-$25; oranges, $30-$26; lemons, $38.50-$26.

It costs three times as much to ship prunes from Portland to New York by rail as it does to send them by water, according to Skinner's Packing House News.

BUYING CO-OPERATIVELY

Thirty thousand Minnesota farmers buy supplies co-operatively, while 77 per cent of all the creameries in that State operate on that basis.

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Highest prices in 20 years. Big demand. Big money raising them. Raised in one month. We ship famous breeding stock and supplies. Little space needed to raise them.
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SUPERIOR ENGLISH LEGHORNS—INTERNATIONALLY KNOWN
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FOR SALE—Large corner acre in Runnymede Colony, Lindly Ave., one block north of S. P. tracks. Garage, house with cement floor. All new equipment. Modern poultry houses; 485 fine W. L. hens, just out of moult; $4500, electric lights; city water. Terms. FRED SEELEY, Runnymede, Reseda, Calif.

OUR BACK-TO-LAND PLAN—We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land, deep, rich, tried soil, complete irrigation with cheap water, thorough drainage; rail, water and highway transportation. Write owners SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

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340 A., 4 mi. Ry. town, ¼ mi. P. O., sawmill; 25 a. creek bottom, bal. rough. Fair bldgs.; elec. lights, run water; 100 sheep, team, cow, machinery. $4000, ½ cash. B. JOHNSTON, Agt., Saginaw, Ore.

SELL your property quickly for cash, no matter where located. Don't pay big commissions. Particulars free. REAL ESTATE SALESMAN CO., 576 Brownell, Lincoln, Neb.

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CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

FARM wanted, immediately. Send particulars. Mrs. Roberts, Box 83, Roodhouse, Ill.

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BOOKS FOR FARMERS

"THE HOME GARDEN" by L. C. Johnson of Pomona, the largest plant grower in California, tells how, when and what to plant, and how to cultivate. Post paid, 50 cents.

TOBACCO FOR SALE

LEAF TOBACCO—5 pounds chewing, $1.75; 10, $3. 5 pounds smoking, $1.25; 10, $2. Pipe and recipe free. Pay when received. CO-OPERATIVE FARMERS, Paducah, Ky.

BUSINESS OPPORTUNITIES

EARN $110 to $250 monthly, expenses paid, as railway traffic inspector. Positions guaranteed after completion of 3 months' home study course or money refunded. Excellent opportunities. Write for free booklet G-91, Stand. Business Training Inst., Buffalo, N. Y.

HELP WANTED—Instruction

AUTOMOBILE owners, garagemen, mechanics, send for free copy America's popular motor magazine. Contains helpful, money-saving articles on repairing, overhauling, ignition, carburetors, batteries, etc. Automobile Digest, 506 Butler Bldg., Cincinnati.

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TYPEWRITERS, all makes, $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. PAYNE COMPANY, Rosedale Station, Kansas City, Kan.

Prevent Winter Tree Troubles

By J. P. MARTIN

Plant Pathology Department, University of California

THE annual loss of stone fruit trees in the State of California, due to certain winter troubles, indicates to the orchardist that definite preventive methods must be practiced. At times the loss is quite general throughout the State, while at other times it is specific, affecting one or more varieties in a certain locality.

The trees are affected in various ways. Often just part of the tree dies; again the entire top is killed and the roots sprout up, or the entire root system dies, thus killing the top. The trouble is most noticeable in the trunk and main branches about three feet above the ground. In this area gum is found at times, but not always.

At present it is possible to classify the trouble in three distinct classes: (1) Typical bacterial gummosis; (2) sour sap or winter injury (as it is often called) above the ground; and (3) sour sap or winter injury below the ground.

Bacterial gummosis and sour sap are closely allied and very often it is practically impossible to determine if the cause is winter injury or parasitic infections. If a tree is weakened, it is more susceptible to parasitic attacks, the latter being more or less secondary.

EVIDENCE OF GUMMOSIS

Bacterial gummosis is of a bacterial nature, as the name implies. A definite organism always is associated with this disease. Infections take place during the winter months or when the tree is dormant. Evidence of the disease is first noticed when large drops of gum appear, especially on the trunk and large limbs. The gum usually is of an amber color and darkens with age.

The disease spreads, forming large cankers or lesions as the season advances. Often large limbs or even trunks are girdled, thus killing the top. As soon as the tree begins growth, the disease becomes less virulent and finally becomes quite inactive during the summer months.

Sour sap as a rule can be associated with some adverse condition, such as poor drainage, heavy, wet land, a great variation of winter temperature, or some such unfavorable conditions that take place during the dormant period of the tree. This trouble is classed as a physiological disease, but just what takes place within the tree suffering from sour sap is not definitely understood at the present time.

At present no definite parasite that causes typical sour sap is known, but many secondary organisms are obtained after the tree has once become affected.

Stone fruit trees are subject to the above troubles. The peach has been found to be more resistant to bacterial gummosis than any other. The apricot and cherry are very susceptible to the disease, while the plum, prune and almond are somewhat less affected. Seedlings have proved much more resistant to the common winter troubles than the commercial varieties.

The preventive measures or control of the troubles mentioned above are few. The most promising known at present are as follows:

1—Good, thorough "orchard practice." Remove all dead parts of the trees.

2—Surgical methods may be employed when practical, disinfecting the cut area with Bordeaux paste.

3—Good, thorough spraying is always recommended.

4—Whitewashing trunks and main limbs, both winter and summer. The fall whitewash should be applied before the heavy rains set in. Cold water paint is highly recommended, as it withstands the winter rains and is not injurious or harmful to the tree. *Cold water paint is not an oil paint as the name may suggest, but is quite similar to ordinary whitewash in its composition. The object of keeping the tree well whitewashed is to maintain a more uniform temperature.*

5—Top working susceptible varieties on resistant seedling stocks at least three feet above the ground and keeping well whitewashed. At present the stocks recommended for the cherry are

Showing ideal tree for top-working, and method of white washing. Black rings indicate points where seedlings should be top-worked.

the Mazzard and Morello; for the plum, the Myrobalan and peach; for the apricot, the peach; for the French prune, the Myrobalan and peach and for the almond, the bitter almond or the peach. The Myrobalan and Morello seem to do well on heavy soil.

For those making new plantings or replants the following method is recommended as having given very good results. The idea is to secure a resistant trunk and then top work with the desired variety.

CHOOSE SEEDLINGS CAREFULLY

1—Select seedlings best adapted to particular soil and commercial varieties desired. (For instance, all plums do not make a good union on peach seedlings.) Plant these seedlings in orchard form.

2—Head seedlings 30 inches above ground at the end of the first year in the orchard.

3—Select three or four main branches as shown in the illustration and top-work with the desired variety at point indicated by black rings, which are 36 inches above the ground. This top-working may be done at the end of the second year. It is best to let the seedlings go for another year in case they are not large enough at the end of the second year for top-working.

4—Keep trunks and about six inches of grafted wood well whitewashed. Whitewash prevents sunburn, which is a very common trouble found on fruit trees. With such a tree grown in this manner, the framework is well established in case the grower wishes to work over to a new variety later on.

Long Pruning Successful With Kadotas

AMONG authorities there has been a difference of opinion about the right way to prune Kadota fig trees, but the fundamental idea of most growers has been heavy cutting-back.

In the Terra Bella orchard of Reeves Brothers, part of the trees have been pruned according to standard methods and the remainder have been "long pruned," with certain important modifications.

As in all pioneering, problems had to be met as they came along, and changes made to suit, until finally the right methods were discovered—but the experiment as a whole has been a brilliant success.

The orchard has just finished its fourth summer's growth and produced its first real crop. Without having kept the fruit from both parts of the orchard separate, and merely estimating the comparative yields, the owners figure the "long pruned" trees bore seven times as much per tree as the short pruned trees. They also started bearing from two to three weeks earlier than the short pruned trees.

As to size, on a rough estimate, they have twice as much bearing wood ready to get to work when growth starts next spring as the other trees have. As to shape, the short, or standard-pruned trees, average nearer the ideal. This is due to the fact that Reeves Bros. had to feel their way along in the shaping of the long-pruned trees and they did not do as well in building the framework as they would do now with the experience they have gained.

POST LONG SYSTEM

If they planted a new orchard they certainly would follow the long pruning system, and in fact they are caring for a new orchard for another owner, and are using this method of tree training.

The method, as finally worked out, consists in starting the main branches in number and location according to the way that will make the best shaped tree, according to previous standards.

If the growth is permitted to go unchecked, there will be too long a stretch of branch without laterals, and the shape of the tree will be bad. The policy that has been followed for the past two years, therefore, has been to pinch off the tip of the branch when it reaches a length of, say, eighteen inches, or whatever length seems best.

This stops length growth, makes the branch thick and well nourished, and drives out laterals just as cutting back at that point the following winter would do. The tree is saved all the wood that would be lost by such cutting back and the laterals are given a much earlier start. This pinching is a small job and by it a tree of exactly the right shape can be secured.

That, in a few words, is the pruning policy adopted. This last summer it was used on the short-pruned Kadotas also. It would take too long to tell of certain problems that came up in the time that this policy was being worked out, and it is unnecessary. The fact that the trees are far larger, far thicker at the trunk, perfectly shaped when the method was properly followed, and bore far heavier crops, is sufficient recommendation. At least it justifies an investigation.

FRUIT SETS EARLIER

Another important feature is that with the long-pruned, or pinched Kadota trees, the fruit sets earlier in the summer and starts ripening earlier than on the standard pruned trees, giving that much longer harvesting period. The long-pruned Kadotas had ripe fruit in quantity two weeks before any other Kadota orchard in the district this summer, and three weeks earlier than the standard pruned Kadotas in the same orchard.

In 1922—that is, in the third summer—only a few figs were harvested and sold, as the quantity was not enough to justify shipping up into Fresno County and unfortunately no good record of yield was secured. The trees are planted eighty-three to the acre.

The orchard is one-half mile north of town and just west of the State highway and can be seen by all travelers. Results in every way make the pruning policy worthy of investigation by other Kadota growers.—TULARE FARMER.

BROADCASTING MARKET REPORTS

The federal government uses over 80 radio stations for broadcasting market news to American farmers. A leased wire, which crosses the continent and extends along the Atlantic seaboard and into the Southwest, also is used 12 hours a day for this purpose.

Northern Walnuts

THE question has often been asked, "What will become of the walnut industry when our Southern California groves are all subdivided and transformed into urban property?"

This question is quite justified in many parts of Orange and Los Angeles Counties. Not only is subdivision destroying many trees, but considerable acreage is being reset to citrus fruits.

A brief survey of the walnut industry in the northern part of the State was made by the writer during August, which proved a revelation to him in the way of possibilities for future development.

Large walnut plantings were found in Contra Costa, Napa, Mendocino, Sonoma and Lake Counties. Production on the older groves did not come up to production of the average Southern California grove.

The younger groves, on the other hand, are showing good promise and compare very favorably with Southern orchards. One of the finest ten-year-old groves the writer has ever examined is located at Lower Lake, Lake County.

The principal varieties now grown in the northern counties are the late blooming sorts, such as Franquette, Mayette, Poe and Concord, which come out late enough in the spring to avoid the frost hazard.—H. E. WAHLBERG.

American Poultry Journal
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U. S. SILVER FOX FARMS
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Turn Slacker Cows Into Big Milkers

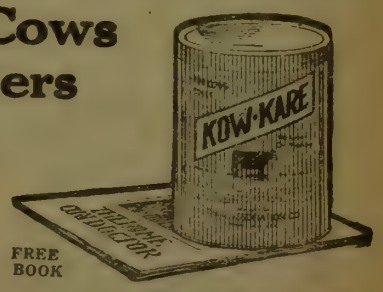
The only difference between just breaking even at dairying and making a real profit lies in seeing that there are no slackers in the herd. A poor milker can soon eat up the profit of several productive cows.

Almost always the so-called poor milker is unproductive because of some sluggish condition of the genital or digestive organs. If these functions are impaired the milk flow is quickly reduced.

Kow-Kare helps to make good producers of poor milkers through its direct medicinal action on the milk-making organs. The vital organs of production are made to function with new vigor. Not only does the milk pail benefit, but the cow is able to ward off disease.

Such cow ailments as Barrenness, Abortion, Retained Afterbirth, Scours, Bunches, Milk Fever, Lost Appetite, etc., find their origin in weakened genital and digestive organs. Kow-Kare is a reliable aid in treating these disorders. Its use and reputation is nation-wide.

By feeding a tablespoonful of Kow-Kare to all of your cows one week out of each month you will keep down expensive disease loss and add greatly to the volume of milk. Dairy experts say that you can double the net profit by increasing the yield only 10%.



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FOR PLANTING IN 1924

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1103 Sutter Street, San Francisco, Calif.
The largest trade and engineering school on the Pacific Coast. 1500 to 2000 men trained every year.

Does Testing Dairy Cattle Pay?

By A. FOLGER AND G. M. DRUMM

MANY dairymen who hesitate to start official testing do so because they believe the business is too difficult to learn or too expensive.

We often hear the question, "Does testing pay the ordinary, practical farmer?" When done in a sensible, conservative manner it seems the best way to develop a high-class purebred herd. Many successful dairymen may be cited who have faithfully followed the policy of conducting official tests on the majority of animals in their herds. When prices boomed, they did not expand the business too much and become extravagant. They have not tested every cow each time she freshened and gone to a lot of needless expense just because they felt they could afford it for the time being.

There are other dairies, however, that have not paid because they were operated in an extravagant manner by men not particularly trained in the business. The average farmer who is a natural stockman can eliminate the cost of a high salaried herdsman and by practicing economical feeding and economizing throughout, soon accumulate something.

In order to determine whether testing actually pays, the cost of conducting a test must be determined and compared with the receipts accruing from the test. The accompanying tables give average figures for short and long time tests.

The accompanying figures will vary in some particular in every instance. They can be considered as average and only as a guide. However, on analysis they do emphasize some important points. It can readily be seen that it is quite necessary to run the maximum number of cows on test at a time. The estimates favor seven-day work more then they should. There are many advantages to long-time testing not brought out by figures. At the present time the yearly test is growing rapidly in favor as a guide to the real producing ability of an animal upon which the value for the sale ring and for intelligent breeding is quite largely placed. Sale averages in future years no doubt will emphasize the value of yearly tests.

No feed bill is figured for fitting and feeding while on the seven-day test, because the increased production obtained will pay the feed bill, providing the animal is handled economically as soon as the test is finished.

It is impossible to figure accurately the labor cost incurred in running one animal for seven days because that depends on how well the remainder of the time is spent by the attendant. However, we do know what it costs to run a full string, and one-fourth of that was considered as fair for one animal. In estimating the cost of running a string of ten cows it was considered advisable to use a milking machine although some of the milkers are milking that number by hand.

LABOR ITEM VARIES

Labor for seven-day work is negilible, but for yearly work it is the most important item. While under ordinary herd conditions, it represents a little over 20 per cent of the total cost, in yearly testing it amounts to 50 per cent of the total. It is quite important to have as efficient work as possible. This has led many producers to feel that modern equipment, including the milking machine, helps in a large way to solve the problem.

SEVEN DAY TESTS

	One Cow	Six Cows	Ten Cows
Wages of supervisor for seven days	$ 42.00	$ 42.00	$ 84.00
Rooming and boarding supervisors	10.00	10.50	21.00
Acid, water, etc., used	5.00	10.00	15.00
Certificate fees	.50	3.00	5.00
Labor in caring for the cow	7.50	28.75	35.00
Total	$ 65.00	$ 94.25	$ 160.00
Increased value of tested animals	$182.14	$ 772.84	$1821.40
Expenses	65.00	94.25	160.00
Profit	$117.14	$ 678.59	$1661.40

YEARLY TESTS

Wages of supervisor, 12 visits at $12.00	$144.00	$ 144.00	$ 288.00
Rooming and boarding supervisors	30.00	30.00	60.00
Acid, hot water, etc.	15.00	30.00	45.00
Certificate fees at 10 cents per cow per month	1.20	7.10	12.00
Labor caring for cows	345.00	1380.00	1500.00
Feed	190.00	1140.00	1900.00
Total	$725.20	$2731.20	$3820.00
Increased value of tested animals	$182.14	$ 772.84	$1821.40
Value of 600 pounds butterfat at 50c	300.00	1800.00	3000.00
	482.14	2572.84	4821.40
Expenses	725.20	2731.20	3820.00
Profit or loss	$243.06	$ 158.36	$1001.40

In California it costs on the average $1380 per year to provide a test cow milker. If he is milking four times and handling six cows this means a cost of $230 per animal. If he is furnished with a convenient barn and modern equipment, including a milking machine, he can handle ten just as easily and so reduce the cost to about $150 per cow per year. This saving of nearly $100 often means the difference between profit and loss in the testing department.

In yearly work, the feed cost stands second to labor. Cows on long-time test must be fed a good variety of the best feeds. The cost varies considerably, depending on the needs of the individual. A small cow eats less and produces less on the average. One way to get at the feed cost is to take the average consumption of feed of a representative string of test animals.

The string at the University Farm was used in obtaining some averages. The test herd of 16 animals is producing 600 pounds of butterfat and consuming $190 worth of feed per year on the average.

HOW MANY RECORDS?

There is quite a wide difference of opinion as to how many records should be "put on" an animal. Some breeders have followed the practice of putting their best cows on test every time they freshened and in this way seeking to make a great life-time record. This practice often has resulted in making non-breeders. There is quite a close connection between the mammary system and the reproductive organs. Forcing an animal year after year is quite a strain. It is flirting with danger with very little if anything to be gained.

It does seem like a good plan, however, to test a heifer at first calving for the purpose of development while she is growing and in order to sell any of her offspring more easily. Then why not give her a rest and run her again as a mature cow after she has raised a number of calves? The two records are enough from the economy standpoint and best for the health of the cow.

As to the profits derived from testing due to the increased value of the animals, a study of the prices paid for dairy cattle at public auction during the 30 months ending June 30, 1923, give the following figures: (The writers wish to acknowledge the courtesy of The California Breeders' Sales and Pedigree Company, from whose records all sales figures were taken.)

	Tested	Untested
Total females sold of all ages	942	981
Total value	$400,132.50	$238,012.50
Average price	424.76	242.62
	242.62	
Increased value of tested cows	$182.14	

(Females too young to be tested, rated according to records of dams. Bred heifers were omitted, as the bull used might affect value.)

	Tested	Untested
Total sold including calves	237	307
Total value	$63,527.50	$43,362.50
Average price	268.04	141.24
	141.24	
Increased value with tested dam	$126.80	

As values stand at present, we feel safe in stating that the man with only two or three cows to test cannot hope to more than break even on yearly testing; a full string on test handled with care and economy are necessary to profit when average cows are considered.

INDIRECT BENEFITS IMPORTANT

Aside from the actual increase in value of a tested animal the indirect benefits are important and must be considered.

One of the first things that may be noticed is the stimulating of tested animals to higher production; commercial dairymen are finding that milking cows for a time three times per day is a paying proposition.

The poor producers soon are singled out and the average production thereby improved, usually with a reduction of labor and care. Interest in the herd is stimulated, on the part of both the owner and his employees and so better conditions in the herd usually follow testing. From this usually results an improved appearance of the herd.

The cumulative value of persistent testing, especially yearly testing, is not in fact apparent until after several years of work. At the present time the men doing the most testing in California are those who have already done the greatest amount, they apparently having found it a paying proposition. And they are the men in a position to know.

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Aged Grower Active

H. B. STARKEY of the Porterville district (Tulare County) has the distinction of being one of the oldest orange growers in the State who is in active charge of his property.

Born in Illinois in December, 1846, he now does all of the regular work on a flourishing, eight-acre orange grove, which in yield and condition is fully up to the standard of the immediate vicinity, and that standard is high. If any growers are older it would be interesting to hear of them.

The work is done with one horse, and that is very small for a ranch horse, weighing about 800 pounds. Of course the heavy tillage cannot be done with one small horse, so in spring the plowing is hired. But during the summer the horse does all furrowing out and cultivating.

Standard methods of tillage are followed. Three furrows are run down each middle, with a one-horse walking plow, and the water is run about 48 hours. When the ground has dried out properly the furrows are cultivated in with a chisel cultivator, made one-horse size. Four cultivations are given between irrigations; first across the furrows, next along them, then twice diagonally.

Water comes from a well near the house, with two-horse electric motor and plunger pump. The stream is only large enough to set from four to eight rows at once. This pump runs night and day, but supplies more than enough water, as it is idle about a week between irrigations, which are given about twenty-one days apart during the summer.

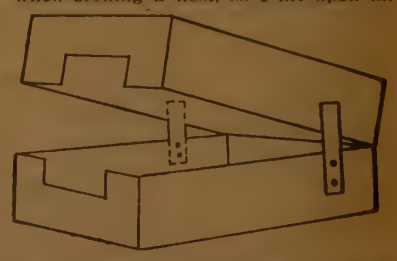
The larger part of the orchard is from twelve to twenty years old. Near the house are some trees still older, which rival any in the county for size and vigor. There is also a magnificent walnut, as well as other garden trees and the surroundings of the vine-covered house are home-like and attractive.

Like most active persons of advanced age, Mr. Starkey is slight in build, excellent in health and disposition, and shows signs of having many years left to enjoy his pleasant and comfortable surroundings.—TULARE FARMER.

Emergency Nest

MY chickens were in the habit of nesting in my garage and when I locked it on several occasions I found that they did not return to their usual laying places, but went out into the orchard to lay.

The garage was rather close and dark and this is what the hen searches for when seeking a nest, so I hit upon an



idea of allowing the hens to lay in specially constructed boxes, placed in the garage.

Place two ordinary lug boxes without cleats together at their open ends, making one large compartment. Saw a rectangular notch in each at the center of the end, large enough to admit the hen from the outside. After the lower box is nailed to the wall a hole of equal size is made through the wall. Cleats then were nailed on the upper box sides to keep it from shifting about.

The upper box can be lifted off very conveniently in gathering eggs. The straw is easily changed.

The hens refuse to lay in any other place and never frequent the orchard when hunting a nest. These nests very easily could be placed in any shed or hay barn where laying hens make themselves a nuisance.

BEEF BRINGS FOURTEEN CENTS

The two prize steers at the Los Angeles County Fair were sold for 13 and 14 cents a pound to Mrs. Leota VanMetre of the Stockyards Inn, Los Angeles. The premium beeves were bred and fed by J. A. Scollard of Chehalis, Wash.

He Plants Pie Plant Between the Orchard Rows

RHUBARB as an orchard intercrop has proved very successful on the 20-acre H. W. Bradway ranch, near Covina. The motorist, passing on the paved boulevard, is attracted at once by the pleasing appearance of 20,000 "Einbree's Giant Cherry" rhubarb plants, stretching into the distance between the rows of trees.

A well-kept orchard it is, and with the neat bungalow, lawn and flowers, the tout ensemble is more than satisfying to the eye of the nature lover. Bradway has made a good showing in the five years he has owned the place. In addition to the walnuts, he has more than 300 persimmon trees, all of the Hachiya variety, and the orchards have made a remarkable growth, now being on the verge of heavy and profitable production.

At left is shown country home of H. W. Bradway. Right, Bradway and typical rhubarb plant.

Intercropping has been the rule on this ranch since it was acquired by the present owner, and the rhubarb promises to be its most profitable product. But does this plan interfere with the development of the orchard? Bradway believes not.

In fact, he asserts, "I think this system of planting between the rows actually benefits the trees, especially in the case of rhubarb, which requires a great deal of fertilizer and water. Of course, if the extra crop were allowed to rob the trees, they would show the damage quickly; it is largely a matter of careful management."

Bradway irrigates every three weeks during the growing season, cultivating with a tractor until the rhubarb is too large and finishing the tillage with a one-horse outfit. In order to facilitate tractor work, he set his rhubarb plants four feet apart, in rows seven feet apart, thereby taking issue with certain other growers who advocate closer planting. But in justification of his belief he points to the saving in tillage expense as well as the alleged larger growth of the plants through not crowding them.

HEAVY FERTILIZATION NEEDED

"Fertilization and plenty of it is one of the principal secrets of successful rhubarb culture," relates the Covina grower. "We have used both ammonium sulphate and nitrate of soda with good results." Following is Bradway's general plan of operation.

Young plants (or crown divisions) are set out in February. Most Southern California growers prefer to plant in April, but Bradway believes this involves danger of loss from sudden hot spells. He has set out plants as early as December and secured a perfect stand. The principal danger of winter planting is that the divisions may rot in the ground, but this, he believes, is more than offset by the difficulties besetting the late planter.

Preparation of the ground must be thorough. The soil must be in perfect condition and well settled or "hard under," so that when water is applied the earth will not shrink away from and expose the young plants. A heavily-weighed disc, set almost straight, and drawn by a tractor, is used for the settling process, as well as to "fine" the soil. A heavy application of barnyard manure is recommended before planting.

The plants are set on a ridge and covered one-half to one inch deep with a cultivator, which simultaneously makes a furrow on either side for irrigation. The soil is kept moist by irrigation, if necessary, until the young plants are well started.

From June first to September first the growth is not forced; in fact, irrigation is withheld except as is necessary to keep the plants alive. About application of fertilizer, about 500 application of fertilizer, or about 500 pounds per acre, is made.

Bradway, having the advantage over some growers of a few degrees in temperature, doesn't try for the October market, but plans to make his heaviest cuttings between December first and January first.

SECOND CUTTING FORCED

After this cutting another application of 600 to 700 pounds per acre is made. In eight to ten weeks another cutting or "pulling" is ready.

Again fertilizer is applied, and the third and last cutting is made in April.

It will be seen that the establishment of a rhubarb field is expensive. But once well started, the plants will produce profitably in this locality for five or six years.

By his system of heavy fertilization, this grower obtains one more cutting than many producers, a factor which in his belief justifies the additional expense involved.

As much as 900 boxes of rhubarb have been taken from a measured acre on the Bradway place at one cutting during a favorable season. A total yield of 300 boxes per acre, however, is considered good. The price fluctuates according to market conditions, but $3 a box has been obtained.

Some growers are said to have made as much as $2800 an acre during periods of peak prices and favorable weather conditions. But some of the tales of fabulous profits circulated during recent years are scouted by experienced growers familiar with the difficulties encountered.

"Over an average period of several years market rhubarb will come about as near to any other crop to paying good interest on high-priced land," admits Bradway—and we shall let it go at that.

An additional source of income for the grower of a "wanted" rhubarb variety comes from the sale of root divisions or "plants." A mature rhubarb plant will yield six to twelve such cuttings, and because of the demand for certain superior varieties, these have been sold by the thousands for as much as 50 to 75 cents each.

As it takes from 2000 to 4000 plants for an acre (according to planting system), it will be seen that the loss involved by the grower who fails to get a stand may be considerable. And a perfect stand is the exception, not the rule, according to Bradway. Then there are other difficulties. A mysterious disease, or "rust," has caused some damage, and aphis frequently attack the plants.

Bradway has developed one labor-saving device which might be used to advantage in growing other crops—a fertilizer attachment for the cultivator, by means of which two men and a tractor-driver have applied two and one-half tons of commercial fertilizer in six hours.

This "invention" consists of nothing more than a platform built over the chisel cultivator, to which Bradway attached on either side short lengths of hose, fitted with funnels. The bags of fertilizer are set on the platform and a man sits near each funnel, dropping the desired amount of fertilizer beside each plant as the outfit moves along the row. A shovel covers the fertilizer, and ridges up along the row of plants, at the same time leaving a furrow for irrigation.

Later any weak or "scraggly" plants are "spotted" by hand; that is, more fertilizer is applied near them.

In addition to the 20,000 plants on the home place, Bradway has this year 10,000 growing on other land nearby. He is enthusiastic about his home and country life, but not so enthusiastic about present land values from the viewpoint of the farmer.

COSTLY LAND, HANDICAP

"If it weren't for rising property values, one could scarcely afford to bring orchards to production on some Southern California close-in, high-priced land," Bradway points out. "But where the farm is also the home and there is a prospect of ultimate subdivision of the land, a fellow is encouraged to try intensive production."

He has spent a goodly sum of money in improving his acreage and derived a lot of pleasure out of doing it. Furthermore, he is now at the point where a gross income of $25,000 or more a year is in sight, judging by the prices other growers have received for the three crops on which he is specializing—walnuts, persimmons and rhubarb.

If Bradway's 20 acres were for sale, no doubt it would take more than $50,000 to buy it. And that's that!

Livestock-Judging Cup Winners

HERE is the Chaffey Union High School (Ontario) livestock judging team which won first place in the Southern California contest held at the Riverside fair. Left to right: Douglas Perry, Glenmore Imbach, Bruce Hawk, Andrew Crevelin and Coach Charles Perrin.

This same San Bernardino County school represented California in the 1921 contest at the Pacific International Livestock Show at Portland and the International Livestock Exposition at Chicago.

Sell Citrus Bonds

TWO million dollars' worth of 6½ per cent first closed mortgage bonds of the Fruit Growers' Supply Company recently were offered at private sale and were oversubscribed. An equal amount of supply company bonds are being sold publicly.

The supply company is owned by the 11,000 members of the California Fruit Growers' Exchange. The subsidiary concern owns 71,000 acres of timber and ranch lands, with sawmills and box factories in Lassen and Siskiyou Counties, valued at $11,000,000.

The proceeds of the bond sale are to be used to retire existing funded indebtedness, reduce current borrowings, increase capital, complete purchase of Collins timber tract in Lassen County and other corporate purposes. The company will have no other indebtedness.

"The business of the supply company now amounts to $10,000,000 a year," states C. C. Teague, president of the exchange. For the past five years the earnings of the company available for interest payments have averaged $740,000 annually.

"Ample provision has been made for the retirement of the bonds now being sold. As saw timber is cut, the company's trustees are paid $4 per thousand feet. At the present rate of consumption, this will provide $300,000 per year. In addition to this, there will be available for bond retirement $400,000 per year from stock subscribed by members, based on a charge of two cents per box upon all fruit marketed by the exchange."

Three Thousand Carloads of Succulent Celery

By RALPH G. RISSER

AMONG the specialty products of irrigated districts, celery is one which has a peculiar interest. It is a crop which is produced by intensive farming, and vegetable growers, generally, regard it as one of the more difficult and exacting of vegetables. Skill and experience are important in its culture, and from the time it is planted in seed beds until it is finally loaded in refrigerator cars, it should receive the producers' watchful attention.

During one year (1922) California marketed nearly 3500 carloads of this luscious delicacy, ranking second only to Florida, and surpassing New York State. Growers contemplating the production of celery should proceed with caution, particularly if they are inexperienced. It is also well to consult a representative of a well established distributing agency before launching such an enterprise. All important questions should be fully considered in connection with each proposed planting. As there is a close interdependence between producer and distributor, and their interests are so intimately associated, it is advisable to take up one's problems with a man working in such a capacity who should be in a position to offer helpful assistance.

At the left is shown an interesting operation — cutting the roots of the celery below the crown with the standard implement used for that purpose. In the great celery growing district of the Sacramento-San Joaquin Delta, the stalks are blanched with soil, while in the southern part of the State, boards frequently are used for this purpose. A number of specially constructed implements and tools have been developed by and for celery growers.

The center view shows a typical harvest scene, the celery being trimmed, packed and marked for Eastern shipment.

Any damaged, diseased or undersized stock is discarded by the packers who follow the trimmers, and with crates lying on the side, pack the celery evenly and tightly in the container. Each crate is marked on both ends, showing plainly the contents in dozens and half dozens of heads. When the final slats are on the crates and the number of dozens marked thereon, the package is ready to be hauled to shipping point.

The lower photograph shows a load of celery on the way to the railway for shipment to Eastern markets.

SOIL REQUIREMENTS

Celery is not adapted to worn out land, but it can be grown successfully on a wide variety of soils, providing a constant abundance of moisture and a high state of fertility are maintained. Extremely clayey soils are least adapted to the crop, and the soils rich in vegetative material, including mucks, sediments, peat mixtures and loams, are the most popular among celery growers. As these soils absorb moisture readily and retain it well, they are especially suited for supplying the exacting moisture requirements of the celery crop.

The usual richness of these soils and the ease with which they can be worked are additional advantages. But any good fertile, well-drained soil of mellow texture will serve the purpose, although alluvial deposits and soils containing an abundance of organic matter are preferable. Celery will tolerate a reasonable amount of white alkali; at least, after it has made a fair growth.

For the general shipping crop, use Golden Self Blanching seed from a reputable grower, and be sure that the particular strain will produce a stocky type. Celery having broad stalks, compact form, low branching foliage, and good heart usually is preferred to the more rank growing sort. But the type produced is influenced by other factors in addition to the seed.

WATER REQUIREMENTS

Celery requires a constant and liberal supply of moisture, and water should be available for frequent use to meet this requirement. To say that celery needs water and lots of it would be true as a general proposition, but might be misleading on lands where drainage is an important matter, as it is possible to supply too much.

ORCHARD and FARM

CALIFORNIA STATE LIBRARY

DECEMBER 23, 1923

This Orange Grove Pays Attractive Dividends

By O. H. BARNHILL

WHEN R. M. Douglass, railroad construction engineer, paid $2000 per acre for a ten-acre orange orchard near Covina, seventeen years ago, certain observers dolefully remarked, "Another Eastern sucker hooked."

Like many other California fruit growers, Mr. Douglass did not in the beginning know anything worth mentioning about horticultural practice. With the help of experts, he selected a first-class grove and then set about to apply to its management the same principles which had enabled him to achieve signal success in railroad building. He had been told that an orange grove was merely "a rich man's plaything," but was determined to ride his hobby along the highway of financial success.

"An orchard is nothing more nor less than a fruit factory," declared Douglass, "and should be regarded as such, rather than a spontaneous force of Nature which yields fruit automatically. A factory needs to be fed raw materials for the manufacture of the finished product. Nature provides a portion of these supplies, but these must be replenished and others added to obtain profitable yields.

"The factory must be kept in good running order so as to produce at maximum capacity. I employ a citrus expert to examine all my trees carefully at least once a year and apply whatever treatment is necessary to those which are missing fire or not hitting on all six cylinders."

MUCH FERTILIZER USED

Water and fertilizer, the two essentials for unlocking soil wealth, are supplied in generous quantities, $800 a year being spent for manure and chemicals alone. Bean straw and horse manure are preferred for keeping up the supply of humus and other essential soil ingredients. Organic fertilizers are considered better than minerals for furnishing nitrogen, although a limited quantity of chemicals is used.

"Lack of capital is the average farmer's chronic difficulty," asserted Douglass. "Part of this is unavoidable, under existing conditions, but trouble often results from not making adequate provisions for all the overhead and underfoot expenses connected with agricultural production.

"A certain percentage of the profits of production should be set aside in the form of a sinking fund, to tide the grower over bad years and unexpected losses. Adequate preparation should be made for repairs, replacements, interest on capital invested, and so forth. In short, a farm should be managed just like a modern business corporation."

The former railroader early realized the advantages of co-operation, joining the California Fruit Exchange and accepting an appointment as chairman of the appraising board of the Los Angeles Farm Loan Association. A great deal of time and thought are given to helping neighbors obtain Government money for financing their orcharding operations. Mr. Douglass is still a director of the association, after serving for years in the capacity named.

This 10-acre orchardist does not consider a tractor a good investment, believing it cheaper to hire a machine and operator at $1.75 an hour to do his cultivating and subsoiling. The latter is considered a very profitable operation, although the soil is sandy and does not pack readily.

Although a native of New Hampshire, Douglass thoroughly enjoys working with water and at the age of 70 takes an active part in the monthly irrigations. The sound of running water is to him sweet music. When the liquid comes through a neighbor's fence, as is the case with waste water from an adjoining Jap garden, its gurgle is doubly agreeable, lacking the suggestion of water bills. This moisture is used to grow sweet corn, which needs more than the monthly waterings which the orchard receives.

Cover crops are not grown, because the trees are so large there is little room left between them for intercropping. The trees were set 25 feet apart in 1885, 38 years ago. Some of the larger specimens are 25 feet high and have such wide-spreading branches that there is no surplus room left between the rows. Judging by the best records available, an orange tree does not attain maximum production until 35 years of age.

Well, how about the profits, net and gross? The proof of the orange pudding is in the opening of a fat bank account—if the indulgent reader will kindly overlook mixed metaphors. Owing to the severe freeze of February, 1922, the Douglass orchard is not bearing much this year, perhaps five to eight boxes per tree. Twelve to 15 boxes per tree is considered a full crop. The larger trees have yielded 20 to 25 boxes per tree, an enormous tonnage.

During three years of war time prices the orchard grossed $1400 per acre, making a total of $4200 per acre for that period. Can you beat it? The net profit was estimated at $1000 per acre per year, which means that in three years the place paid for itself and earned a profit of $10,000. It is easy to see from whence is derived money for building up a sinking fund.

DEVELOPS YOUNG GROVES

Taking care of an established productive orchard is interesting, but did not satisfy the constructive tendencies of the former railroad builder. Buying at $300 per acre 10 acres of grain land a few miles south, he planted it to orange trees, setting them 20 by 22 feet apart. That was a dozen years ago. The trees have grown into one of the prettiest, most uniform and thrifty citrus orchards to be found anywhere.

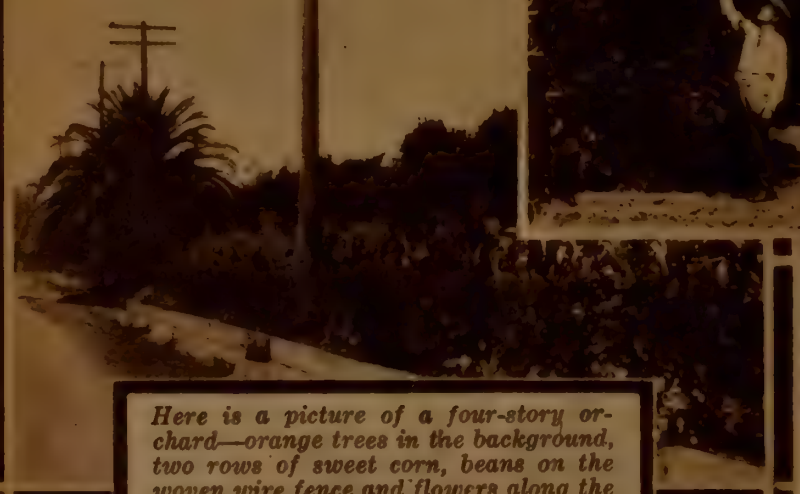
This new orchard is the apple of its owner's eye, and bears golden globes, which rival in beauty the fabled fruit of Hesperides. Douglass knows each of the 1000 trees individually and carefully watches their growth and behavior. A third 10-acre grove recently was sold to a professional man in Covina.

GROWS CORN AND FLOWERS

In line with Douglass' policy of utilizing every bit of valuable ground and water, sweet corn *(Continued on Page 9)*

"Yes, we have no bananas," admits Douglass, "but we have the trees and trade oranges for the fruit." His daughter Lillian takes good care of the lawn and flowers.

Each of these large trees yield 15 to 20 boxes of oranges during favorable seasons. Big trees make big profits.



Here is a picture of a four-story orchard—orange trees in the background, two rows of sweet corn, beans on the woven wire fence and flowers along the edge of the street.

ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY
DECEMBER 23, 1923

Plant Farm Shade Trees for Comfort and Beauty

Specific, Timely Directions for Protecting and Beautifying Farm Homes and Outbuildings, by California's Leading Tree Authority

By M. B. PRATT
State Forester

WHAT is more desolate or uninviting than a group of farm buildings without trees? It seems strange that any farmer should neglect the planting of trees about his buildings, considering the ease with which they can be grown and the comfort and improved appearance that they afford. It is a fact, however, that there are thousands of farm houses and barns in California that stand exposed to chilling winds in winter and withering blasts in summer, all for the lack of a few sheltering trees.

M. B. PRATT

Trees are essential to the making of a real home and if a farmer wants to provide one for his family they will enjoy and in which they will take pride, he can well afford to spend a few days a year in planting and caring for shade trees about his buildings.

Much has been written about the value of windbreaks for protecting crops and farmers have been advised many times to plant trees to supply themselves with fuel. Little has been said, however, about the planting of trees on farms for beauty and for the comfort of women and children.

Recently I have received many inquiries regarding suitable trees for planting on farms, which indicates that the value of shade tree planting in rural sections is being realized to an increasing extent.

PLANT PROVED VARIETIES

In selecting shade trees for farm planting, only proved, hardy species should be chosen. Many failures have resulted from the planting of exotic species, particularly in Central and Northern California. The average farmer does not want an arboretum of rare, pampered trees for show purposes, but rather sturdy trees that can look after themselves, once they have been given a good start. For this reason, only a few hardy trees are recommended. Once they are established some of the fancy trees—long lists of which can be found in any ornamental tree catalogue—can be tried out, if desired.

The following well-known deciduous trees are most likely to prove satisfactory on California farms if watered, cultivated and protected against stock, rodents, insects and fires for at least three years after planting. Deciduous trees are recommended, since evergreen trees shut off the light in the winter and hinder the ground from drying.

ELM IS RECOMMENDED

The American elm is a striking tree at all seasons of the year. In the winter its graceful limbs stand out against the sky; in the spring it is one of the first trees to blossom. Tiny, reddish-brown blossoms appear, shortly followed by the fruit, which is surrounded by flat, oval-shaped wings that later help to scatter it from the parent trees.

This particular elm is tall and spreading and is best adapted for spacious open places. It is of rapid growth and long lived, but has some objectionable features, such as the suckering habit and its susceptibility to insect pests.

The Huntingdon elm does not have these objections and is considered by some to be the handsomest of all elms, because of its dense foliage, clean bark and erect habit.

My choice of a tree for planting in front of a farm house is American or Huntingdon elm, because of their dignity and grace.

CALIFORNIA BLACK WALNUT

The California black walnut makes an excellent shade tree, with its wide spreading habit and long, compound leaves. It has a broad, rounded head and at maturity reaches a height of about 75 feet. If desired, it can be grafted to English walnut. It is a hardier tree than the latter species and its roots are better adapted to our soils.

The walnut is not as graceful as the elm, but is better adapted to a greater variety of soils. It would be my choice for planting in the back yard, or near the pig pen or poultry yard.

The contrast between these two farm homes well illustrates the value of shade trees and shrubbery.

European sycamore, also called Oriental plane, combines to a remarkable degree the merit of rapid growth with most of the other features desirable in shade trees. It is extremely hardy, grows a straight stem and forms a compact, symmetrical head, which may be pruned without injury to conform to the space it occupies. It is not troubled with insect pests to any extent, and such attacks as are made easily can be controlled by spraying.

SYCAMORE SHEDS BARK

A striking feature of this tree is that it sheds its bark as well as its leaves. The bark of the trunk and larger limbs flakes off in large, irregular masses, leaving the surface a mottled, greenish-white and gray-and-brown. The European sycamore is my choice of tree for planting along the drive leading to the farm house or along the highway in front of the house.

The black locust is a native tree of the eastern part of the United States which is known in Europe as the false acacia, because of its resemblance to the true acacia. Where grown in the open, it branches low and the top is open, rounded and irregular. The leaves are eight to fourteen inches long and consist of small, oval leaflets arranged in pairs on the side of the leaf stem, with a single leaflet on the top. This tree is most beautiful in flower, when the pendent white clusters of pea-shaped blossoms are set off by the dark green foliage.

BLACK LOCUST EASILY GROWN

The ability to grow in a wide variety of soils and under arid conditions is a strong point in favor of the black locust. Its habit of suckering is the chief objection to it, although this propensity often is not pronounced. Black locust makes a rapid growth and produces a dense, hard wood, which is valuable for posts. It is a splendid tree for planting near the barn and corrals.

Honey locust, which grows naturally in the Appalachian region, is a striking ornamental tree, due to its handsome, finely divided foliage, which resembles that of acacia; its large, conspicuous pods and branched spines. It attains a height of 50 to 75 feet and has spreading branches, which form a low, spreading, rounded top.

Honey locust *(Continued on Page 7)*

Arizona Farmers Are Winning Wealth and Power With Water

National Irrigation Scores Conspicuous Success at Phoenix and Yuma—New Projects Planned

By COSTA DEL SUR

AGRICULTURAL Arizona is a land where the spirit of the pioneer and the supreme confidence of youth have combined to take advantage of Nature's lavish gifts. From a marvelous wealth of sunshine, soil and water, crops are being produced which in variety and volume are wonderful object lessons to enterprising farmers and orchardists of other States.

Here irrigation by Uncle Sam has achieved its greatest success. Manager Cragin of the Salt River Valley Water Users' Association, makes these significant statements:

"The net power revenue pays the entire cost of operation and maintenance of the irrigation system. There is only due to the Government $39 per acre, payable $3 annually, without interest. A million dollars has been paid this year on past due installments. A reasonable discount would result in prompt payment of 50% of all balances due.

"Two hundred and twenty-six thousand acres are served with water. 94% of this land is cultivated. The value of the crops this year is over $18,000,000.

"Twenty-three thousand horse power is developed in five power plants. 12,000 more horse power will soon be available for factories and sold at a low price. In the future 50,000 more horse power will be developed from additional reservoirs."

POWER PAYS FOR WATER

It is understood that ultimately the power revenues will pay back the entire cost of the whole irrigation system and the farmers will get water without cost.

When the real story of the success of the Salt River Valley and Yuma projects reaches the Fact Finding Commission at Washington, which is now considering National reclamation problems, its influence largely will offset the unfavorable opinion now prevalent throughout the country concerning Government reclamation enterprises.

In the Salt River Valley under the famous Roosevelt dam, and in the Yuma Valley under the Laguna dam, with its canals covering 60,000 acres and 30,000 acres more now under process of development, irrigation engineers, as well as irrigation farmers, can gain information not found elsewhere in the world.

Arizona has a population of about 400,000. Of improved farms there are 712,000 acres; irrigated, 467,000 acres; value of crops produced, $42,400,000, in 1920. There has been a heavy decrease since then in value of production, due to the slump in prices of cotton and other crops in 1920 and 1921, but the returns for 1923 will show an increase of probably 25% over 1922.

NEW IRRIGATION PROJECTS

Within a few years many new irrigation districts will be opened up, such as the U. S. San Carlos and Lower Gila projects. By 1930 there will be recorded for this State an irrigated area in excess of 1,000,000 acres. Cheap power to be provided will assist materially in pushing forward the development of such projects.

Cotton is king again, having regained the throne this year with a $15,000,000 crop in the Salt River and Yuma Valleys. Thirty-five-cent cotton spells prosperity.

Diversified farming is increasing rapidly. The bankers of Phoenix are alive to the necessity for encouraging this and have advised farmers as follows:

"Nature has made diversified farming both easy and profitable in the Salt River Valley. The Phoenix Clearing House Association feels that the prudent farmer should use his best efforts to carry out a well rounded plan, giving due consideration to dairying."

Cattle and sheep feeding, dairying and poultry raising are very profitable. Alfalfa continues to be the great staple crop. Six to eight annual cuttings are usual in the principal valleys. In Salt River Valley alone alfalfa is valued at $3,000,000 this year. Cantaloupes come next, having sold for $1,300,000.

Alfalfa seed shipments are increasing. Citrus fruits, grapes and many vegetables are produced in immense quantities. The fame of Arizona grapefruit has spread from California to New York and Arizona lettuce also has a national reputation. New crops growing in favor include pecans, figs, dates and sugarcane.

Arizona's growing season is long, this being a land of early crops, which bring big prices. Many Arizona products are on the market before other districts can compete, thus eliminating danger of overproduction.

Satisfactory progress has been made in the formation and operation of cooperative marketing associations in several districts in the State, especially in the Salt River Valley.

Probably the outstanding achievement of recent years in Arizona has been the organization of an Industrial Congress, which is composed of business men, farmers, merchants, manufacturers, mine owners, educators, railroad officials and other leaders in the State's activities. Under the able leadership of P. G. Spilsbury, this organization has brought about a great change in sentiment, creating good will among various elements, successfully promoting constructive work in the aid of home industry and putting in motion plans to enable growers to raise, sell and distribute their products to the best advantage. Spilsbury says:

"The Congress has achieved actual economic and financial co-operation between corporations, farmers and stockmen.

"The basis of reducing individual taxation is found in spreading the burden by creating new wealth, which in turn can be taxed.

DAIRYING INCREASES WEALTH

"If corporations are able to build up dairying in the Salt River Valley to its ultimate capacity of 100,000 cows, they will increase the taxable wealth over $5,000,000, with *(Continued on Page 6)*

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE

FRIENDLY PHILOSOPHY

By THE EDITOR

DON'T pay any attention to calamity howlers who assert California is in imminent danger of deforestation.

According to officials of the University of California forestry department, we have a forest area of about 28,000,000 acres, which just about equals the area of farm land. The estimated stand of timber is 300 billion board feet.

At the present rate of use the virgin supply would not be exhausted for 250 years, making no allowance for growth. Furthermore, about two-thirds of the area is within the National forests and now is devoted to permanent production of timber in connection with grazing.

MORE TREES; MORE WATER.

Sometimes trees are moisture robbers—for example, when they must be removed because of damage to an adjoining orchard row. But in other cases they serve to increase the water supply, as when planted upon denuded water sheds, high in the mountains. There is a right and a wrong place for everything; trees are no exception. But let us be sure we have plenty of them—in the right place.

BUT WE HAVE A FOREST PROBLEM.

The above figures, of course, do not take into account increasing loss by fire. As more and more campers and tourists enter and make use of the National forests, danger of disastrous conflagrations increases.

California has just passed through one of the most trying seasons in the annals of the forest service. Only by heroic efforts have some of the big fires been controlled. And despite the magnificent work of the fire fighters, losses have reached millions of dollars.

Therefore, it behooves every citizen to give serious thought to this vital subject. Now is the time to resolve that we will profit by the experiences of 1923 to the extent of exerting constant vigilance and care.

SOUTHERN CALIFORNIA'S REFORESTATION WORK.

When fire does sweep through our mountains, however, leaving charred ruins in its track, destroying watersheds, exposing the soil to erosion, threatening the valleys below—even when the devouring flames sweep all in their path, there is yet hope of reasonably quick recovery.

This has been proved by experiments conducted in northern and central California, and more recently in Los Angeles County. Here County Forester Flintham has supervised three plantings of about 1000 acres of ridges, canyon sides and plateaus at an expense of approximately $25 an acre.

The area in question was denuded, ash strewn and without even top soil. In 1919 the land was seeded to native brush and later was set to little pines, averaging six inches in height.

Now there is a splendid setting of manzanita, scrub oak and other brush and many of the young pines are three to seven feet tall. In 50 years, with proper protection and thinning, these formerly barren areas will be clothed with valuable timber, not to mention the inestimable worth to city and country of the restored watershed.

What's New? — Keeping Abreast of Agricultural Progress

Building More Fruit Cars

THREE thousand more refrigerator cars, designed to handle fruit and costing $10,000,000, have been ordered by the Pacific Express Company. These cars, together with 675 yet to be built on last year's order, are to be ready next summer. They will increase the total number of Pacific "reefers" to 30,500.

Siberian Butter Sold Here

THE first shipment of Siberian butter to be received in this country in several years recently arrived at the port of New York. The 3000 tubs which made up the importation were released for sale to the trade when examination by inspectors of the Department of Agriculture showed that the butter complied with the United Staes legal standards.

Defoliated Walnuts Recover

EXAMINATION of the 60-acre Ventura County walnut orchard which was completely denuded of leaves early last summer by army worms showed complete new foliage was put out and the set of nuts present at the time of the attack of the worms was matured as a marketable product. The nuts were slightly undersized but of fair quality. The trees showed weakening from the attack, but favorable treatment is bringing them around to normal condition.

Weather Warnings Aid Stockmen

DURING the summer season the Weather Bureau now maintains a service which gives reports of range and weather conditions over the cattle ranges of the Southwest. During the winter the bureau also furnishes special advices to stockmen concerning the approach of cold waves and storms. Special telegraphic advices sent out from Amarillo, Texas, and San Francisco have proved especially valuable. It is estimated there are 6,000,000 sheep in Oregon, Washington and Idaho. The San Francisco service has proved especially valuable to sheep owners in these States.

Citrus Exchange Is Growing

DURING the year ending June 1, 1923 the California Fruit Growers' Exchange made a net gain in citrus orchards of 9500 acres. This represents 2000 carloads of fruit at the present time and much more in the future, as most of the trees are young.

The percentage of the California orange crop sold by the Exchange the past year was 72.5, compared to 69.5 for the last normal crop. The percentage of lemons sold was 94.8, while only 84.2 of the crop was handled in 1920-1.

Saving Straw in Oregon

MORE than 100,000 tons of straw is burned each year in western and southern Oregon, according to F. E. Price of the Extension Service. In addition to this enormous waste, many straw stacks are allowed to rot down, resulting in an almost total loss of material.

It is estimated that an average ton of straw contains nitrogen worth $2.20; potassium, $1.50; phosphorus, 10 cents; sulfur, 4 cents; total, $3.84. This does not take into consideration the very valuable humus contained in straw fiber.

Straw spreaders are slowly coming into use in the Willamette Valley. Using an $80 machine, three men spread straw over nine acres in one day.

Poisoned Peanuts Get Rodents

THE Tulare County ground squirrel hasn't a chance for his life now—he's going to be fed poisoned peanuts. At least, Federal biological experts are experimenting with a view to evolving a plan whereby the rodents which have balked at poisoned barley and gas fumes may be eradicated, and have turned to peanuts and poison. Indications are that it will work out very satisfactorily.

In a few isolated sections of the county the campaigners engaged continuously in getting rid of squirrels have found families, clans or tribes which refused absolutely to eat the tempting barley morsels and for some unexplained reason the gas fumes also have failed. But now the arch-enemy of the ground squirrel in Tulare County believes peanuts have solved the problem.—F. B.

Inyo Tests Grain Varieties

RESULTS of grain variety trials in Inyo County during 1923 are as follows:

Four sacks of Tennessee winter barley secured from Monterey County, sowed April 5, yielded 2325 pounds per acre. It is believed that earlier planting would make the crop more successful, and such will be tried the coming season. One hundred pounds of Victory oats seed, secured from Montana, sowed April 25, at the rate of 100 pounds per acre, yielded 2230 pounds per acre. This was better than the average for local yields and considering that planting was late and made on somewhat inferior ground the showing is considered satisfactory. The seed is being saved for further trials in 1924. Due to unfavorable conditions 100 pounds of Wisconsin No. 7 oats yielded only 809 pounds. The variety, however, will be further tried in 1924. Grain variety trials for the coming season include Bunyip wheat, Federation wheat, Onas wheat and various varieties of oats and barley.

Storing Eggs in Wineries

WHAT is regarded as a significant change in California agriculture is indicated by the conversion of a winery at Petaluma into a modern cold storage plant for keeping eggs. The refrigerated rooms have a capacity of 95,000 cases of eggs.

The new-old plant is being used by the Central California Poultry Producers, which needed more storage space, because of the largely increased number of eggs held in refrigeration this year.

Oregon Walnuts Sell Well

THE Oregon Growers' Association is selling walnuts at 28, 23 and 16 cents a pound, while the prices on California nuts fixed by the California Walnut Growers' Association is 26, 22 and 15 cents.

The Oregon walnut crop is comparatively small, the bulk of the nuts being grown in the Willamette Valley, where walnut orcharding is a new industry. Dundee has a walnut association, which is selling nuts at 30, 24 and 18 cents. Franquette is the principal variety grown.

Storage Eggs Cause Concern

THE great increase in the number of eggs held in cold storage is causing both producers and dealers grave concern, according to the Pacific Poultry Producers. There were 6,658,000 cases in storage November 1, compared to 5,726,000 a year ago.

This is an increase of 932,000 cases—a third of a billion eggs. The excess on the Pacific Coast November 1 was 150,000 cases over last year.

The San Francisco egg market was higher each month of 1923, except October, than in 1922.

Advertising Citrus Fruits

APPROXIMATELY 46,000,000 copies of leading magazines during the year ending June 1 contained a page ad in colors, telling of the usefulness and desirability of California Sunkist oranges and lemons.

More than 151,000,000 copies of newspapers carried similar advertising during the same period. Posters and street car advertising, news articles, citrus recipe books and other specially prepared material on the California citrus industry aided in popularizing Sunkist fruit.

This advertising campaign cost growers four cents a box for oranges and six cents for lemons.

Students Bid on Livestock

A NOVEL method of instruction has been inaugurated by members of the Golden Hoof Club of the California College of Agriculture.

Students are instructed in the "fine art" of bidding for livestock at auction. Before the sale each student is given a list of the animals and their pedigrees and gets all the information possible from published sources, but is not allowed to question herdsmen or other persons.

The student tries to estimate the true market value of the animal and its weight. At the end of the sale the "scores" (based on bids) are totaled and averaged and the man with the lowest score is proclaimed the winner.

California Christmas Cheer

AS THE Christmas season draws near, agricultural California is enjoying an unusually large measure of peace and prosperity. Through the efforts of many model marketing associations, a truce has been arranged in the age-old war between producers and dealers. The stamp of public approval has been placed upon the farmer's efforts to secure a square deal for himself in the business world, while in the State and National Legislatures he has obtained long-fought-for recognition.

OWING to favorable natural conditions, diversified cropping and a continually increasing population, California farmers have fared better, perhaps, during the past few lean years than have their fellow workers in any other State. Internal difficulties in two of the largest co-operative associations have been amicably adjusted and the disastrous rocks of dissension safely passed, proving that farmers can and will stick together for mutual profit and benefit.

IN nearly a third of a million homes which will be reached by this issue, the editors of ORCHARD and FARM desire to bring a personal message of fraternal good will and mutual helpfulness. May the loving, unselfish spirit of the Man of Galilee, whose birthday we are preparing to celebrate, pervade our great State from the verdant valleys of Del Norte to the sunny plains of Imperial; from the snowy plateaus of Modoc to the flower-decked vales of San Diego; throughout the spacious valleys of Sacramento and San Joaquin; from the sea to the mountains—"Peace on Earth, Good Will to Men."

Propagating Roses Successfully

How to Graft and Bud—Why Some Rose Gardens Are Not a Success—Timely Hints

By HELEN TEMPLE

"IF I only had a garden of roses, I'd be happy," lamented a lover of these flowers, and she led me out to her garden and showed me three sad rose bushes. "But this is all I have," she concluded.

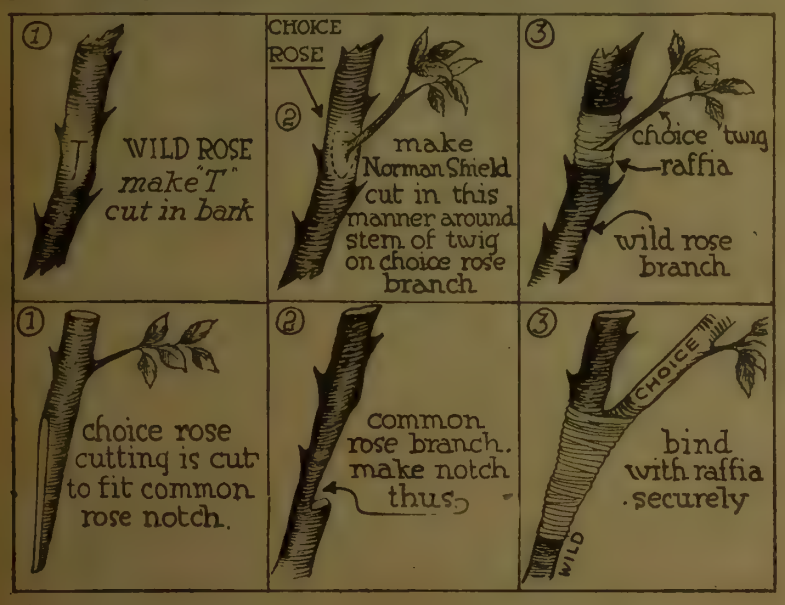
HELEN TEMPLE

The rose bushes had become disgusted with life and were rusty and mildewed, while their few blossoms were a disgrace to their old age. The principal reason for their refusal to become roses "like those of our dreams," lay in the fact that their neighbors were not congenial, being utterly unlike a rose bush in habits. The roses were planted among groups of shrubs at the edge of the lawn.

"And how can I have a real rose garden?"

Set aside a portion of your garden, prepare your soil for roses, then set out sturdy three-year-old plants of the varieties that do well in your locality. Three-year-old rose bushes are rather expensive, but they bring quick results.

However, those who are patient and cannot afford to purchase a large supply of rose plants, may grow their own. It is quite a satisfaction, anyway, when we can truthfully say: "This is a bush that I started from a slip from that rose in Aunt Jane's garden." We always feel especially proud of the plants that are begun this way, and it's great fun to scurry around and see if the cuttings are going to grow, every day or two.



STARTS CUTTINGS IN WATER

One woman of my acquaintance starts rose cuttings very easily in water. She makes the cutting of medium wood about six inches long and places it in a glass or bottle of water, which is set in a sunny window. It is left undisturbed, until the roots are formed; then a little fine sand is sprinkled into the water each day, until it is filled with sand.

By this time, the rose cutting has established strong roots, and may be planted outdoors in a protected situation. Leave the plant in glass or bottle, but just before setting it into the ground, break the container carefully, and slide bottle and all into the hole.

The plant grows on without realizing that it has been moved. Soon the roots push the broken glass to one side, where it becomes nothing more than a bit of drainage.

The starting of roses in water is simple, yet I firmly believe it would be difficult to start two or three dozen cuttings in this manner. The glasses and bottles setting about in the windows would become a nuisance to the housekeeper.

HOW TO MAKE CUTTINGS

The simplest method for larger quantities is found in the use of cutting boxes and sand, or sandy loam. Make the cuttings six or seven inches long, of ripened canes, using proper care in getting clean cuts. Do not force them into the soil or you may bruise the end of the slips, and cause decay. Keep the cutting boxes moist at all times and do not disturb them.

The constant shifting of a cutting box often causes complete failure in obtaining rooted plants. The tiny roots which soon begin to form reach out and grasp the soil, then someone or something jars the box, or perhaps lifts it into another position.

More often than not, the box is dropped with a sigh of relief into its new position. What happens underground? The roots are broken away and often decay. After the cutting has become a plant with new leaves and growth above ground, a disturbance of this kind is passed unnoticed, but may cause ultimate failure.

While I am not a "grafter," I often find that grafting pays, and have learned the art from one who is a success at it. I hope the readers of my article will not feel disappointed when they learn that I am talking about grafting roses. The following directions for budding are those of a successful gardener of many years' experience.

USE WILD STOCK

Use wild roses, such as manitte, canina and rosa rugosa for grafting and budding purposes. If these roses are planted in the early spring or late winter, they will have reached a development sufficient for budding purposes by September or October. Budding is done by several different methods, but all are performed just above the surface of the ground.

One of the easiest methods is the use of the "T" cut and "Norman shield." This sounds rather romantic; nevertheless it is very practical and simple. First, a "T"-shaped cut is made in the wild rose branch. Next, a clean cut in the shape of a Norman shield is made in the bark of the branch around the twig of the choice rose.

The bark then can be pushed back, and the twig cut from the branch of rose. Now the "T"-shaped incision in the wild rose is opened up and the twig end and its bit of bark are slipped quickly and carefully into it. Then the wound is tied carefully with raffia. Do not tie the twig, but bind the wound thoroughly on the wild rose branch.

When the bud has made a good strong growth, cut back all of the wild rose just above the original cut, and be sure to cut back the suckers that appear at the base of the plant.

GRAFTING EASILY DONE

Grafting may be done successfully with the same roses, or with the common roses in our gardens. I have seen three varieties of roses growing and blossoming successfully on the same bush, the bush itself previously having failed to produce satisfactory blooms.

Grafting is best done in the early spring when the common or wild rose begins sending out a lot of soft growth. At this time, the choice rose usually is in full growth and almost ready to bloom. Make a cut much in the shape of a long notch in the wild rose branch. Make the bud in a clean cut to fit into this notch, and bind together securely with raffia.

While we may not be successful in all of our attempts at budding and grafting, we may derive a great deal of satisfaction in knowing that we have succeeded in doing that which once had seemed difficult. And it is well to remember that professionals often fail in this work, but they "try, try again," which is just what we must do.

There are other methods of grafting and budding, but these are two of the most satisfactory for the novice to use.

Date Crop Doubled

THE Deglet Noor date crop of the Southwest is estimated at 200,000 pounds this year by Dr. Swingle of the United States Department of Agriculture. This is twice the yield of last year and four times the production of two years ago. Four hundred thousand pounds is Dr. Swingle's estimate of next season's crop.

The American method of rooting offshoots on the tree results in practically 100 per cent growth, according to the same authority, who adds that the Arabs, practicing the ancient method of cutting, save only about two-thirds of their offshoots.—MARY E. WALTER.

Plant Few Pecans

C. A. REED, nut specialist of the United States Department of Agriculture and authority on pecan and walnut culture, addressing a recent meeting at Los Angeles, cautioned California growers against over-enthusiasm.

It was pointed out that there are thousands of acres in many States naturally adapted to pecan culture, fitting in roughly between the citrus belt and the deciduous belt. These lands are much cheaper than the lands of California and are close to the Eastern market.

The pecan tree is rather slow in coming into bearing and is not a heavy producer, compared to the walnut. There are also a number of serious diseases and insect pests of the pecan, which increase the cost of production materially. Exceptional yields should not be taken as a criterion for plantings.

Reed stated that it would be desirable to plant pecans for home and local consumption and recommended the planting of such standard varieties as Delmas, Schley and Vandeman.

Sawdust Lugs Good for Grapes

OF all containers for grapes, particularly late grapes that are to be held for a considerable period before being used, the one that now offers the best future seems to be the "sawdust lug," and it has no recognition in law. Or, to be a little more accurate, it is covered only by general rules in standardization requirements.

The origin of this lug probably never has been given in print before. One cold winter's morning, nine or ten years ago, Roy Pinkham of Exeter was in the Los Angeles commission district. A little Italian fruit man was fishing out grapes from a drum, shivering and miserable, and finding it very inconvenient to get at the grapes. "Why da h——," he said, "don't dey putta da grapes in da little boxes?"

"Why not?" said Pinkham to himself, and next fall tried it. The method has spread until several packing companies are following the plan, some to the exclusion of old line drums.

An unfortunate feature is that, although standardization requirements hold up the quality of drum stuff, a packer can put anything he wants into a sawdust lug, provided it will come up to crate grade. That policy nearly wrecked the market for drum grapes a few years ago and can do so for sawdust lugs unless standardization rules are adopted, as they probably will be.

Drums are like small kegs. In fact, real kegs often are used. The sawdust lug is a small box, far cheaper and easier to handle in every way than the drum. The grapes will carry and keep just as well as in the drum. They cost less to pack and need less sawdust per pound of grapes, and a third more grapes can be shipped in a car.

So far every company can suit itself as to size of sawdust lug, by calling it "irregular containers." One of the sawdust lugs contains 23 to 24 pounds of grapes and 6¾ pounds of sawdust.

A keg contains 33 pounds of grapes and 11 of sawdust. The lug itself weighs 5 pounds, the keg 8; a genuine drum, somewhat less. It costs 2½ cents a pound of grapes to pack a sawdust lug and 4 cents a pound to pack a drum. The lugs fit snug in a car; there is much waste space with drums. There are 576 drums in an average car and 1040 sawdust lugs of this particular size.

When they get to the market the lug is far more convenient to handle and can be sold cheaper than the drum, and yet net the packer and shipper as much. Sawdust lugs offer a good future to the producer of late shipping grapes and need standardization requirements as much as any other package.—TULARE FARMER.

Green Calif. Fruit Injures Eastern Marke

(Letter read at Auburn fruit meeting.)

"THERE is no question but what a very large percentage of the California fruit which reaches the Eastern market is of exceedingly poor quality. This has led to the very common expression you hear throughout the East that the Pacific Coast has fruit which looks good, but to get flavor and quality you have to buy Eastern fruit," writes C. I. Lewis of Chicago, former head of the horticultural department of the Oregon Agricultural College.

"There is no doubt in my mind that this is due to the fact that much of the fruit arriving from the Pacific Coast is harvested too green, is immature, has not developed its sugar and high flavor and arrives back here in very poor shape.

"If you were watching the market this year on pears, you would have noticed that about July 14 the market on California Bartletts broke miserably.

"This was due partly to the offering of an unusually large tonnage, but the main factor was that the pears were small and green and of poor quality. The market broke from about $4.25 and $4.50 down to as low as $2.35.

"The plums which come in here early are generally of very poor quality, and do not sell any too well. I noticed this year that they went down rather fast, and the quality of those that I sampled was exceedingly poor.

"I know back here some of the men encourage the very early shipping of fruit because of the temptation to get that very big price which the first arrivals receive, but after the first few arrivals get in and the fruit begins to come right along and it is of poor quality, it certainly becomes a drug on the market.

"Undoubtedly much of the early fruit is in that category. To get a big consumption of fruit, it must not only look well, but have quality. If you buy plums, apricots, nectarines or pears that are flat, insipid or astringent it knocks out the taste for consuming this class of fruit.

"I find that a very large percentage of the early Bartletts which arrive in the market are really not fit to eat. They are astringent and bitter, and very poor fruit. I generally buy Bartletts for my own family a little later in the season."

Arizona's Citrus Crop

I. R. MILLER, general manager of the Arizona Citrus Growers' Association, estimates the coming crop at about 225 carloads, divided as follows:

One hundred cars of seedless grapefruit, 25 cars seeded grapefruit, 75 cars Washington navel oranges and 25 cars of seedling oranges.

The production of three growers, who own 46 acres of trees, averaged more than $850 an acre last season. The returns from citrus orchards gradually is being increased each year.

Increase of acreage has been somewhat slow, because of a shortage of good nursery stock. A rigid quarantine has been maintained against trees from other States, which has retarded development of the citrus industry.

Growers believe in the principle of "safety first" in protecting their groves against the injurious insects and plant diseases which have proven so detrimental in other States. There are several reliable citrus nurseries in the Salt River Valley at the present time and stock is being grown which will permit of a considerable increase in planting this season, and a much larger increase next year.

Arizona grapefruit is being called for in increasing quantities each year, as the quality is such that those who try it for the first time generally want more. Grapefruit trees come into bearing at about four years of age and bear heavily.

A new variety of orange, which bids fair to rival the famous Washington Navel, seems to be coming into popular favor, both with growers and consumers. It is known as the Sweet Seedling. One advantage of the new variety is that it is unusually hardy and consequently can be grown outside of what is generally accepted as the citrus district.—M. E. BEMIS.

WASHINGTON APPLE CROP

The 1922 Washington apple crop amounted to 27,226,000 bushels, which was more than one-fourth of the entire commercial apple crop of the United States—100,566,000 bushels. California produced 4,806,000 bushels and Oregon 5,040,000.

Bob Jones' Corner

Little Stories of Farming

By ROBERT E. JONES
Contributing Editor

SACRAMENTO'S REMARKABLE GROWTH

Sacramento, the agricultural city of the north, is having the greatest growth in its history. New homes are building as poppies blossom in the suburbs. Ask any Sacramentan why it is and he can't explain. There have been no big new factories and the railroad shops, while quite busy, can not account for it.

Likewise, most of the fruit companies have moved away to San Francisco. But still Sacramento grows.

The reason is simply this: Sacramento is an agricultural city. Within the last ten years, more than 300,000 acres of rich, reclaimed land have been added to her productive area. These lands have been settled gradually and thousands of acres now are under intensive cultivation. Sacramento is feeling the impulse of fundamental wealth and Sacramento can not help but grow.

Best of all for Sacramento, it is a diversified agriculture that is developing in her back country, which makes for stability. What the Sacramento area needs most, however, is more dairying. What Sacramento city people need to realize and keep constantly in mind is that Sacramento's destiny rest on agriculture. Comparatively, other kinds of industry are of minor importance.

LITTLE LANDERS' PARADISE

The Monterey Peninsula cannot be classed as an "agricultural empire," for there level soil is scarce. But it is near the Salinas Valley, one of the most promising areas of deep soil in California for intensive development. More about the Salinas Valley later.

But the Monterey Peninsula, however, is an excellent place for the "little lander," who may have a specialty or may want to grow some things for profit and make part of his income in other ways. It holds much promise for him. The climate and soil are peculiarly friendly to flowers—Del Monte, Monterey, Pacific Grove, Seaside and Carmel are a riot of color. Perhaps this is one reason why the peninsula has so appealed to literary and artistic folk.

Such nationally famous writers as Harry Leon Wilson, Robert Wells Ritchie, Samuel G. Blythe and Hugh Wiley have homes there. The Del Monte Corporation has been far-seeing in preserving the forest of native trees which covers most of the peninsula, as a playground for Arthur Brisbane's future California of 50,000,000 people.

This forest has more than forty miles of smooth macadam highway, better kept than any other road of which I know. It winds through the pines, now and then skirting the ocean. Here and there along the road are clumps of strangely gnarled Monterey cypress trees, pressed to the earth and twisted by the wind, yet battling for existence at the very brink of the sea.

BETTER QUALITY CHEESE

One of the best things that came out of the Dairy Show was the organization of the California Cheesemakers' Association, with better quality cheese and all the progress and profit that goes with better quality as its aim. A dozen counties and several adjacent States and even Canada were represented at the meeting. The meeting was called as a hope and it came to be a live and going realization.

If the cheese people proceed as they have started, California cheese has an assured future. Dr. J. J. Frey, head of the State Dairy Service, often has pointed out that California can make just as good cheese and in as many varieties as may be desired.

What is needed most is better quality and uniformity of product. Even people familiar with the industry were surprised at the varieties and quality of cheese exhibited at the show, assembled by C. A. Phillips of the University of California. This cheese display is a story in itself, which I hope to tell later.

MOTOR TRUCKS AND FRUIT SHIPS

The motor truck has done big things for California's fruit industry. I can see the time not far distant when the team of motor truck and refrigerator ship will mean as much to the California fruit grower as an iced refrigerator car. Already trucks from the Yucaipa district in San Bernardino run on schedule to put fruit aboard steamers leaving Los Angeles for the Atlantic coast. This is written at the mouth of a little valley which despaired of intensive development a dozen years ago because it had no railroad. Today I saw several motor trucks and trailers go over the hill to Monterey loaded with apples.

THROUGH THE PANAMA CANAL

The Panama Canal has made this possible. It will also make possible the coming of sturdy immigrants from northern Europe to help people California's idle irrigable lands. In fact, I'm told the time is not far distant when ships will be coming to San Francisco and Los Angeles direct from Europe with farmer immigrants. The trouble now is that it costs several times the fare to cross America that it costs to reach America by water. That is why New York is the dumping place for many good European farmers who would be better off on California's irrigable lands.

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Wallace Wants U. S. to Export Crops

"THE objective to be attained by the exporting of farm crops by the Federal Government," says Secretary Wallace in his recent annual report, "is to secure for wheat and other agricultural products an exchange value approximately equal to what is was before the war.

"As has been said often, one of the chief causes of the agricultural depression is that farm commodities are relatively far cheaper than before the war. The price of wheat at terminal markets is not far from pre-war prices in dollars, but a bushel of wheat on the farm will buy much less of the things farmers need or desire than before the war. The end sought, therefore, is to put farm products on a price plant comparable with the price plane of other commodities.

"The proposal in question contemplates setting up of a Government export commission charged with the duty of disposing of the surplus in the form of wheat or flour in such a manner that the domestic price may rise behind an adequate tariff barrier to the point of restoring the pre-war purchasing power of wheat in the domestic market.

"Such an agency would need money with which to operate, and it is proposed to start it with a working capital of, say, $50,000,000, that being the approximate sum which the Government made in the way of profit by its wartime handling of wheat and flour when the price of wheat was arbitrarily controlled and held below the price at which it would have sold without such control.

"In case losses should be incurred because of the character of its operations, it is proposed to recover losses through the levy of an excise tax on the crop of wheat itself. In the end, the cost would be paid, not out of the public treasury, but from the assessment on the growers benefited, and should not be large."

Here's Winning Dairy Products Team

ABOVE are shown the members of the California team which won high place at the recent Pacific International Livestock Show at Portland.

Left to right—Hugh Giddings, Wasco; J. J. McNamara, Crescent City (high man of contest), Ralph W. Garrett, Los Angeles; Lloyd Johnson, Wasco; Prof. G. D. Thurnbow, Coach.

The remarkable record of California judging teams during the past three years is a matter of interested comment in agricultural circles throughout the country.

Arizona Agriculture

(Continued from Page 3)

incidental taxable wealth almost as great.

"In marketing organization work we find that if we determine the surplus of each article and bend all our efforts to remove that surplus to a place where there is none, the law of economics will take care of the normal supply.

"We now are engaged in a comprehensive campaign to sell the State University to our own people."

The Congress publishes many bulletins, among which is The Arizona Crop and Livestock Report. This is compiled by the U. S. Crop Reporter, but as his department has no money for distributing printed matter, this burden is assumed by the Industrial Congress.

The Agricultural College of the University of Arizona, located at Tucson, has been a great factor in State development. Although badly hampered by lack of funds, splendid results have followed from research work, university extension efforts and the experiment station activities. Concerning the work of the college, Dean J. J. Thornber says:

HORTICULTURE IN DEMAND

"Our big demand is for horticultural information and training. I believe date growing will become an important industry. We have discovered how to root offshoots. We build a frame around the tree and keep it full of moist soil. In three to six months we have well rooted plants.

"The pecan industry is very promising and we are giving special attention to it, carrying on experimental work. We will bring in a man who will devote practically all his time to the citrus industry in Yuma and Salt River Valleys.

"Our experiment stations are doing fine work. Our grapefruit is famous. Southern Arizona, Imperial and Coachella Valleys produce the finest pomelos in the United States, the earliest and sweetest. Our grapes mature early and have a greater sugar content than grapes of other districts.

"This is the long staple cotton center. For the Pima long staple of unusual strength there is no great demand now. The Upland—Acala principally—is not as good as Pima, but can be produced at less cost and meets a readier market.

"Dairying is making rapid progress. Purebred stock is in favor. Farmers demand the highest quality. The poultry industry is growing by leaps and bounds. We are looking for a poultry specialist and also for a cotton expert. We want a market director to assist farmers in forming a co-operative selling association.

"We ship in eggs and chickens by carloads from Kansas. Butter is imported in car lots, but we send out butterfat to Los Angeles.

"Arizona developed the lettuce now known as the 'Los Angeles Market,' of which the Imperial Valley is producing many times as much as its native State. Our grazing work is at a standstill for lack of funds, while cattle and sheep owners need range improvement.

"We should establish greater reciprocal arrangements with California and our extension workers should confer with them often, as many of our problems are mutual.

"The College of Agriculture has $332,000 this year for teaching, research and extension work and investigations. Of this amount $125,000 comes from the Federal Government."

Baldwin Herd at Home

E. S. HAAS, who purchased the entire herd formerly owned by Anita M. Baldwin, including the $41,000 bull, King Korndyke Pontiac Acme, has finally secured a home for the cattle by purchasing a partially improved place at Norwalk. The acreage is small, but splendidly located and will be supplemented by a large tract at Capistrano, where young cattle and dry cows will be carried.

An extremely important feature of the present development of this herd is the fact that Haas has secured the young bull, Prince Aaggie Acme Mead, to which all the daughters of the Baldwin bull will be bred.

10% More Milk Will Double The Profit from Your Cows

You do not expect bumper crops from your fields without fertilizing and extensive cultivation. Why, then, expect a maximum milk yield from your cows unless you keep their milk-making organs in top-notch health? The hard-worked milk-producing functions of the cow need frequent aid to keep up a full flow and retain the stamina to resist disease.

Kow-Kare has such positive action on the digestive and genital organs that its benefit is soon shown in the milk yield. Thousands of successful dairymen are now using it regularly about one week in each month for every cow. Especially during the winter months it aids in keeping up a full yield from dry rough feeds.

Dairy authorities say that the average dairy can double the net profit if measures can be found to increase the milk 10%. Kow-Kare is a regular part of the feeding course in thousands of dairies where surprising increases in milk yield are being accomplished.

Kow-Kare, of course, is primarily a cow medicine. It increases milk flow only because it builds up the same set of organs that must be reached when cow diseases are being treated. Such troubles as Barrenness, Abortion, Retained Afterbirth, Scours, Bunches, Milk Fever, Lost Appetite can be successfully eliminated by Kow-Kare because it restores health to the genital and digestive organs.

There is a definite profit advantage for every user of Kow-Kare. Cow health and big milk yields are inseparable. Our free book, "The Home Cow Doctor," is yours for the asking. It tells the various uses of Kow-Kare, with which every cow owner should be familiar.

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FREE BOOK

Hints for Home Gardeners

By M. K. ZIMMER

[Editor's Note—In keeping with its policy of presenting practical information of value to all classes of growers, ORCHARD and FARM has made arrangements with Mr. Zimmer, a widely known authority, to contribute frequently articles on home gardening.]

LOCATION IN GARDEN IMPORTANT

In addition to a number of common varieties of short season vegetables, the home gardener should plant those which remain in the same place year after year. It will pay to give a little thought to the arrangement of a kitchen garden.

Do not plant a perennial in the center of the garden. Use this easily accessible space for rapidly growing vegetables. Place the permanent varieties in the waste corners or along the side of the garden, in order that they may be easily reached with water. These perennial plants, after becoming thoroughly established, do not need as much cultivation and irrigation as the annuals.

The most important point to be considered in growing perennials is the preparation of the beds for such plantings.

HOW TO GROW ASPARAGUS

Asparagus is one of the most valuable permanent vegetables, yet one that is given the least care and attention. If you wish to be successful in producing nice, tender asparagus tips, follow the following simple instructions and you will be more than repaid for your efforts:

Dig a trench 18 inches deep and 16 inches wide; fill the trench half full of well-rotted barnyard manure. (This does not mean chicken, goat or rabbit droppings, which are too rich in ammonia for the purpose.)

After thoroughly firming the manure, cover with two inches of top soil; then set the asparagus roots two feet apart on top of this soil, carefully spreading the roots.

Cover the asparagus roots with from two to four inches of top soil, then firm the ground thoroughly. Leave the remainder of the trench open until the asparagus begins to come up, then gradually fill in the trench with rotted leaves, lawn clippings or barnyard manure.

If you are unable to obtain rotted barnyard fertilizer for filling in the trench under the plants, use well-rotted lawn clippings, leaves or other refuse material that will make a similar compost. Use chicken, rabbit and goat manure sparingly, and thus avoid burning tender young roots that are just forming.

Asparagus varieties most extensively planted are the Argenteuil and Palmetto. There is a rust-proof variety being offered for sale, but it is not easily obtained as yet, owing to the heavy demand from commercial growers.

DIRECTIONS FOR ESTABLISHING RHUBARB—

The soil for planting rhubarb should be prepared in a manner similar to that for asparagus. However, rhubarb roots are of different shape from those of asparagus, therefore the trench should be made deeper.

A frequent fault of inexperienced gardeners is applying too much water in copious amounts and at spasmodic intervals. Successful results cannot be assured if water is applied directly upon the planted roots; instead, trenches should be dug on either side, to allow the water to filter through the soil to the roots. There will be no danger of rotting the newly planted roots if watering is done in this manner and at regular intervals.

Strawberry and Giant Crimson Winter are the best known varieties of rhubarb. The latter is probably the heaviest producer, although not the most attractive. It is of good flavor and this, together with heavy production, probably will continue to make it the most popular. To get continued results and heavy production, fertilizer should be dug in around the plants annually.

(Editor's note—The "Giant Cherry" is popular among commercial growers.)

STRAWBERRIES? BY ALL MEANS!

No home garden is complete without strawberries. They are easily grown and the money made from them, together with the satisfaction of being able to pick fruit fresh for the table when you most desire it, makes strawberries very valuable.

The soil should be dug up and pulverized thoroughly in advance of planting. There are two methods of planting, either of which is good. The method with which most people from the East are familiar is planting on a level surface. A great many will continue so to do, because they are accustomed to this method.

Difficulty in watering of the plants is the most serious objection. The sprinkling system of irrigation is necessary when this plan is followed.

THE CALIFORNIA METHOD

The California method is to plant strawberries on ridges thrown up about six inches high and 12 inches wide, planting double rows on top of the ridge and spacing the plants a foot apart. When water is applied it is run in the trenches between the rows.

After water has been applied to the soil, cultivation should be attended to as soon as moisture conditions will allow, in order to prevent the soil from baking.

Avoid putting the strawberry plants too deep in the ground, thereby covering the crowns with dirt and causing the hearts to rot. Strawberries watered directly upon the heart of the plants when first planted will cause the heart to rot.

The varieties best adapted to this region are: Carolina, Progressive, Klondyke and Brandywine, in the order named. The Carolina is a comparatively new variety, but has made a wonderful record. It begins bearing early in the spring and continues until November. The berry is larger than Klondyke, red through and through and of delicious flavor.

The other varieties begin bearing six or eight weeks later than the Carolina. The Progressive is a continual bearer until the winter frosts. The fruit is medium to large, of dark red color and of sweet, mild flavor. The last two varieties named are good bearers, but have a short season, in comparison with the first two, and therefore are not as desirable for home gardens.

When the tree is placed in the hole the roots should be spread out as near their original position as possible and the soil carefully worked in about them with the fingers, after which the ground should be thoroughly tamped, to bring it into close contact with the roots. Then more soil should be added and the ground again tamped.

After planting, water freely and the following day draw loose soil around the tree, filling up the basin left for watering. When the growing season begins, not less than ten gallons of water should be given to each tree, at intervals of two weeks apart.

CARE OF TREES IMPORTANT

The care of trees during the first three years is very important. The soil should be kept moist and after each irrigation well worked with hoe or spade. Trees branching six or eight feet from the ground should have their bodies wrapped with burlap or paper the first and second years, to prevent sunburn. Dry grass should be cleared for five feet from the base of the tree, to safeguard it from fire.

Trees will respond wonderfully to care and there is no reason why any of the species recommended should not flourish on California farms if properly planted and cared for. Money expended on shade trees for the farm is well invested, not only because of the pleasant surroundings created, but also because of the increased value they give to the property.

Planting Shade Trees

(Continued from Page 3)

grows rapidly on any ordinary good soil and is one of the few leguminous trees that will stand alkali. For those who may object to this tree on account of its sharp thorns, a thornless variety has been developed, which can be obtained from most nurserymen. Honey locust is equally desirable to black locust for planting around outbuildings on the farm.

ASH GROWS IN ALKALI

Arizona ash is a little known tree which is destined to be widely planted in rural sections as soon as its merits become known. It grows well in alkaline soil where hardly any other trees will flourish, and is particularly well adapted to the arid regions of Southern California.

This tree has large, compound, willow-like leaves, gracefully drooping branches and large panicles of wing-like fruit in the fall. It grows rapidly and forms a symmetrical round top, which affords sufficient shade, although some sunlight always filters through its irregular, wavy foliage. It is a tree that is very suitable for planting back of the house, in case black walnut is not favored.

Most of the broad-leaved deciduous trees have rounded contours. The Lombardy poplar stands almost alone in the remarkably erect habit of growth of its branches which are of almost equal length at the base and at the top of the tree and which point upward at a sharp angle from the trunk. When planted close together poplars make an excellent windbreak, because of their low branches, which form a wall of foliage against drying winds.

Lombardy poplar should never stand alone, but should be placed so that the row of vertical green plumes may form a contact with some horizontal line. It is called the "exclamation point" in landscape architecture, because of its tall, pyramidal form, which is utilized to mark the position of houses or serve as sentinels at gateways. Lombardy poplar can, with advantage, be used on farms in this capacity, as well as for its shade and beauty.

PLANT TREES CAREFULLY

If shade trees are to succeed they must be carefully planted and tended. Holes at least three feet in diameter and three feet deep should be dug. Where hardpan exists it is advisable to blast out the holes.

The best time to plant deciduous trees usually is in January and February, after the rains have made the ground suitable for working. Trees planted in these months will become settled and ready to start growth in the early spring.

At the time of planting any mutilated roots should be cut off to smooth, sound wood. All other roots should have a fresh cut made on them and shortened in, so they will fit into the holes readily without doubling up.

Fireproof Fences

IN California, where grain field fires are so common every harvest season, the idea of using fencing materials, which are proof against ordinary fire ravages, is worthy of the attention of every farmer who is constructing new fences or has an old fence which must soon be replaced. Wood posts have long been the standard for fencing, but many farmers are turning their attention to other materials for posts.

One of the chief advantages claimed for the use of steel and concrete as posts is that they are fire resistant. This advantage, together with the greater length of life claimed for them over wooden posts, is more than sufficient to offset the greater initial cost, according to the advocates of those materials.

Extremes of heat naturally are detrimental to the life of such posts, but C. S. Broadwell of the wire products department of one of the large western steel products companies, states that a "flash fire," such as most grain field fires might be termed, has no noticeably injurious effect on the galvanizing of either wire or the steel fence posts. Likewise, concrete should show no injurious effects from such a fire.

Of course, in a fence row where the fire is held and developed to a greater heat by an accumulation of weeds, discarded wooden fence posts and the like, a part of the zinc in the galvanizing is certain to be oxidized, or the concrete likely to be cracked and the post and wire destroyed, or their life greatly diminished.

Other factors enter into the selection of fencing material other than its fire resistant qualities. The initial cost of the material, labor involved in placing and the length of life which may reasonably be expected, all are factors influencing selection.

In an effort to determine the relative importance of these factors and to compute a cost per year of life for the various materials, the Division of Agricultural Engineering of the University Farm, Davis, is planning an experiment dealing with these factors.

The experiment will require several years before some of the data can be secured but any questions as to the progress of the experiment will be gladly answered by those in charge of the work.—J. D. LONG, Agricultural Engineering Division, University of California.

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POULTRY

WEBB'S S. C. WHITE LEGHORN CHICKS

You will get plenty of eggs if your chicks come from

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2500 choice selected hens mated with cockerels from trapnested hens with records of 200 and better.

12 years Santa Cruz' largest poultry breeder. Prices 15c up to February 1; 12½c from February 1 to March 15 and 10c thereafter.

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CERTIFIED White Leghorn quality chicks from selected free-range, heavy-laying, utility hens mated to double pedigree cockerels with authentic trapnest records. Our breeding flocks are inspected and accredited by the Sonoma County Farm Bureau. Safe arrival and full count of live, vigorous chicks guaranteed. Accredited "AA" grade chicks at single "A" prices. Send for catalogue and attractive spring prices. MUST HATCH INCUBATOR CO., INC., the World's Largest Electric Hatchery, 432 7th St., Petaluma, Cal.

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BLOOD WILL TELL. Let a wild-blooded tom head your flock and see increase of vitality. Where no inbred birds prevail in 10 years' raising of turkeys. JENKINS, the Veteran Breeder American and Mexican Wild Blooded Toms and Hens, Route 3, Box 1178, Burgess, Calif.

FINE BRONZE breeding goblers, $10; hens, $6; 2-year goblers, $20; 2 year hens, $8. MRS. CHAS. KLAUMAN, 817 Hawthorne St., New Monterey, Calif.

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WE are now taking orders for this winter and spring plantings. Place your orders now, while we have a complete assortment of trees and vines, and assure yourself of getting first class stock.

Write for price list.

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BERRIES and SMALL FRUIT PLANTS: Fruit Trees, Roses and Grapevines. All varieties for immediate delivery. Plant early for best results. My 27 years of experience as a practical fruit grower and nurseryman will assure you delivery of large, healthy, well-rooted stock, which can be depended upon for quality and reliability. Write for price list. Descriptive catalogue sent on request. M. J. MONIZ, P. O. Box 477, Sebastopol, Calif. Phone 23-F3.

BEFORE YOU BUY! Get our prices on fruit trees, grapevines both domestic rooted and grafted on resistant root; berry plants, etc. We will save you money in addition to supplying you with fully guaranteed stock. Write us list of your wants and request price list. Wholesale and retail. J. F. MILLER & SONS, Healdsburg, Calif.

CHOICE AND RARE BERRY PLANTS—Red Raspberries, Black Raspberries, Purple Raspberries, Blackberries, Cory Thornless Macatawas, Mammoth, Himalaya, Phenomenal and Red Logan, Dewberries, Currants, Gooseberries. Ten varieties of Strawberries. Wholesale and retail. Send for free catalog. STANFORD BERRY PLANT NURSERY, Box 226, Palo Alto, Calif.

BERRYMAN Bushes Bear Big Berries. Why? Selected plants from choice varieties, is the answer. The unequaled Del Rosa everbearing red raspberry, also the mammoth thornless blackberry. Both varieties giant size and heavy bearers; also finest flavor. L. J. MORTON, Lessee, Rt. 2, Highland, Calif.

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FALL PEARS, Bosc, Anjous, Comice and Winter Nelis, from the Rogue River Valley, Oregon, lead all world markets. Most profitable fruit grown. Full information on request. Box 934, Medford, Ore.

HOME GARDEN SPECIAL—50 red rasp., 25 each Mammoth and Himalaya Blackberry; 100 Carolina Straw., 100 Klondike Strawb., $5.00, postpaid. W. P. DEARMAN, Gardena, Calif.

FRUIT AND ORNAMENTAL TREES. Most complete line offered Southwest. Buy direct from growers. Catalog free. Express paid. Consolidated Nurseries, Houston, Tex.

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SEEDS WANTED—Growers having Sudan seed, Sorghum seed or Hubam Clover seed for sale, please mail samples to BOMBERGER SEED CO., Modesto, Calif.

PISTACHIO NUT seed; selected N. Cal. black walnut seed. Claud Tribble, Elkgrove, Calif.

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CERTIFIED STRAWBERRY PLANTS—Leading varieties. Let us put you on our list of satisfied customers. We are growers, not brokers. Write for samples and prices. J. R. & S. G. MARKS, Canby, Oregon.

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EARN $110 to $250 monthly, expenses paid, as railway traffic inspector. Positions guaranteed after completion of 3 months' home study course or money refunded. Excellent opportunities. Write for free booklet G-21. Stand. Business Training Inst., Buffalo, N. Y.

TYPEWRITERS

TYPEWRITERS, all makes, $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. PAYNE COMPANY, Rosedale Station, Kansas City, Kan.

What Is Best Green Feed for Poultry?

IN analyzing the results of recent experiments conducted in connection with the Farm Bureau Egg Laying Contest at Pomona, M. A. Schofield has the following to say:

"The main effort last year was directed towards finding a substitute for green feed. It was felt by some that in sprouted grain and milk we had the best chance of finding this material.

"It is only fair to say that the experiments along this line so far have been entirely negative. The problem of producing a high quality green feed is still the most pressing one before our poultrymen.

"Not only is it one of the most expensive parts of the ration when labor is considered, but the rapid deterioration in green feed for poultry is a problem almost bewildering.

"Some experiments tried elsewhere tend to show that green-cut alfalfa allowed to wilt in the sun for two or three hours has lost some of those peculiar properties called vitamines, without which our hens are unable to produce eggs that will hatch strong chicks.

"From loss of water, which causes the barley or alfalfa to wilt, or from cold weather and frost, which retards growth, the green feed which may have been in prime condition today can be made practically worthless two or three days hence.

"The coming year grain will be sprouted until the sprouts are several inches long. We are hoping that this will give us something that the short-sprouted grain did not give.

"In an experiment tried with 600 breeding hens on my own plant I found that soils produced by our winter grasses shaved about one inch below the surface of the ground restore fertilability of eggs in a little more than two weeks. For several days the hens consumed not only the green shoots and roots in the top soil, but they also ate up nearly all of the dirt adhering to the roots.

"At some future time we shall know whether box-sprouted oats and barley will have the same effect that ground sprouting has had, where an inch of top soil is thrown in with the green sprouts.

"It is these periods of emergency, when for a few weeks we do not have green feed, which cause us a world of trouble, especially at hatching time, because those chicks hatched from hens not supplied with proper green feed tend to grow up with less vigor and with more culls than those hatched when hens have an ample supply of growing greens."

Good Pullet Record

THIS White Leghorn pullet began laying before she was four months old, and by November 30, after working 193 days, had produced 174 eggs. She, therefore, rested less than three weeks in more than six months, laying an egg a day all the rest of the time.

She was hatched and raised by L. W. Schiller, manager of the Pure Breed Poultry Plant and Hatchery at San Mateo. "This picture was taken in a high wind, which ruffled the bird's feathers," writes Schiller. "The photograph, therefore, does not do the little lady justice."

Schiller is a great believer in utility poultry, the kind that fills the egg basket early and often. Readers of ORCHARD and FARM keep him busy supplying that kind of stock.

"Turkeys Killed Cheap"

IT cost a certain Tulare County farmer just about one cent each to kill several hundred turkeys, and he did it with a sack of oats that were somewhat spoiled.

His wife, who has charge of the flock, succeeded in hatching 800 fine young poults, most of which were started successfully on life's journey.

Then a sack of oats was purchased. It was bought at rather a bargain price and the reason for the price was seen when the turkeys began to die. In one day fifty-one little poults died and within two weeks, between three and four hundred were dead.

Others were weakened and died later. Out of the 800 hatched only 200 were marketable. It was no expensive bargain. Of all fowls, turkeys seem to be most easily injured by poor food.—TULARE FARMER.

Challenges Silage Cutters

A CHALLENGE to meet any other team of farmers in the county in a silage cutting contest has been made by a number of dairymen in the Bodega section of Sonoma County. The silage team working on the F. Kruger ranch at Bodega succeeded in putting up 140 tons of corn silage in two days and a half.

The team worked with a tractor, cutter and four two-horse teams.—K. R.

The California White Leghorn Breeding Farms

SUPERIOR ENGLISH LEGHORNS—INTERNATIONALL KNOWN

THE WORLD'S BEST

Write for mating list on pedigreed chicks and hatching eggs.

ECKMAN & MILLIGAN, Lankershim, Cal.

FARM TRACTORS, MACHINERY

NEW and rebuilt implements at special prices. Call and see them. ARNOTT & CO., 114 S. Los Angeles St., Los Angeles.

PATENT ATTORNEYS

PERCY S. WEBSTER, Savings Loan Building, Stockton, Calif. Long established office. Reasonable. Send for free book on patents.

FARM LAND FOR SALE

OUR BACK-TO-LAND PLAN. We offer ambitious farmers a real opportunity to own a farm on very easy terms. Sutter County land, deep, rich, tried soil, complete irrigation with cheap water, thorough drainage, rail, water and highway transportation. Write owners, SUTTER BASIN COMPANY, California Fruit Bldg., Sacramento, Calif.

POULTRY and BERRY FARMING in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land. Near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

IMPROVED POULTRY and fruit ranch in Rio Linda poultry district near Sacramento. On highway near Townsite. Good income. Electricity and plenty of water. Also 10 acres unimproved at $300 per acre. E. COLYER, Rio Linda, Calif.

SELL your property quickly for cash, no matter where located. Don't pay big commissions. Particulars free. REAL ESTATE SALESMAN CO., 576 Brownell, Lincoln, Neb.

NEW BOOKS

FREE BOOK. Enoch Coming Before Jesus. O Megiddo Mission, Rochester, N. Y.

FARMS WANTED

CASH BUYERS want Western farms. Describe and state lowest price. R. A. McNOWN, 367 Wilkinson Bldg., Omaha, Neb.

WANT TO HEAR from owner having farm for sale, give particulars and lowest price. JOHN J. BLACK, Chippawa Falls, Wisconsin.

FARM wanted, immediately. Send particulars. MRS. ROBERTS, Box 83, Rocklin, Calif.

CIGARS AND TOBACCO

CIGARS. Direct from factory. California's finest. 100 Sheets $2.50 for 50 Little Havana Sports, 4½ inch, $3 for 50. Clear Cigars, 65c lb. FRANK MILLER, 1206 West 6th St., Dept. O, Los Angeles, Calif.

BOOKS FOR FARMERS

"THE HOME GARDEN," by L. C. Johnson of Pomona, the largest plant grower in California, tells how, when and what to plant, and how to cultivate. Lost paradise on a.

TOBACCO FOR SALE

LEAF TOBACCO: 5 pounds chewing $1.75, 10, $3; 5 pounds smoking, $1.25, 10, $3. Pipe and recipe free. Pay when received. CO-OPERATIVE FARMERS, Paducah, Ky.

BEES AND HONEY

BEEKEEPING pays. Instruction booklet free with prices. Supplies, queens, nuclei, pkg. bees. Hale Spencer Apiaries, Sawtelle, Calif.

Canned Goods Bought on Faith

By GEORGE P. WELDON
Pomologist, Chaffee Junior College of Agriculture

WHAT is there to indicate to the buyer of canned goods, the kind of product the can contains?

The writer has tried to discover something that would enable one to know just what kind of fruit he is purchasing. There seems to be nothing. The attractiveness of a label means little, since the most attractive labels often cover the poorest grades of fruit; the trade name or brand means little, as it is usually such as to fit any kind of fruit; the density of the syrup, which sometimes is indicated on the can, is a step in the right direction, yet it is not sufficient, since poor fruit may be put in good syrup.

The consumer makes his purchase on faith. True, he has learned from experience that certain brands are quite dependable, but even so he often pays the price of the best grade for something inferior.

STANDARDIZATION IS URGED

Why should standardization be essential with fresh and dried fruits and of no value with canned fruits? Why should the grade of fresh fruits have to be designnated on the container and not that of canned fruits? May not slow market conditions of canned goods be due to lack of confidence of the buying public in the product?

These are questions which we have asked ourselves many times. There is too much relabeling and mislabeling of canned fruits, for the best interests of the man who grows them. The canner may grade the fruit which he handles with the greatest of care and after it leaves his hands some of the lower grades may appear on the market with a very attractive label and a price to correspond to the label, but out of all reason for the quality of product that is inside the can.

RANK DECEPTION PERMITTED

As long as canned fruit marketing permits of rank deception from the time that the product leaves the canners' hands until it is finally sold to the consumer, there would seem to be little hope for the industry.

If legislation is necessary to force honest practices with canned fruits, as it has been with fresh fruits, then the sooner we have such legislation the better for everyone who owns an orchard from which the product is put into cans.

Junior Headquarters at International

THE permanent headquarters of the Boys and Girls' Club Congress was dedicated on the grounds of the International Livestock Exposition at Chicago on December 3. Fifteen hundred champion juniors in club projects from all parts of the continent took part in the ceremony.

This structure has been furnished the boys and girls by the management of the exposition in recognition of the importance of their work and as an encouragement to its further extension. It is constructed in the Old English style of architecture and is in harmony with the famous Stockyard Inn and other buildings which surround the picturesque court yard.

The first floor of the building is for the boys' work and the second floor is to be given over to the girls. The United States Department of Agriculture is loaning $5000 worth of scenic effects to be used in connection with the demonstration stage and the decoration of the exhibit booths. This new

building is one of the centers of attraction at the International Livestock Exposition at Chicago.

Rabbit Brush Not as Deadly as Painted

There is a lot of poisonous "rabbit brush" growing near here. Cattle feed on it and have done so for years. Just lately I have been thinking of getting some sheep. Do you think it would be risky to graze sheep in the vicinity of this plant? I understand Nevada sheep men have suffered heavy losses as a result of their stock eating the rabbit brush.—MRS. V. V. DAVIS, Inyo County, Cal.

WE are unable to determine to which "rabbit brush" this subscriber refers. Desert plants are hopelessly mixed up in the use of their common names. Common plants that are harmless but poor forage are called "rabbit brush," whereas others not so common proved to be poisonous also are called "rabbit brush."

The poison rabbit brush is a member of the same family as the common rabbit brush (the green sages which are gray-green throughout the year and have conspicuous yellow flowers late in the fall, usually September and October).

The poison rabbit brush is usually much shorter than the common rabbit brushes and green sages, and the leaves are very short, borne on spreading, rigid branches. It is an inhabitant of desert areas and is more or less abundant with common forage shrubs, such as sage brush, white sage, shad scale, salt sage, etc. My observation of it, covering many years on the ranges in Nevada, is that it is very seldom eaten and never by any stock except sheep.

Even sheep will eat it only when there is nothing else to eat. This correspondent should not take the matter too seriously as cattle will not eat it in the first place, and if there is plenty of room for the sheep to graze over, they will seldom if ever eat a sufficient quantity at any one time to cause harm.

Another plant that may be placed in the same category and is exceedingly abundant in desert areas, particularly on strong alkali lands, is the greasewood (Sarcobatus vermiculatus)—not the plant commonly called "greasewood" in Southern Nevada nor the one known as Kern greasewood in Southern California.

Sarcobatus, or the poison greasewood, has always been regarded with suspicion and was always considered as a worthless plant. I observed that when one's hand is injured by one of the spines on the bush, it becomes exceedingly sore. At that time, however, I did not know that the plant was poisonous.

Recent experiments by the United States Department of Agriculture prove that it is poisonous to stock. However, we should not worry very much about this plant so long as the animals have plenty of room to range, allowing them the opportunity to select their feed. I have seen thousands of sheep grazing through areas where this plant was abundant, but have never seen any of them poisoned, for the reason they did not eat it, except under compulsion.—DR. P. B. KENNEDY, University of California.

Orchard Heating Ideas Undergo Change

AFTER listening to a series of discussions on orchard heating problems by experienced growers at Farm Bureau meetings, which were attended by Floyd Young of the U. S. Weather Bureau, it became apparent that current opinion in regard to the efficiency of orchard heating is undergoing a decided change.

A few years ago most orchard heating experts held that in order to be most efficient a heater should deliver the largest possible proportion of its heat in the form of radiant energy, which does not heat the air directly, but passes through the air and becomes sensible heat when intercepted by any object, such as a leaf or a fruit.

Now, however, it is felt that inasmuch as the amount of radiant heat delivered to the object to be heated decreases according to the square of the distance, particularly with small trees, there is too much radiant energy lost into space in proportion to that which strikes the trees.

Again, in recent years the tendency has been toward using a smaller number by larger heaters, and the greater distance between heaters decreases the economy of radiation.

As a matter of fact, the chief function of the tall stack is to improve combustion and do away with the smoke nuisance, rather than to provide a greater radiating surface, as many had supposed. Young stated that in his judgment the tall stack would be done away with if a heater were invented which would provide good combustion without it. So far, no such heater is known except the coal basket or briquet heater, which presents disadvantages in lighting and refilling, where very large numbers are employed.

What we are now attempting, therefore, is actually to warm up "all outdoors," and where connection heat is depended on the wind or drift of air across the grove becomes an important factor and the value of windbreaks takes on a new significance.—J. ELIOT COIT.

Honey as a Stimulant

HONEY-SWEET is a combination of glucose and levulose in nearly equal parts, two of the several different kinds of vegetable sugars existing in nature.

Levulose is a fruit-sugar that has real medicinal value, being readily tolerated in diabetic tendencies, or even decidedly beneficial. It is the only form of sugar that can be assimilated into the blood without any preparation. All other sugars must be converted by digestive processes before they are used by the human system.

Honey, then, is the only sugar supplied by nature in a form ready for instant use. It is a quick and lasting stimulant in cases of exhaustion and nervous collapse, as well as extreme fatigue. A teaspoonful of honey in half a glass of water, either hot or cold, will restore exhausted energy wonderfully, with only beneficial reaction. No "dull gray dawn of the morning after" follows the use of honey, either as stimulant or food.

Douglass' Oranges

(Continued From Page 2)

is grown along the road fence of the home orchard, successive plantings furnishing an abundance of roasting ears to eat and give away. String beans cover the fence, while flowers find footing along the curbing outside.

Mr. and Mrs. Douglass' daughter Lillian derives a great deal of pleasure in developing the home place, decorated with beautiful shrubs and flowers. Like her parents, she takes an active interest in altruistic work and is at the head of the economic department of the women's clubs of Southern California. Recently she accompanied a party of Presbyterians who went to Alaska by special steamer to inspect a number of missions in that country.

Mr. Douglass did engineering work in connection with the construction of both steam and electric railroads in Iowa, Ohio and several other States, employing as many as 3000 men at a time. He is deeply interested in good government and attended the convention which nominated Calvin Coolidge for Vice President. Like many other friends of the Farm Loan Act, he deeply regrets the way farmers are being forced out of control of the financial system which they have built up, but is hopeful that agriculture yet will attain its rightful place in the banking system of the United States.

Hawaiian Livestock Thrives on Molasses

CANE sugar molasses—"on account of its high nutritive value, easy digestibility, pleasing taste and low cost per unit in comparison with other feeds"—has been used to good advantage for years in the Wailuku Sugar Company stables (Island of Maui, H. I.) as an important part of the feed ration for mules and saddle horses.

Later, when a dairy was established as a part of the Welfare Organization on the plantation, molasses was also used in feeding pure bred Holstein cattle.

This dairy herd, as well as cattle being fattened for slaughter, is fed with molasses in suitable quantities to meet the respective requirements, and pure breds as well as grade cattle thrive on a ration in which there is sufficient molasses.

Prize winning mules and pure bred Holstein cattle exhibited at recent Maui County fairs by the Wailuku Sugar Company have been conditioned on feed in which there was a high percentage of cane sugar molasses.

MOLASSES HAS DOUBLE VALUE

Cane sugar molasses not only has a high food value, but its incorporation in the feed makes the ration especially palatable and more relished by the stock, an important factor in feeding for maintaining milk production and in keeping working animals in condition, according to these progressive island producers.

Straight molasses is kept before the stock in the pastures. All stock, excepting the very young animals, crave molasses and will consume any amount of it. The animals gather around the troughs as long as the contents last, often fighting for a chance to get at the sweet stuff and lick up the last drop in the containers.

In feeding pigs, a small quantity of molasses is used to good advantage, officials of the company report.

Cane sugar molasses is superior to beet sugar molasses as a feed for stock, because it does not have the same laxative properties; for that reason cane sugar molasses can be fed in large quantities with no ill effects. In fact, it is an aid to digestion, and animals fed on cane sugar molasses are particularly free from digestive disturbances, at least, these are the conclusions reached after several years of experimentation.

RATIONS FOR FARM ANIMALS

Following are the rations fed:

COWS—The grain ration consists of a mixture of chopped pigeon peas (Cajanus Indicus), bran, oats, alfalfa meal, cocoanut meal and molasses. The pigeon peas and grains are mixed before the molasses is added. Just enough molasses is added to moisten the mixture and to make it more palatable, about 15 to 20 per cent. The molasses is not diluted, but is heated if too thick to work properly. A mixing machine is used.

HORSES AND MULES—The grain ration for horses and mules consists of a mixture of barley, bran, alfalfa meal and molasses, mixed the same as the

Molasses Mixing Tank

cow ration, with the exception that more molasses is added—about 25 per cent. There is also a molasses box in the horse paddock.

CALVES—The calves are fed a portion of the cows' ration, with a small amount of bone meal added. Each one receives from one and one-half to two pounds per day. There is no molasses box in their lots, as the calves don't seem to care for straight molasses.

BULLS—The bulls are fed from the feed mixed for the horses and also have access to molasses boxes. They get considerably more molasses in this way than could be given them in the grain ration.

HOGS—So far very little molasses has been given the pigs. From one to two quarts per hog per day is all that has been fed, but this is said to have given good results. The pigs don't seem to care for molasses alone, but pouring it on top of the other feed after it has been put into the trough will cause them to eat considerably more, it has been found.

Value of Honey Should Be Advertised

HONEY, in its usefulness to humanity, ought to have greater publicity, not in the form of fake tales which clutter the newspapers all summer, such as the one about the swarm that lit on Jones' auto and filled the gas tank with honey before he reached the seven-mile house—but in authentic facts and solid, sensible information.

Honey is the only sweet known to chemists which is prepared by nature for immediate digestion—a pre-digested sugar, therefore the most easily digested by the enfeebled stomach. It is a quick stimulant to exhausted nervous energy and destructive to any putrefactive agents in the digestive tract.

In cases of anemia, honey is among the most valuable of foods, many cures being ascribed to its use. In sunburn, boils and other surface inflammations, it is a valuable emollient. Mixed with lemon-juice, it is one of the best cough-syrups known, especially if hoarhound or eucalyptus honey is used.

For those who like to juggle with the intricacies of "calories" and "vitamines"—of which every good, healthy stomach should be kept in ignorance—be it known that honey abounds in "vitamine B"—the invisible protector against glandular troubles, anemia and nervous disorders.—J. D. B.

Agricultural Leaders of the Pacific West

XIV—GEORGE E. FARRAND

Chairman California Legislative Committee and Legal Counsel for Numerous Farmers Co-operative Organizations

PROBABLY as often as one hundred times a year some one who has to do with shaping the policy of the big co-operative marketing organization in California pushes back his chair at the council table and wants to know if the particular thing under discussion is lawful.

It is at that particular point that the chairman turns to George E. Farrand for expert legal advice in the matter, because the latter is recognized as the last word on law as it pertains to the conduct of co-operative marketing systems and their allied organizations.

For a considerable time after co-operative marketing was instituted in this country the legal phases of it were bewildering. Their complexity was so extreme that nobody seemed to be able to understand the legal aspects of the various plans. The public's first impulse,

when it failed to comprehend certain ramifications of the business, was to conclude that the growers were "slipping something over."

Farrand has done more, probably, than any other one man to simplify the legal aspects of co-operative marketing. He took the complex features of the business and reduced them to the point where they were positively simple.

Co-operative marketing has claimed the attention of the United States Government in a degree perhaps second only to that of the national transportation problem. A dozen years ago the Government seriously considered dissolving many of the co-operative marketing organizations, because they appeared to be operating in violation of the anti-trust law.

Farrand is one of the reasons why this decisive step was not taken. By his shaping of certain phases of the business aspects of such systems, he so simplified the plan, as an economic proposition, that nation-wide confidence in the idea was established. Today the Government is co-operating with the co-operatives, while many foreign countries are sending their representatives here to study the system which Farrand has helped to make world famous.

Farrand is legal counsel for the California Fruit Growers' Exchange, California Walnut Growers' Association, California Milk Producers' Association, Fruit Growers' Supply Company and all their subsidiary corporations, such as the Exchange By-Products Company, Exchange Orange Products Company and the Walnut Growers' Spray Manufacturing Company. In addition, Farrand is president of the Agricultural Legislative committee, a gigantic organization representing all of the important agricultural and horticultural interests in the State in the matter of necessary and desirable legislation.

It may be that Farrand's great success in his unique line of legal practice is in a measure due to the fact that his sympathies are largely with the farmer who tills the soil, being himself an extensive producer of walnuts, citrus and deciduous fruits.

He came to California at the time when this section of the country was entering upon a period in which its agricultural life was likely to collapse because of remoteness from the chief market places of the country. He can drive the length and breadth of the State and see everywhere orchards, fields and dairy herds which he has helped to develop and stabilize by wise counsel, either here or at the national capital. At scarcely any time would he be out of sight of the diversified activities which have claimed his attention almost constantly during the last twenty years.

Farrand drafted the first plans for the organization of the lima bean growers in Ventura County in 1909, and handled the legal end of the organization until 1916, when he moved to Los Angeles to attend to his duties as chief counsel for the California Fruit Growers' Exchange. He had charge of the legal phases of the upbuilding of the California Walnut Growers' Association, which is one of the models of co-operative marketing in this country.

The organization plan adopted by the California Milk Producers' Association was developed in Farrand's office. It has since been used as the basis upon which many other similar organizations have been formed in this State. When the Citrus Protective League changed its style and plan of operation it was Farrand who worked out the many details and drafted the articles under which the California Citrus League now is conducted.

He originated and put into operation the revolving fund plant which enabled the Fruit Growers' Supply Company to develop a $4,000,000 business, and his work along similar lines made the going easy for the Dairymen's Feed and Supply Company.

Such success as has crowned Farrand's efforts has been due to hard work and the doing of a great many small things at the time and in the manner in which they should be done; together with helping people to accomplish the desired end.—DONALD SIAS.

Maintaining Soil Fertility With Gypsum

By PROF. GEORGE A. OLSON

ABOUT fourteen years ago I happened to meet a professional man from Iowa, who stood admiring a piece of land he had purchased in the Nob Hill section of Yakima Valley, Washington. The land had not been set to trees, but from his statements it was apparent that he was looking forward to the time when the minerals in the soil would be converted into fruit gold and bring him riches and independence.

It was during a boom period, when the price of apples was high and the demand for fruit lands in the Pacific States was very strong. The pioneer who bought land at a low figure and developed and sold orchards at peak prices made money easily. The person who paid high prices for virgin land was not so fortunate, because the boom collapsed soon afterward.

Most of the trees were planted before 1909 and many of them were in bearing at that time. During the following ten-year period the total number of apple trees increased only 9 per cent in Washington and 17 per cent in California. In Oregon the number decreased 17 per cent. The halt in speculation, however, did not defer production of apples or the improvement of orchards, since fruit yields and values increased enormously in the succeeding ten years.

ALFALFA CROPS INCREASE

During the same period the production of alfalfa increased 83 per cent in Washington, 58 per cent in Oregon and 47 per cent in California. Dairy cattle also increased in numbers. In Washington this increase was 66 per cent, in Oregon 31 per cent and in California 11 per cent.

In these States, which are richly endowed with minerals and abundantly supplied with sunshine, certain positive changes in the methods of farming have occurred. The sunshine, fertility and water which combine to make shapely and highly colored fruit also has been found valuable in rearing stock and producing many varieties of crops. The transformation noted plainly shows that diversification rapidly is taking place.

There are various reasons why it was desirable to diversify, but in this article only some important phases of the fertility side of the question will be emphasized. Based on Wolff's analysis of apples, it was generally regarded that fruits did not require much plant food, since the bulk of the apple is composed of sugars and water. Even the sugars are combinations of the elements contained in water and carbon dioxide—the gas which makes soda pop sparkle.

FOOD USED BY APPLES

Some of the plant food derived from the soil helps build the trees. The minerals removed in an average crop of apples amounts to 4 pounds of nitrogen, 5 pounds of potassium, 7 tenths pound of phosphorus and 3 pounds of sulphur per acre. These quantities do not appear to be large; nevertheless, a deficiency in any one of them would mean small crops, lopsided fruit, or none at all. The most striking fact, however, is the large amount of sulphur required, as compared with phosphorus, yet it was the element most neglected.

In the fertile soils of the Yakima Valley it became known that there is much land which contains at least four times as much phosphorus as sulphur. Therefore, in producing fruit the chances were 16 to 1 that sulphur was more of a limiting factor than was phosphorus. In the orchards where cover crops were maintained the demand for minerals was much increased.

In the case of alfalfa it was found more than 20 years ago that the sulphur requirement exceeded that of phosphorus, and that applications of sulphur, or the immediately available sulphate sulphur as contained in gypsum, increased the yields in various parts of California, Oregon and Washington.

EFFECT OF USING GYPSUM

The dark green color observed in alfalfa following the use of gypsum also was observed in other crops. It signified health and vigor and a well-balanced food supply. These desirable qualities should contribute to the formation of shapely and highly colored fruit.

Farmers already have realized that fertilizers are essential in soils which were recognized at one time as fertile. In California the expenditure for fertilizers increased, from 1909 to 1919, from $2,143,993 to $8,182,998; in Oregon, from $68,557 to $489,524, and in Washington, from $87,023 to $525,637.

In the counties producing most apples, Sonoma bought 2.5 per cent, Hood River 15 per cent and Yakima 7.2 per cent of the total fertilizers purchased in their respective States. At the same time it should be remembered that dairying has helped to maintain fertility; otherwise the fertilizer consumption would have been even larger than it was.

LEGUMES SUPPLY NITROGEN

The growing of legumes has provided a means of increasing the nitrogen content of the soil. The orchardist who has adhered to clean culture, however, has had to depend on fertilizers and organic manures as sources of fertility. Some sulphate sulphur has been returned to the soil through the use of fertilizers, but from various points of view it would be preferable to apply gypsum directly to the soil than to depend on a supply in fertilizers, in view of the fact that soils generally are more deficient in sulphate sulphur than they are in other forms of plant food. Also, gypsum furnishes the sulphate sulphur in the immediately assimilable form. This is the direct way of using sulphur on the farm.

Those who grow and care for stock could use gypsum more advantageously. Sprinkled on the floors and in the gutters and on the manure pile, it would serve the farmer in two well-defined ways: It would prevent the escape of easily lost nitrogen, and thereby maintain the high nitrogen content in manure; also, it would provide the sulphate sulphur, this being the indirect way of applying sulphur food to the soil.

Soils may be very fertile to begin with, but in the course of time the minerals cease to be converted into the golden harvest. Replenishing the soil with fertilizers is the only means of maintaining fertility.

Meet Our Staff Artist

THIS is artist H. F. Colson of the ORCHARD and FARM staff, who painted the beautiful Christmas cover

design which adorns this issue.

Mr. Colson is responsible for many of the artistic drawings and "layouts" published in this magazine.

We have a suspicion that he is really a farmer at heart, driven into art work by the urge of his talent, but longing secretly for his own "vine and fig tree."

At any rate, he says he'd rather draw agricultural pictures than any other kind.

BEE NOTES

By J. D. BIXBY SR.

MICE MAY STEAL HONEY—

The robbing of beehives by field mice might easily occur in any section where bees are packed for winter, as mice are very fond of honey and particularly of pollen.

J. D. BIXBY SR

They also destroy much empty comb by gnawing through it or building nests.

Where bees are packed in leaves, straw or chaff, particular care should be taken to screen the entrances and all other places where mice might enter. Bees, when clustered in cool weather make no attempt to defend themselves from mice, unless the cluster is actually disturbed.

BEES BECOMING ACTIVE—

Bees of the South Coast are again becoming active after a long rest. Blue gums is commencing to bloom, lemon orchards are perfumed with scattered blossoms, and the weather is delightfully warm and sunny. Orchards sowed to cover crops begin to show the gold of Bow top (white mustard). All these things stimulate brood rearing, for it is now California's spring.

FEEDING BEES IN WINTER—

The most frequent question asked of the bee editor these days is "How shall I feed bees?"

The best way to give a satisfactory answer is to divide our beekeepers into three classes—the back lot operator, the farmer apiarist and the commercial honey producer.

The first has from one to six colonies. His best plan is to prepare some sugar syrup—sugar and water, half and half—a little warm. Add a trifle of honey if you have it. Put this in some tin cans (old condensed milk cans are handy), put in two or three small sticks, or a little wad of excelsior to prevent the bees drowning; then set the cans close to the entrance of the hive at 3 o'clock in the afternoon; early in the morning take the cans away, to prevent robbery.

The farmer with ten to thirty colonies had better feed bees inside the hive. Take out a couple of empty combs at one side and set a can of tepid syrup in this space. Leave it there and fill every afternoon, after the heat of the day is past.

Cover the frames carefully with a burlap blanket and turn back each time just enough to permit filling of the cup. An old teapot or watering pot makes a good filler. If a colony fails to take up its supply each day, better look it over; it may be diseased or too weak to start breeding and is liable to be robbed.

For the commercial beekeeper there are three methods which are commonly followed: First, feeding in the hive, very much as above, in large quantities if simply for stores, and very small quantities if only for stimulative purposes. Second, feeding in the open air for winter stores, which must be done early and with very thin honey. The strongest colonies will, of course, store up the most honey, which must then be equalized among the weaker colonies. This can be done only if no other bees are within a mile or more of the apiary.

Third, by filling combs with syrup and inserting in the hive. Take a small extractor, put in the requisite amount of hot water, then add an equal amount of sugar, by measure. Turn the extractor until the sugar is dissolved. Add to the mixture any honey you can spare, first boiling it.

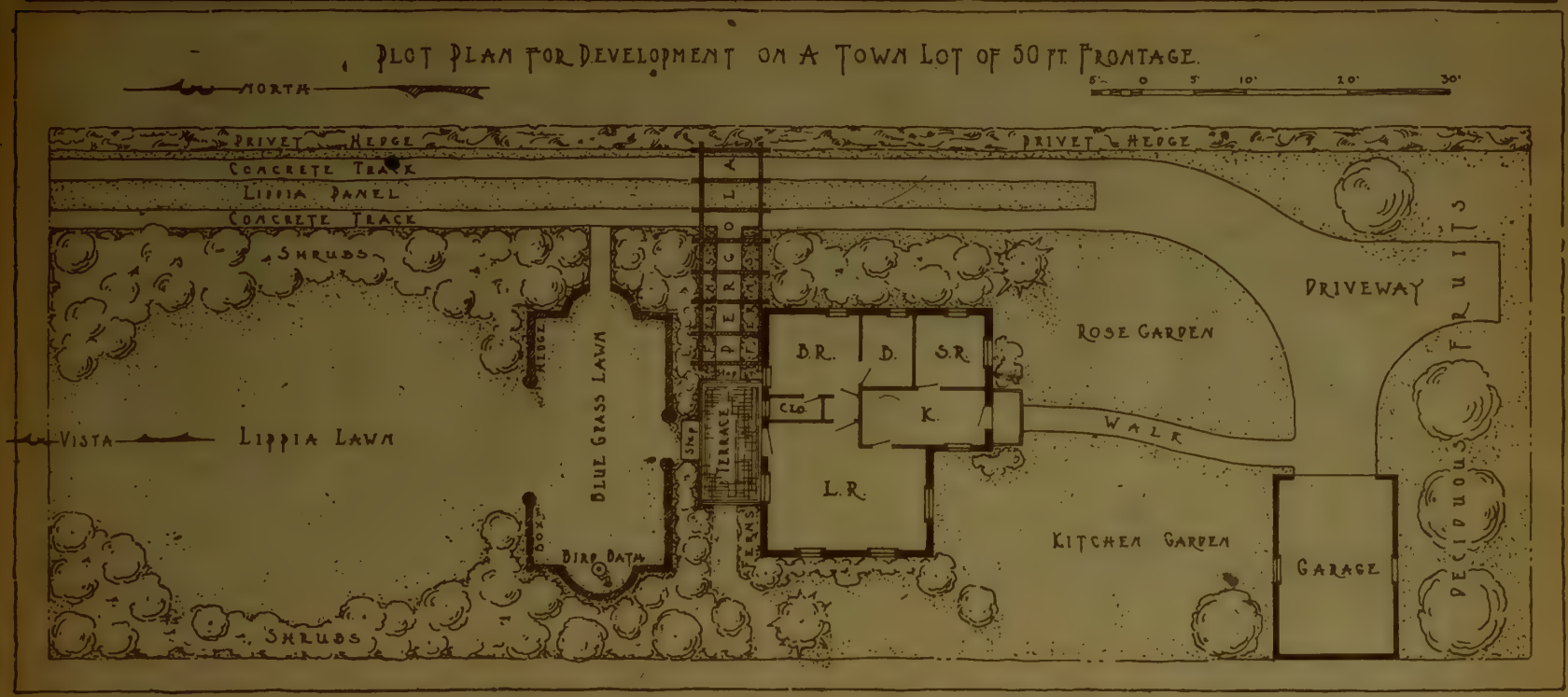
Have a small tub under the gate of the extractor and run into it the syrup. Lay a comb on the top of a comb basket and with a small spray pump spray it full of syrup, both sides; then set in a super placed over something to catch the drip (an uncapping box is good for this purpose). When enough combs are filled, take to the yard and place from one to three in each super.

Repeat this feeding in two or three days, after the bees have emptied the combs first given. This latter method I consider the best. Make entrances to hives very small, to discourage robbing.

FARM WORDS AUTHORIZED

A committee appointed by the Secretary of Agriculture has passed on the spelling of several disputed farm words. "Sorgo" now is the official name of cane sorghum, saccharine or sweet sorghum. Kafir and milo have had the words "corn" and "maize" dropped from them, while "broomcorn," "purebred" and "butterfat" are spelled as single words.

Landscaping for One Hundred Fifty Dollars



By RALPH D. CORNELL

Master in Landscape Architecture

THE landscape work on the majority of California's thousands of new homes resolves into the planting of a patch of lawn in the front yard with a few mixed and spotty shrubs placed along the house as a foundation planting.

The most of this work is done by small nurserymen as a selling outlet for their plants, or by local gardeners who earn a livelihood by house-to-house work in lawn mowing or making. The fact that such work is done by nurserymen or gardeners does not preclude poor design and arrangement of shrubbery, for the taste of such men may be excellent. In truth, the greater number of these small-lot "jobs" rightfully belong to the local gardener and his kind, for the budget of the home-builder will not permit the employment of a professional landscape architect for the designing of plans.

On the other hand, it is exceedingly important that thoughtful consideration be given to the placing of buildings, even on the 50-foot lot, and is the choice and arrangement of shrubbery that is intended either to adorn or to serve some economic function. A mistake looms bigger on a tiny lot than it would in larger spaces where it would bear relatively less importance, so that, by the same token, the proper landscaping of the small place demands more time and attention, relatively, than does that of the place composed of larger units.

PROBLEM IN PSYCHOLOGY

The successful landscape designer must be something of a student in psychology, for his task is that of giving pleasure to others through the creations of his own mind. He must visualize and picture and imagine things as they will be, in advance of their creation, and must be able to anticipate those things that will bring pleasure to their holders.

No man should develop his yard and choose his trees and shrubs without consideration for the character of the neighborhood in which he locates. There should be harmony of development to give a satisfying sense of unity to the entire block or street. Street trees should be of one variety. Houses should be uniformly set back from the streets. Front yards should harmonize with each other. But mistakes should not be passed along from one lot to the next.

COMMON PLANTING ERROR

A common mistake is setting a large palm or tree on either side of a front walk that leads directly down the center of the yard. Another common mistake is over-crowding and over-planting to a point where nothing has an opportunity properly to develop and where the foliage masses become entirely too large to remain in scale with the yard. A third mistake is the use of a spotted variety of many plants that restlessly jostle one another for their place in the sun, with not enough of any one type of planting to give the place character.

While seeking harmony with the neighborhood, one should also seek individuality and local interest. Exact reptition brings about monotony. Introspection, analysis and visualization are three processes through which the mind should go as it struggles with the problem of creating the home landscape. These qualities are yours to possess, and their exercise will reduce greatly apparent troubles.

The accompanying plan illustrates a type of small lot planting which is widely divergent from the customary arrangement but which, nevertheless, would readily conform in harmony to almost any neighborhood—either as it is or with slight modifications to meet local demands.

In the first place, the house is tiny, which is an advantage in that this allows for greater ground space about it. It would be classified as a "California house," of cheap but attractive design and construction, and is built to house a family of two.

The grounds were designed with first consideration for economy in both construction and maintenance, but with the desire to create an attractive setting that would have the appearance of finish and unity. Lawn area is cut to a minimum—being confined to the small, formal carpet that serves as an extra outdoor room, just beyond the terrace. Visible beyond this, but showing as a separate and distinct unit, the flat, open area is covered with Lippiarepens, which is easy to maintain and thrives under the tramp of feet.

COLOR HARMONY CONSIDERED

The shrubbery is selected and grouped with conideration for its harmony in foliage color, but with sufficient contrast and accent to give interest and emphasis where it is needed to bring out the design of the plot. The ground plan and planting arrangement create slightly more variety and interest in design than ordinarily is possible on so narrow a lot, and yet could not be copied indescriminately and transplanted into other settings where the house and other set features were widely different. Its value lies in its suggestion and in your power of adaptation.

The chosen plants are all common and easily obtainable. Fruit trees in the rear with fruit-bearing shrubs at the side add economic interest. The garage is invisible from the street and does not show as an unsightly terminus to the long driveway that comes in at one side.

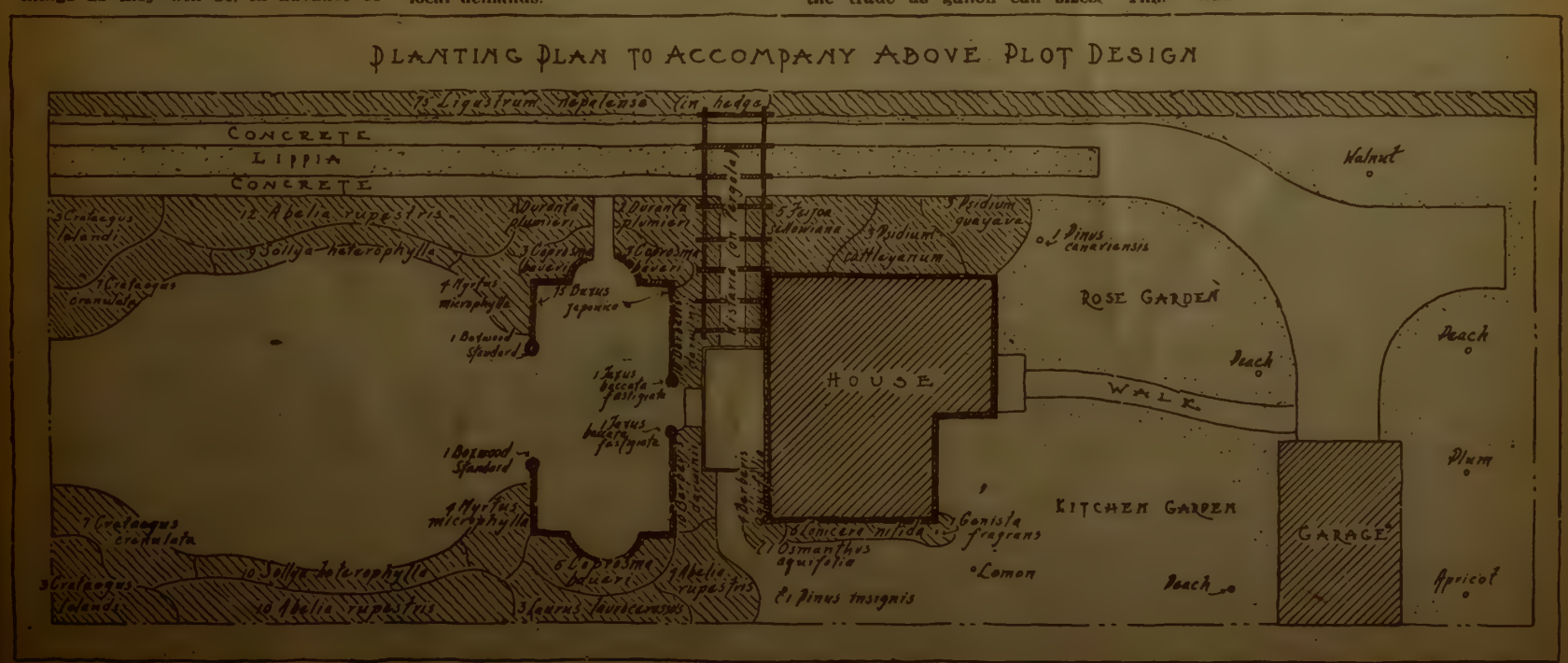
The estimated cost of the shrubs and trees as indicated on the planting plan is about $110 for what are known to the trade as gallon can sizes. This means plants that are growing in gallon cans as they come from the nursery. By purchasing smaller plants, a very considerable saving might be made on this estimated cost while, if larger sizes were desired, the cost would be increased in proportion to the size of plants chosen.

The fruit trees could be purchased for a probable $7 or $8. The bluegrass lawn and lippia could be established for an amount in the neighborhood of $30, including grading, fertilizer, top dressing and labor. The total cost is about $150, a small sum when the completeness of the plan is considered.

LIST OF PLANTS NEEDED

Following is a complete list of the plants indicated on the plan, with the total quantity required, and with the names by which they should be ordered from the nurseries:

(The common name occurs in parenthesis): 26 Abelia rupestris (Abelia), 75 Buxus japonica (Japanese Boxwood), 2 Buxus japonica clipped into globes, 4 Berberis aquifolia (Oregon Grape), 20 Berberis darwinii (Darwin's Barberry), 11 Coprosma baueri (Coprosma), 14 Crataegus crenulata (Scarlet Thorn), 6 Crataegus lelandi (Orange Thorn), 4 Durante plumieri (Golden Dew Drop), 5 Feijoa sellowiana (Pineapple Guava), 1 Genista fragrans (Yellow Broom), 3 Laurus cerassus (English Laurel), 75 Ligustrum nepalense (Nepal Privit), 6 Myrtus microphylla (Small-leaved Roman Myrtle), 1 Osmanthus aquifolius (Osmanthus), 1 Pinus canariensis (Canary Island Pine), 1 Pinus insignis (Monterey Pine), 3 Psidium cattleyaum (Red Strawberry Guava), 3 Paidium guayava (Yellow Lemon Guava), 19 Sollya heterophylla (Australian Blue Bell), 2 Taxus baccata fastigiata (Fastigiata English Yew), 1 Wistaria chinensis (Wistaria), 1 apricot, 1 lemon (if in suitable location), 1 plum, 1 walnut.



TREES MAKE LIFE MORE WORTH LIVING

More windbreaks are needed to prevent damage by the destructive north winds which so frequently sweep California's great interior valleys.

This unique outdoor meeting place is used by forestry students of the University of California. An open-air hearth is surrounded by seats hewn out of giant redwood logs. The circle is located in a grove of eucalyptus on the Berkeley campus.

Trees along an irrigation canal may or may not be desirable, depending upon frequency and method of cleaning the ditch. In this case an artistic effect has been secured without sacrifice of utility and with no robbing of moisture other than that which would be lost anyway through seepage.

Picture this same highway without the evergreens. Hundreds of miles of California's wonderful paved roads are still barren of greenery. Co-operate with the State Forestry Department.

How much do the fine old trees add to the value of this beautiful California country home? New Settler, have you made arrangements to start your young shade trees and ornamentals this winter? See your nurseryman now. January's planting time in most sections!

Here's a formerly barren hillside which was regarded by the owner as waste land, but which now supplies all of his fuel. In addition, the trees prevent erosion which formerly made the slope a menace to cultivated lands below it.

ORCHARD *and* FARM

DECEMBER 30, 1923

Filberts Easily Grown and Sold in California

Pacific Coast Nuts Reach Perfection and Bring Top Prices, Asserts Grower

By C. E. PARSONS

[Editor's Note—The writer of this article is a plant propagator and grower of many years' experience, whose experiments have been conducted at Nevada City.]

FILBERT growing in California has not been as extensive as market possibilities and other conditions justify. The average individual knows little about this interesting potential industry.

The name "filbert" means "full beard" and is derived from the fringed husk which encloses the nut. "Hazel" comes from the old Anglo-Saxon word "hassel," meaning a hood or bonnet. In England, where many of these nuts are grown, all varieties with a long husk are called filberts, while those with a shorter husk than nut are called hazelnuts, or "cob nuts."

In Europe young hazel wood is used for withes in basket and barrel making and for fish poles.

Allowed to grow in bush form the filbert makes a good hedge and when planted in two rows 10 feet apart makes a delightful arbor. As a valuable addition to home grounds, this fine shrub has been overlooked, as well as for commercial nut planting.

SOME FILBERT ADVANTAGES

Filberts require no props, no thinning, no lug boxes, no drying trays, no ladders for picking and little or no spray material. The crop matures before the leaves fall and requires no expensive containers. The nuts are picked from the ground by cheap labor. They ripen in September and October and are uninjured by rain.

California filberts dry perfectly without special care and remain edible for considerably more than a year.

In the Eastern States blight renders filbert growing unprofitable, but this disease is not considered serious by Pacific Coast growers. The green aphis sometimes works on the leaves, but not enough to render spraying necessary. Borers attack bark injuries and should be dug out and the wounds waxed over.

Gophers and rabbits never molest the filbert, which is a great point in its favor. A bud mite affects all varieties, but not seriously.

The crop is practically sure, the blooming catkins being uninjured by a temperature of 15 degrees above zero. Here at Nevada City, at an elevation of 2600 feet, filberts have borne every year for 10 years. They often are in full bloom in January, sometimes during a snowstorm. The trees continue in bloom for months, the calyx appearing in May.

Although filbert trees bear early, they live to a great age—100 to 150 years. Therefore, he who plants a filbert tree plants not only for himself, but for posterity. Paying crops may be expected five or six years after planting.

Oregon growers report orchards nine to twelve years old, bearing 30 pounds of nuts per tree; also, 11 full crops in 13 years and 25 to 75 per cent of a crop in the two "off" years. On 18-year-old trees, 40 pounds of nuts is not an uncommon yield, and 50 to 60 pounds sometimes is harvested from one full grown tree.

SOME GOOD NUT YIELDS

Prof. Schuster of the Oregon Experiment Station has a grove of 15-year-old Barcelonas that bore 3500 pounds of nuts per acre. The writer has taken 40 pounds of nuts from a 50-year-old tree.

Albert Etter of Humboldt County reports 20 pounds of nuts from a 16-year-old tree. Mr. Cunningham of Sacramento County reports filberts growing along irrigation ditches and bearing good crops every year.

From the foregoing it seems reasonable to expect that a 15-year-old orchard with trees planted 20 by 20 feet—109 to the acre—will produce a ton of nuts per acre.

Enormous quantities of filberts are used by candy manufacturers, who consider this nut superior to almonds for making chocolate bars.

Vegetarians and food specialists consume large amounts of filberts, while some are crushed for oil, which constitute half or more of their weight.

Filbert oil is used for lubricating fine machinery and in making perfumery. Nut bread is very nutritious and palatable, especially when made of graham flour.

LARGE QUANTITIES IMPORTED

Ninety per cent of the filberts used in this country are imported. In the past 13 years our filbert imports have increased from 7,000,000 pounds to 25,000,000.

There is an import duty of two and one-half cents per pound on filberts. The present wholesale price in San Francisco is 15 cents per pound. Dealers say that (Continued on Page 9)

This small branch from a Barcelona tree shows the bearing habit of the best variety of filbert. Good trees will bear one ton of nuts per acre.

Branch with part of the leaves removed, to show nuts. The filbert grower needs no props, drying trays or ladders, and seldom sprays.

The author standing beside a model filbert tree in his orchard near Nevada City.

Plate of well-grown filberts, an improved variety of the common hazelnut. Nine-tenths of the filberts used in this country are imported.

ORCHARD and FARM
THE CALIFORNIA AGRICULTURAL WEEKLY
DECEMBER 30, 1923

Spraying on a Business Basis—Cost and Returns

Accurate Data on Expense of Combating Insect Pests and Fungus Diseases, With Value of Resultant Crop Increase

By E. R. DE ONG
University of California

DURING the period of abundant crops and high prices of orchard products it is easy to spend money for spraying. Our orchards have yielded well and we want to treat them right, so they will continue to bear, and many an orchard has been sprayed, under these conditions, without the remotest chance of returns on the investment.

All orchard work for the control of insects or plant diseases, however, should be on an economic basis. No money should be spent for such purposes unless there is the possibility of increased returns, equal at least to the interest upon the principal expended, and the possibility of recovering the latter.

It is quite possible that there are orchards in California that harbor no serious pests, or at least none that can with profit be controlled. The ravages of red spider, scale insects, aphids, twig borer and—in the case of pears, walnuts and apples—the codling moth, must be considered—together with plant diseases—as a hindrance to profits. These, coupled with drought, however, are sufficiently serious in most orchards actually to reduce the yield, perhaps to the point where the returns will not pay for harvesting the crop. These are the conditions we should study.

Let us consider, first, the control of red spider; for if spraying is necessary, the same program that will control this pest will also check most others common to prunes, plums and peaches.

TWO APPLICATIONS NEEDED

Two applications of lime-sulfur solution, one in the winter and the other in the summer, will in most instances be sufficient to control the two or three species of red spider which may be present, besides serving to check the twig borer and fungus diseases, such as shot-hole fungus and peach leaf curl.

If the latter are not present, but the winter egg of the brown mite or the citrus mite is in evidence, then an application of crude oil may be substituted for the winter application of lime-sulfur. This will slightly increase the expense for materials, if a prepared emulsion or miscible oil is used, rather than a home-made emulsion.

If aphids are present, nicotine sulfate may be added to the summer spray, increasing the cost about $1.50 per hundred gallons. The expense of application will, of course, remain the same, irrespective of the combination used.

The full value of a spray program is not usually realized the first year, as it continues to increase until a state of pest control is reached under which trees may reach maximum production. This is not attained the first year, as the general condition of the tree and the food stored in it are largely dependent on the prevailing conditions of the previous year.

It also is very difficult to control certain types of pests during the first year's control work, because the value of spraying frequently accumulates from year to year. For example: One thorough application of crude oil may control the brown mite for two years.

An estimate of yields in sprayed and unsprayed orchards, together with the cost of spraying, has been prepared as a basis for estimating the value of such applications. The bud development under these treatments also has been considered.

Prune Twigs, Showing Effect on Bud Development of Spraying and Irrigation. See Text for Explanation.

Cost of spraying one acre of almond trees with winter and summer spray of lime-sulfur to control red spider, twig borer and shot-hole fungus.

Cost of applying spray: Per day for nozzle man, $4; for driver, $1.50; for team, 50c; for operating engine, $2; for depreciation of spray outfit, $2; total, $12 per day for applying 1600 gallons—75 cents per 100 gallons.

Cost of spray material: Lime-sulfur solution, at 21 cents per gallon; winter spray, 10 gallons lime-sulfur concentrate to 100 gallons of spray, $2.10; application cost, 75 cents; total, $2.85. Fifteen trees at $2.85 equals 19 cents per tree; 19 times 50 equals $9.50 per acre, the total cost of winter spray.

Summer spray: Two gallons lime-sulfur concentrate, 42 cents; five pounds sulfur, 25 cents; one-half pound calcium caseinate, 12 cents; total cost of 100 gallons of material, 79 cents; application cost of 100 gallons, 75 cents; total cost of materials and application, $1.54. Fifteen trees (to 100 gallons of spray) at $1.54 equals 10 cents per tree; 10 times 50 (number of trees per acre) equals $5 per acre, the total cost of summer spray.

Cost of winter spray, $9.50 per acre.
Cost of summer spray, $5 per acre
Total cost of year's spray, $14.50 per acre.

Returns per acre from sprayed and unsprayed trees:

Unsprayed orchard damaged by red spider, twig borer and shot-hole fungus: Average yield, 300 pounds per acre; price, 12 cents per pound; estimated net returns to grower—against which growing expense is charged—$36.

Sprayed orchard: First year, 600 pounds at 12 cents equals $72. Expenses: 4 cents per pound for hulling and harvesting, plus 4.8 cents per pound for spraying ($14.50 divided by 300); 8.8 cents, charged against 300 pounds increase, equals $26.40. This leaves $45.60 net returns to cover growing expense.

Second year: 800 pounds at 12 cents equals $96. Expenses: 4 cents per pound, hulling and harvesting, plus 3.6 cents per pound, spraying, equals 7.6 cents, charged against 400 pounds increase, $30.40.

Net returns to cover growing expense, $65.60. *(Continued on Page 6)*

Looking After the Farmers' Interests at California's Capital

How the State Legislative Commtitee Functions—Success Proves Soundness of Plan

By R. N. WILSON
Executive Secretary, Agricultural Legislative Committee

IF WE could start some morning before the legislative sessions open at Sacramento and visit a hotel lobby, we would find many groups of persons, chatting, conniving and planning their work for the day.

We would see 10 or 12 men in earnest conversation in one corner of the lobby, and I would tell you that those are the truck and bus interests; the two men we saw eating in the dining room are lobbying for the druggists; the pretty widow smiling entrancingly into that senator's face is opposing capital punishment; the man with the whiskers is protecting the interests of the real estate men; the two women talking with an assemblyman want a new community property law; those six men gesticulating wildly represent union labor; two chiropractors are conferring with an osteopath, and on the opposite side of the room is an M. D.; representatives of the steam and electric roads have buttonholed a couple of assemblymen. Others represent the oil men, auto clubs, supervisers, peace officers, warehousemen, fertilizer manufacturers, and many other interests.

Most of these persons stay here for the entire session, and when they have an important bill up before committee or for passage on the floor they may have from one to 15 or 20 others come in to help them.

These so-called lobbyists have at least two important legitimate functions: First, to sponsor legislation which will encourage the expansion, growth and well-being of their particular businesses, and possibly to secure appropriations for them; second, to protect these businesses from the legislative proposals of the well-meaning but misguided, the avaricious and the ignorant.

Some of the most vicious measures proposed, so far as agriculture is concerned, have been introduced without a thought of harm to agriculture. This was true of a bill introduced at the last session which would have limited the cold storage of food products to 30 days, the passage of which would have created a havoc that it is difficult to imagine. Another instance is of a measure introduced at the previous session which would have required the farmer to market his crops, regardless of whether or not it was profitable to do so.

The California Agricultural Legislative Committee is made up of 35 large commodity organizations, representing some 65,000 farmers, who do an annual business of more than $200,000,000. Most of these associations are co-operative selling organizations, although there are a few of the non-selling type, such as the Wool Growers' and Cattlemen's Association.

Each has one representative on the board of directors. The selling organizations are assessed on the basis of the f. o. b. value of the products sold, the more recent yearly assessments being at the rate of $50 for every million dollars' worth of business transacted.

It is recognized that the non-selling type of organization usually has difficulty in adequately financing itself; therefore a flat minimum fee is levied equal to the amount which would be assessed if the association did a million dollars' worth of business annually. For instance, the Wool Growers' Association has been contributing $50 per year, although the total sales of individual members no doubt greatly exceeds a million dollars.

REPRESENTATION IS CHEAP

Striking an average, we find that each farmer represented in the whole committee has contributed approximately 20 cents per year toward the support of the committee. Though this may seem to be a small amount, it has nevertheless proved ample and has made us sound financially, a condition most likely to be lacking in a farmers' organization.

When the Agricultural Legislative Committee was formed four years ago there was a pressing need for agriculture as a whole to have some representation at Sacramento. We wanted to get on a businesslike legislative basis, as had been done long since by industry, labor and other great groups of workers.

We now have been through two very busy and successful sessions and already are preparing for the next one. We have carefully marshaled our facts and figures and presented them in an orderly fashion at the opportune moment without loss of time or expense; carefully analyzed all agricultural bills, through a good attorney we have avoided many technical errors in the preparation of agricultural measures; we have issued news letters throughout the sessions to some 2000 farmers in all parts of California, keeping them intimately informed of the progress of bills, and we have maintained a man everlastingly on the job to care for the multitudinous details which always arise.

AIDING GOOD LEGISLATION

At the last session of the Legislature there were introduced more than 100 bills which pertained more or less directly to agriculture. We were successful in aiding the passage of more than 30 of these, which represent very material progress for agriculture, and were influential in blocking a large number of others which were of an adverse nature.

One of the most important features of our work is that all of our agricultural people stand together, whether they raise nuts, fruits, beans, cattle or sheep. We have maintained a pleasant, working relationship with the Farm Bureau, the Grange and the Farmers' Union.

At the last session of the Legislature the sheepmen, for example, were primarily interested in 12 or 15 measures, the most important ones relating to predatory animals, shortening the deer season, protection from bear, requiring that hunting dogs be held on a leash, migratory chattels, cold storage, transfer of the livestock sanitary work to counties, placing warehouses further under the jurisdiction of the Railroad Commission, poisoning dogs, and protection of owners of animals killed by railroads.

Some of the desirable bills, such as appropriation for predatory animals work and the migratory chattels measures, were *(Continued on Page 9)*

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TO SERVE—All those who, for pleasure or profit, engage in any branch of the basic industry—AGRICULTURE.

Farmer's Viewpoint

WATERING THE COMMUNITY HORSE

It is easier to lead the neighborhood horse to water than to make him drink, in the opinion of W. P. Whitsett, San Fernando Valley community builder. Whitsett is one of those far-sighted financiers who realizes that the prosperity of a city in an agricultural district is based upon the well-being of the farming industry.

In helping build up a profitable system of agriculture in the vicinity of Van Nuys, Whitsett decided that substantial provision would have to be made to maintain soil fertility. Dairymen and poultrymen, therefore, were encouraged to ply their paying trades in that section.

Well and good; but now these cow and chicken farmers are selling their manure to citrus orchardists, who haul this valuable material out of the valley. Brought to the point where they are invaluable to the community in the maintenance of soil fertility, dairymen and poultrymen refuse to drink to the health and long life of the land on which they live.

Van Nuys district developers are wondering what means they shall employ to bring about desired results.

PLENTY "DOING" ON THE FARM.

The belief of many city residents is that farm life is dull and stupid. These persons attach great importance to such things as reading the details of the latest murder trial before the printers' ink is dry; witnessing the premier production of a new "movie"; wearing clothing which if not a little ahead of the times, at least is up-to-datest; dancing all night to the strains of a jazz orchestra, and similar diversions.

Now these things are all right for those who enjoy them, but our quarrel is with the men and women who can't conceive of any other kind of pleasure.

Nothing that happens on the farm goes unchallenged. The day's milk record is a thing of interest; the egg count ranks in importance with the stock quotations. The new hatch of chickens must be seen before they leave the incubator. There are new born pigs to be admired. Farm animals are always performing unexpected and unaccountable antics. Flowers are blooming; trees are fruiting; a hundred interesting things are happening every day.

As a place to avoid boredom we recommend to the wide awake citizen a "quiet" farm.

SUCCESS OR FAILURE—AND WHY?

What are the principal factors contributing to individual failures among farmers? Undoubtedly they are the same faults commonly met with in commercial life: Listlessness, carelessness, lack of thrift and energy, and waste.

Yet, even though many farmers do not grow rich, there are comparatively few actual financial failures. Study the statistics of any court and find how small a proportion of farmers is represented in the bankruptcy and receivership records.

Of retailers, wholesalers, manufacturers and professional men there are many, but the farmer who cares to "stick," even though he be in deep water, usually finds a way to renew his obligations and carry on. Why? It is because his home and business are one, and his work productive and creative.

But in any event, brains are as essential to success in farming as in any other occupation. The mind should control events in agriculture, just as in commerce. Parents who advise their children against following an agricultural career are creating a wrong impression; the man who has it in him to succeed will achieve in his chosen occupation, no matter what it may be.

Mind must come before muscle; brains before brawn. New ideas are worth more than traditions. Agricultural opportunities are greater right now than ever before.

What's New? — Keeping Abreast of Agricultural Progress

Milkmen Serve Santa Claus

DAIRY workers in the Chicago district contributed more than $8000 to bring Christmas cheer to needy families. Wives and daughters of workers accompanied drivers on December 24, delivering food, toys and clothing, which had been purchased in wholesale lots with the contributed fund.

Wild Horses in Oregon

WILD horses are increasing so rapidly in Central Oregon as to become a menace to the range needed for sheep and cattle. The horses originally came from stock turned loose by owners, on account of unprofitable prices, and have deteriorated until many are worthless. In the Pine Mountain district alone 1000 wild horses are reported.

Growing November Peaches

SEVERAL boxes of fine, fresh peaches were picked and sold for high prices in November by Percy Daynes, Fairoaks (Sacramento Valley) orchardist. The tree from which the fruit was gathered is a seedling. The peaches are large and freestone, highly colored and somewhat resemble the Muir in flavor. They are inclined to be meaty, rather than juicy, owing to the season in which they mature.

Cubans Eat American Eggs

DURING the first ten months of 1923, ten million dozen eggs were shipped into Cuba from the United States; while half as many were sent to Canada and five million to Mexico. These exports more than offset the 15,000,000 pounds of dried and frozen eggs which this country imported from China during the same period. Oriental eggs imported showed a considerable falling off the past year.

Replacing Wheat With Flax

THE area of flax grown in the United States increased a million acres in 1923, yet it is probable the crop will supply only half the domestic demand. More flax is grown in this country now than at any other time in the past ten years. The present tariff of 40 cents a bushel on flax seed encourages American farmers to grow this crop, which is being found more profitable than wheat.

Shipping Record Citrus Crop

IT was estimated that the present California citrus crop available for Eastern shipment would total between 70,000 and 75,000 carloads, the largest in the history of the State, but recent frost damage will reduce this amount somewhat. The 1922-23 crop shipped from California was about 60,000 carloads.

Shipments of Navel oranges from Central California started November 1 and will continue until April, when Valencias are ready to market. Southern California begins shipping Navels the first of the year; Valencias, May 1.

New Potato Selling Plan

YAKIMA VALLEY, Wash., potato growers contemplate wrapping extra fancy tubers in paper and packing them in small boxes. This product is to be shipped through the Panama Canal to New York and other Eastern markets. The transportation cost would be $1.25 per hundredweight, but it is believed this high freight charge would be more than offset by the good prices received.

In 1922 Yakima growers raised on their National Irrigation project 8000 acres of potatoes, which averaged 260 bushels per acre. On account of low prices, they lost money on the crop, part of which was dumped back onto the fields.

Chili Furnishes Fertilizer

CHEMISTS recently have perfected a new process for preparing a concentrated, economical fertilizer from the nitrate fields of Chili. The new product is approximately two-thirds nitrogen and one-third potash, the two kinds of plant food most needed by average soils.

As much potash as there is in 100 pounds of German kainit (widely used in the South) and as much nitrogen as there is in 100 pounds of nitrate of soda is contained in only 100 pounds of the new Chilian chemical compound, which is a veritable "two-in-one" fertilizer. It contains 18 per cent ammonia and 12 per cent water-soluble potash. The latter is in the form of a nitrate, instead of a chloride like most German potash salts—this being an advantage for fertilizing sugar beets and potatoes.

Results of Free Area Work

IT is scarcely a year and a half since free area work was inaugurated in Modoc and Lassen Counties, yet in that time more than 100,000 animals have been tuberculin tested. Out of this number 503 were found to be tuberculous and they have been branded and slaughtered.

The work in these areas has progressed very smoothly. Very few cattlemen have offered even the slightest objection to the testing of their cattle or the branding of reactors.

When an area has been declared free of tuberculosis, cattle shipments may go forward to other States without the inconvenience of having the animals tuberculin tested. Many inquiries from prospective buyers already have been received by cattle owners of Modoc and Lassen Counties, indicating that there is an increasing demand for dairy cattle known to be free from tuberculosis.

Color Apples on Tree

A SUCCESSFUL experiment in coloring apples on the tree was conducted the past season at Wenatchee, Wash., by the American Fruit Growers. Large squares of white beaver board were placed under trees in such a position as to reflect the afternoon sunshine onto the underside of the apples, the color of which was increased appreciably thereby.

Ship Apples to Hong Kong

HONGKONG furnished an excellent market for American apples, the entire supply, 12,000 boxes annually, coming from this country, according to the U. S. Consul in that city, Leroy Webber.

Purchases are made direct by local firms. Contracts with growers are signed up in July or early August. Payment is made upon delivery of goods at destination. There is no import duty. The freight is $30 a ton for refrigerated space.

Apples intended for the Hongkong market are of extra fancy stock, wrapped in paper and packed loose, instead of tiers. From 175 to 200 apples are packed in a bushel box.

"Piping" Inferior Walnuts

A GREAT many walnuts that are unfit for human consumption are being offered for sale, according to E. J. Lea, director of the pure food department of the State Board of Health.

Rancid and wormy nuts often are sold in sacks which are filled with a pipe in the center, into which the inferior walnuts are poured, the space outside the pipe being filled with stock that will pass inspection and the pipe then withdrawn. Cull potatoes used to be "stovepiped" in a similar manner.

Dealers selling wormy or rancid nuts are liable to prosecution under the Pure Food law.

Surveying Wayside Markets

THE success of wayside farm markets depends largely upon the intelligent use of bulletin boards, in the opinion of the National Farm Market Bureau, which has been conducting an exhaustive investigation of these enterprises. There are nearly 500,000 farm markets in the Unitedd States, it is estimated.

Of the 5500 markets about which information was secured, one-half are making $1000 or more annually, 14 per cent reporting a yearly net profit of $5000. More than 300 market managers make enough money to enable them to spend their winters in Florida or California; 2200 have bought autos with the profits of their business, 2600 have purchased musical instruments and 700 have installed radio outfits.

"THEY SAY"

J. L. QUAIL

J. L. QUAIL

Merced County Farm Adviser.

MANY farmers and others have a false impression of the work of the County Agricultural Agent.

We do not, as some persons suppose, devote all our time to production problems. In fact, we strive to deal equally with the four major questions in Agriculture: Economical Production, Improvement of Quality, Community Betterment and Marketing.

In my estimation, present problems of the fruit growers and other producers can best be solved by closer co-operation in marketing and by earnest effort to raise the quality standard of all farm products, particularly fruits. The past season has emphasized as never before the willingness of the consumer to pay for quality, and the difficulty of selling large quantities of inferior stuff at a price that will pay the cost of production.

Unfortunately many producers are inclined to become discouraged by a season or two of low prices, and to withdraw their support of growers' marketing agencies. If we would only make a stronger effort at such times to sustain the associations and take a hand in remedying their defects, instead of branding them as inefficient, I am sure we would all be much better off in the long run. We Americans, perhaps, are too proud of our individual independence. It sometimes prevents our pulling together as we should.

In our county the fruit situation has stimulated interest in dairying and particularly poultry raising. Mr. Allison, my assistant, recently held a meeting of poultry breeders at the suggestion of D. I. Castile of Le Grand, for the purpose of forming an association.

There are no less than twelve well-known breeders at Delhi, five at Dos Palos, three at Gustine, five in the Hilmar (Turlock) district, two at Le Grand, one at Planada and one at Stevinson—indicating the widespread interest here in this industry. Indications are that Merced County, heretofore comparatively a minor factor in egg production, will assume increasing importance as a poultry district.

Growing Berries in California

How to Plant and Cultivate Strawberries, Blackberries, Raspberries and Loganberries

By M. K. ZIMMER

SMALL fruits grown for family use may be grown on all fertile soils. The growing for market purposes on a large scale involves the quality and depth of soil, the climatic conditions, the accessibility of water supply and the transportation to market.

Ground must be fertile to obtain good growth and production. Soil that lacks depth usually leaches easily and it would make little difference how much fertilizer was used, because continued application must be resorted to in order to keep the vines bearing. Therefore, light soils should have liberal amounts of barnyard manure or humus applied to aid in the retention of both fertility and moisture.

Deep plowing for the commercial field and deep spading for the home garden, followed by thorough harrowing or raking, is necessary, as this completely pulverizes the soil, making a deep seed bed for the young plant. This is important, because subsequent cultivation must necessarily be shallow.

STRAWBERRIES ARE ADAPTABLE

Strawberries can be grown any place in California where the conditions mentioned prevail. The variety to be planted should be determined largely by the locality. Sorts that do well in the southern part of the State might not do well in the northern part, and vice versa. It is a good idea to seek the advice of a reliable local nurseryman before planting in your particular locality. One or two other varieties may be set out for experimental purposes.

The Banner strawberry is most popular in the northern part of the State, with Klondyke as a good second. In some of the interior valleys the Dollar is almost exclusively raised. In Southern California, Carolina, Progressive, Klondyke and Brandywine are the leading varieties grown.

All these sorts are perfect flowered berries and will not need cross pollinization.

Moisture may be retained near the surface of the soil by persistent, shallow cultivation, or by mulching, and by constantly destroying the weeds during the summer months. Frequent irrigation to meet local conditions will be necessary, but less water will be needed if the ground is frequently cultivated.

BLACKBERRY A FAVORITE

Runners constantly must be removed in order to maintain maximum production, allowing only enough runners to remain on the plants to keep the rows well filled. Strawberry beds can be made to bear good crops for a period of years by this renewing method.

The blackberry is a favorite on all California markets. The fruit is easily grown and yields abundantly with little irrigation, although it responds generously with better quality fruit if moisture is applied. Should the grower fail to get good, plump, glistening fruit and a fairly strong, new cane growth, this indicates that water is needed.

Commercial growers usually make rows six or eight feet apart and set plants three feet from each other in the rows.

For the home garden, a half dozen plants set three feet apart should supply the average table. Blackberries reproduce themselves very rapidly and soon fill the rows with canes.

Cultivation should be shallow and often. Shallow, because cutting into the roots by deep plowing lowers the vitality of the vines and increases the number of canes; often, because frequent cultivation keeps the moisture close to the surface. An occasional deep cultivation should be made to prevent the soil beneath from getting too hard. Frequent use of the hoe will keep the vines free from weeds.

At planting time the vines should be cut back close to the surface of the soil. When new, strong canes are produced they should be pinched off about three feet high. This will make them stock and enable them to stand alone.

If the trellis plan is adopted the canes should be allowed to grow from five to six feet and then pinched off. This will cause lateral growth, which, in turn, will produce fruit buds for another season. Surplus canes should not be allowed on the plants and only enough canes allowed to remain to produce fruit for the coming year.

Blackberries revel in rich soil; therefore, a liberal amount of barnyard fertilizer should be applied annually. When this material is not obtainable, refuse, with a small amount of commercial fertilizer added, may be substituted.

RASPBERRY VALUABLE FRUIT

The raspberry is another valuable California small fruit. It thrives over a large portion of the State, there being but few sections where it will not grow, due to a lack of moisture and excessive heat. But even in these hottest portions of the State raspberries can be grown successfully, if the vines are planted in protected, shady places.

The raspberry always brings a high price on the fruit market and holds a substantial place on the pantry shelves in the form of jams and preserves. There is no good reason why the housewife should have to purchase this fruit when it can be easily grown.

The culture of the raspberry is very similar to that of the blackberry. It is a heavy yielder and with the advent of the everbearing type, it is now possible to have the fruit on your table nearly every month of the year. The red varieties, which are chiefly grown in California, reproduce largely from suckers from beneath the ground, hence the necessity of shallow cultivation. The process of renewing the patch is like to that of the blackberry.

CUTHBERT POPULAR VARIETY

The Cuthbert is by far the most popular throughout the State, especially as a commercial variety. The St. Regis for the home garden is preferred because of its quickly coming into bearing after planting and its long continued bearing season. The La France is a new everbearing variety recently introduced. Because of its great size and high quality of flavor it is growing in favor. Just how it will stand the climatic conditions throughout the State, is not yet definitely known.

The loganberry is a cross between the wild blackberry and the red raspberry. It is a valuable fruit in all parts of the State. Its characteristics make it most desirable for juices and jams. The vine is a robust grower and produces remarkably long canes.

The shape of the fruit is similar to that of the Mammoth blackberry and in color to that of the dark-red raspberry. The flavor is peculiar, in that it resembles both blackberry and raspberry. The culture is similar to that of the blackberry. It reproduces itself readily from cane tips.

A closing thought: Berries are heavy producers and in great demand, both at home and in the market place.

Indian Basket Work

"WHITE people have no idea how much work it takes to make Indian baskets," declares Ben White, Round Valley Redskin, who had charge of an interesting exhibit of baskets at the 1923 Mendocino County Fair.

White explains how it was necessary to dig fern and hazel roots to make some kinds of baskets. These roots are carefully smoked or dried in ashes, it being necessary to cure the material as carefully as a blacksmith tempers steel.

In order to obtain one kind of grass needed for fine work, long trips must be made to the higher ranges of mountains. Leaves of this grass are split with a horsehair, a very delicate operation.

Hazel and willow branches are largely used in weaving baskets. Heavy, cone-shaped pack baskets have a strong willow rib bound with buckskin around the top. Six weeks' hard labor is required to make one of these baskets, which sells for less than one week's wages for a white person. "Yet buyers complain about our prices being high," protests White.

With one of these large pack baskets, a squaw will carry 200 pounds. The men sometimes earn $4 a day working for the farmers and orchardists of Lake and Mendocino Counties.

White, whose parents saw the coming of the first pale faces to Northern California, explains the lost art of making arrowheads, which was practiced with a piece of flint. A piece of thick buckskin protected the palm of the worker's hand from the stone, which was used to chip pieces off the arrowhead being formed.—O. H. B.

MANY WATER PERMITS

Sixteen permits to appropriate water, mostly for irrigation purposes, involving estimated expenditure of nearly $150,000, were issued by the California State Department of Public Works during the month of September. Applications filed during the same month numbered 34 and involved estimated expenditures of a total of $125,000. A number of the applications were for mining and domestic supply.

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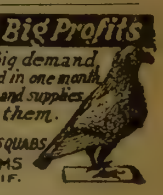

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Try Some Tangier Peas

THROUGH the Kern County Farm Bureau at Bakersfield Tangier field pea seed may be obtained of P. A. Ingvason, who has a large seed farm west of Fresno.

Two years ago the writer examined a test plot of this crop at the Oregon Experiment Station, where the peas made a most remarkable growth, outyielding all other forage crops in both green and dry material.—O. H. B.

More Country Children

OUT of a United States farm population of 30,000,000, 7,700,000 are children under 10 years of age, compared to 5,700,000 boys and girls of the same age in cities having a similar population.

"It will thus be seen," points out Dr. C. J. Galpin of the U. S. Department of Agriculture, that farms are producing 35 per cent more children than cities, in proportion to population."

Timely Walnut Growing Tips

Supplementary Control Measures for Codlin Moth Advised—Protect Young Trees From Frost

By ROBERT W. HODGSON

Agricultural Extension Service, University of California

IN walnut sections where the codlin moth has become established, growers are at this time of the year interested in secondary measures of control, supplementary to summer spraying or dusting. Until comparatively recently little or no attention has been given to this angle of the codlin moth problem, emphasis being placed almost entirely on summer control measures. During the past two years, however, experience has indicated that fall and winter control measures may be decidedly helpful in checking the pest.

ROBT. W. HODGSON

At this season of the year the pest is in either the larval or cocoon stage and by January 1 practically all of the worms will have spun their cocoons and become dormant. Attention at this season of the year is therefore directed toward measures calculated to find the hiding places where the worms are hibernating, for the purpose of destroying as many as possible. It has been found that one of the principal places where the cocoons occur is in the curing trays and stands. The cocoons sometimes are concealed in the cracks between joints and therefore not readily visible or accessible. One of the principal recommendations for fall control work, therefore, is thorough treatment of all trays and stands in order to make certain that the worms in the cracks are killed.

KILL WORMS WITH STEAM

Several methods are in common use. In Santa Barbara County a portable steam tank which will hold ten or more trays at one time has been devised. It is operated by the horticultural commissioner and all growers are compelled to have their trays treated. Immersing for a few minutes in live steam has been found to kill all the worms.

In other sections growers have constructed galvanized iron vats in which water is kept boiling, and the trays, two or more at a time, immersed for five to ten minutes. In order to make doubly certain, growers in some sections add lye to the water. Thus far, fumigating trays under tents have not been found to be successful and the dipping method is the only one which can be recommended. Growers also are advised to clean out thoroughly curing sheds.

Banding the trees with burlap strips twelve inches or more wide rapidly is coming into prominence, it having been found that many of the worms use the bands as hiding places for the cocoons. For best results, however, the bands should be applied rather early in the fall and it is doubtful whether applying the bands at the present time will do much good for the current season. The bands are removed occasionally and all cocoons destroyed by crushing.

A minor control measure, which is now being recommended on the basis of this year's findings, is the cleaning out of all old pruning wounds, in the decayed cavities of which many of the worms will hibernate. It also is recommended that prunings be burned immediately, instead of being permitted to lie on the ground during the winter months, as they have been found to harbor worms.

SUPPLEMENTARY CONTROL

At a recent meeting of growers interested in the subject of fall and winter control measures, W. B. Hooper, extension specialist in walnut culture, pointed out that growers should not lose sight of the fact that fall and winter control measures are merely supplementary and not primary. He urged growers not to forget that after all the principal means of controlling the pest consists of either spraying or dusting in early summer.

In many walnut sections one of the principal problems confronting the prospective planter is that of establishing the orchard and successfully bringing the trees through the first three or four years, to the point where they are safely past the period of injury from early fall or late spring frosts. While it is true that frost injured young trees successfully can be rebuilt, this involves considerable delay and trouble, and by far the most satisfactory plan is to provide protection sufficient to bring the trees through safely to the point where they are large enough successfully to resist frost injury.

Various methods have been used with more or less success. Experience has shown that perhaps the best method of affording satisfactory protection against frost injury is by the use of cornstalks, or other material of a similar character, tied firmly about the trunks of the young trees and extending from the ground up to a distance of at least six feet. Plenty of cornstalks should be used, to afford good protection, and they should be tied firmly, close to the ground and at several points farther up.

A practice which some growers have used, with results which are reported to be very satisfactory, is the tying of burlap sacks over the tops of the young trees, bringing the sacks well down over the upper ends of the cornstalks. Another method which is being used extensively in some sections is wrapping the trees with burlap cut in strips three to four inches wide and wound spirally about the trunks to a height of five to six feet.

Not only do these methods protect the trees against early fall and late spring frosts, but they also serve to protect them against sunburn and drought injury. Some means of protection against these difficulties is worth-while insurance which every grower with young acreage would do well seriously to consider.

Oregon Apples Sell Well

IN spite of the magic of the name, "California," fancy Sebastopol Gravensteins this year brought growers only 70 cents a box, according to the Sebastopol Apple Growers' Union. Eight carloads of Gravensteins grown and shipped by Charles H. Castner of Hood River, Oregon, to New York brought—for the same grade—$2.65 to $3 a box. This netted the grower $1.60 a box.

Cost and Results of Systematic Spraying

(Continued from Page 3)

Profit per acre from spraying first year, $9.60.

Profit per acre from spraying second year, $29.60.

Estimated California average production with good care and favorable conditions, 900 to 1000 pounds per acre. Average yield per acre, 1916 (assessor's report), 240 pounds; 1919, (assessor's report), 315 pounds.

A more striking difference in the returns from spraying than that given for almonds has been found in control work on prunes. The winter application may sometimes be omitted, as prune trees seldom are attacked by fungus diseases and less frequently by the brown mite.

Necessary spraying may include but one summer application, the cost of which would be similar to that of spraying almonds. The benefits from spraying are seen in larger fruits, which means not only an increased tonnage, but also a higher price, as such fruit is closely graded according to size. The following data brings out this fact strikingly.

The trees defoliated by red spider in one orchard showed a crop loss of 44 per cent by weight and a drop of 3 points in the grading. At this rate of decrease a crop of dried prunes (40-50 grade) of three tons per acre would have lost in weight 1 3-10 tons. The remaining 1 7-10 tons would have depreciated in value from 11¾ cents per pound for 40-50's to 7½ cents per pound for 70-80's, a total loss of approximately $453 per acre.

This same orchard showed a total crop loss from red spider injury of $139.18 per acre (on the basis of three tons of dried fruit per acre), including both the reduction in weight and the depreciation in value of the remaining fruit. The injury to next year's buds, also due to the work of red spider, causes a further loss.

BUD DEVELOPMENT AFFECTED

The bud development in the various sprayed and irrigated plots is a good indication of the thrift of the tree and the amount of food stored for next year's crop, as will be seen by the accompanying photographs. Number 1 is a twig taken from the plot receiving the summer spray of lime-sulfur only and a light irrigation. Number 2 is a winter sprayed twig where the brown mite only was controlled.

The valuation of the buds on these two plots was just the same both in number and weight, showing that the injury of the brown mite is as serious as the two-spotted mite in mid-summer.

Number 3 is from a well irrigated plot, but without spray. This received fourteen inches of water in June. Number 4 is from a tree unsprayed, defoliated in July, then irrigated. It grew a second crop of leaves, but at the expense of the next year's bloom and leaf buds. Number 5 is from an unsprayed, unirrigated check tree defoliated in May.

It will be noticed that Number 3, from the heavily irrigated block, has the best buds, with Numbers 1 and 2 close seconds, while Number 4 shows the poor condition of winter buds after growing a second crop of leaves. Bud development, or rather the lack of it, is shown very strikingly in Number 5.

GOOD CULTURE IMPORTANT

In addition to the spray program, emphasis should be placed on certain cultural practices which will stimulate the tree, making it more resistant. In some instances cultivation may be of as much value as the best of spraying.

No orchard, no matter how well sprayed, will retain its foliage when suffering from a combination of drought and red spider attack. I have known of a number of instances during the past year where orchards were apparently well sprayed, but were defoliated in the dry parts and retained their foliage where the moisture supply was normal.

If the soil moisture is deficient at the beginning of the red spider season it is just as important to irrigate then as to spray. Irrigation is not as important an aid in preventing injury from aphids and scale insects, but even here a tree with ample moisture will withstand the drain of many parasites better than one suffering from drought.

The mid-summer attack of red spider is by a different species of mite than the one on the trees in the spring and early summer. This summer form, commonly called the yellow or two-spotted mite, is dormant in the ground during the winter, but in early spring begins feeding and breeding on hardy weeds, such as malva, morning glory and star thistle.

If undisturbed, these insects increase slowly in number during April, May and perhaps June. As the spring vegetation dries up or dies, they migrate to the orchard trees, which occurs from May to July. In dry, sandy soils this occurs earlier than in deep, moist loams.

PLOW UNDER WEED HOSTS

If the weeds named are present, the orchard should be plowed deep and very early in the spring. Do not allow these native host plants to breed spiders all spring, but plow them under early.

A better plan is to grow a cover crop such as alfilaree, grain or peas and vetch—some plant which does not act as a host—then plow it under in late spring. But be very certain that there will be sufficient soil moisture to induce this growth to decay and not lie there and dry out the soil.

Some orchardists are plowing very early in the spring with the idea of burying the hibernating forms that are usually near the surface. To those interested in this method, I would urge the necessity of working down the newly plowed ground, for, if left loose and lumpy, the mites could crawl to the surface.

The New BULLETINS

AMONG new bulletins and circulars issued by the United States Department of Agriculture the following are deserving of special mention. They may be obtained free on application to the Division of Publications, Department of Agriculture, Washington, D. C. Order by number:

	No.
Hog lice and hog mange—methods of control and eradication	1085
Feeding cottonseed products to livestock	1179
Dairy barn construction	1342
Standard varieties of chickens: the American class	1347
The corrugated method of irrigation	[illegible]
Increasing the potato crop by spraying	1340
Cabbage diseases	1351
The yellow-fever mosquito	1364
Segregation and correlation of characters in an upland-Egyptian cotton hybrid	1144
Chrysanthemums for the home	1311
Root-knot—its cause and control	1345

CIRCULARS

	Dept. Circular	Price
Crop tests as the co-operative testing station, Sacaton, Ariz.	277	10c
Commercial control of citrus stem-end rot	292	5c
The Eelworm disease: a menace to alfalfa in America	297	5c

MISCELLANEOUS

Information for prospective settlers in Alaska (Alaska Agricultural Experiment Stations, Circular L.—Price 10c.)

BOOK REVIEW

A Manual for Spraying, by K. L. Cockerham. The Macmillan Company—New York San Francisco.

This book is designed to serve as a practical reference and guide for the spraying, dusting and fumigation of plants for all insect pests and diseases that attack them.

The text treats fully all phases of the subject, whereas most of the publications treat of particular phases of the subject. The subject matter is tabular in form and is divided into sections and treated by groups of crops, a chapter being devoted to each group. There is also a chapter dealing with the chemical qualities of the insecticides and fungicides used, as well as their thorough preparation for field application. The book is illustrated with half-tone plates.

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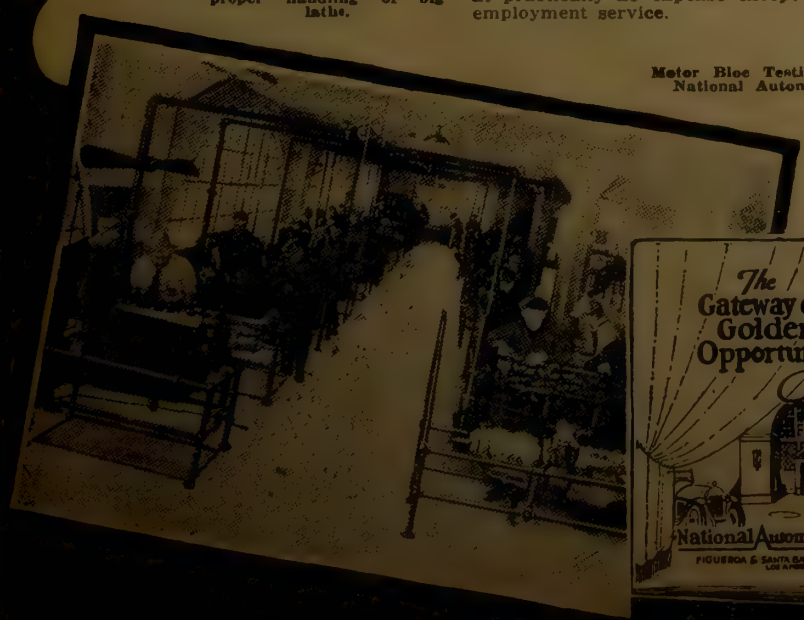

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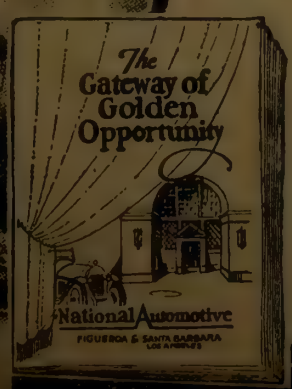

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Egg Storage Law Should Be Revised

By CORNELE G. ROSS

President Poultry Producers of Southern California

A GOOD cold stored egg is just as edible as any fresh egg, as has been demonstrated time after time. It is only due to an unwarranted prejudice on the part of the consuming public that they do not readily accept an egg under the cold-storage label.

It is no doubt true that many of the fresh eggs laid in the hot summer months are in every way inferior to the cold stored eggs which were laid in March and April and properly graded and cared for under refrigeration. The public can be better served and at a material saving in cost, by taking advantage of what science has accomplished in the conservation of perishable food products.

Under the present law an honest grocer will find his high-class, processed, cold stored eggs a drug on his hands, even at a low price, while his dishonest neighbor finds a ready sale for the same eggs, when marked "strictly fresh," at a materially higher figure.

There can be no question that the present cold storage branding law in this State works a hardship upon the owner of first-class cold stored eggs, as well as upon the consumer whom it is supposed to protect.

Any one at all familiar with modern cold storage methods knows that an egg which is perfect when it is placed in cold storage in March, April or May, will remain so until it is taken out in November or December.

Going a step farther, it has been demonstrated that the processed storage egg will remain in good condition for weeks after it is removed from storage.

The law referred to, like many others on our statute books, was passed without any adequate means of enforcement in practical, every day trading conditions.

It is up to the State Board of Health, but that body is very much occupied with matters in other lines and has not sufficient funds at its command to employ additional inspectors.

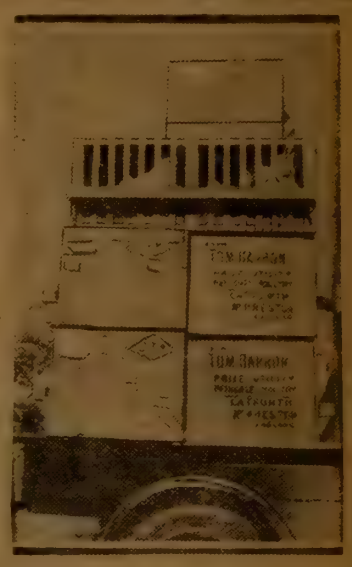
In fact, we doubt very much whether it would be at all possible to prove in court that a given sample of eggs had been in cold storage, especially if such eggs had been processed before being placed in storage.

Why, then, should we continue in force a law which does not protect the consumer, inasmuch as the unscrupulous dealer will sell him cold storage eggs as fresh, resting secure in the knowledge that it would be difficult if not impossible for the State officials to detect and convict any appreciable percentage of such evasions?

Buys British Birds

AN important event in the poultry world was the recent importation of 100 cockerels from Tom Barron, noted English breeder, by the California White Leghorn Breeding Farm near Lankershim (Los Angeles County).

Although the birds were cooped up nineteen days on their 6000-mile trip, every rooster arrived in fine fettle, not one being sick. Milligan and Eckman, who bought the birds, consider this



excellent evidence of health and vigor, a point which they believe to be of great importance in poultry breeding.

The entire importation cost between $2000 and $3000, indicating that there is at least one breeding plant where no expense is spared to secure the very best blood, in this country and Europe.

The California White Leghorn Breeding Farms

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THE WORLD'S BEST

Write for mating list on pedigreed chicks and hatching eggs.

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You can if you know what to say and how to say it. 4 weeks' term opens Feb. 18 at Los Angeles, Rosslyn Hotel Hdqtrs.
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POULTRY and BERRY FARMING in sunny California in the famous Charles Weeks intensive poultry colony will make you a comfortable living on a very little land. Near Los Angeles. Write for literature. CHARLES WEEKS, Owensmouth, California.

IMPROVED POULTRY and fruit ranch in Rio Linda poultry district near Sacramento. On highway near Townsite. Good income. Electricity and plenty of water. Also 10 acres unimproved at $400 per acre. R. COLYER, Rio Linda, Calif.

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FREE!!!—1924 Daily Egg Record. FREE!!! Contains poultry pointers, calendar and ruled pages for the daily egg yield. We want you to have a copy. Send postal and record will be mailed promptly. GOLDEN EAGLE MILLING CO., Petaluma, Calif.

"THE HOME GARDEN," by L. C. Johnson of Pomona, the largest plant grower in California, tells how, when and what to plant, and how to cultivate. Post paid, 50 cents.

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CIGARS—Direct from factory. California's one big best bet. $2.50 for 50 Little Havana Sports, 4½ inch, $3 for 50. Cigar clippings, 65c lb. FRANK MILLER, 1208 West 8th St., Dept. O, Los Angeles, Calif.

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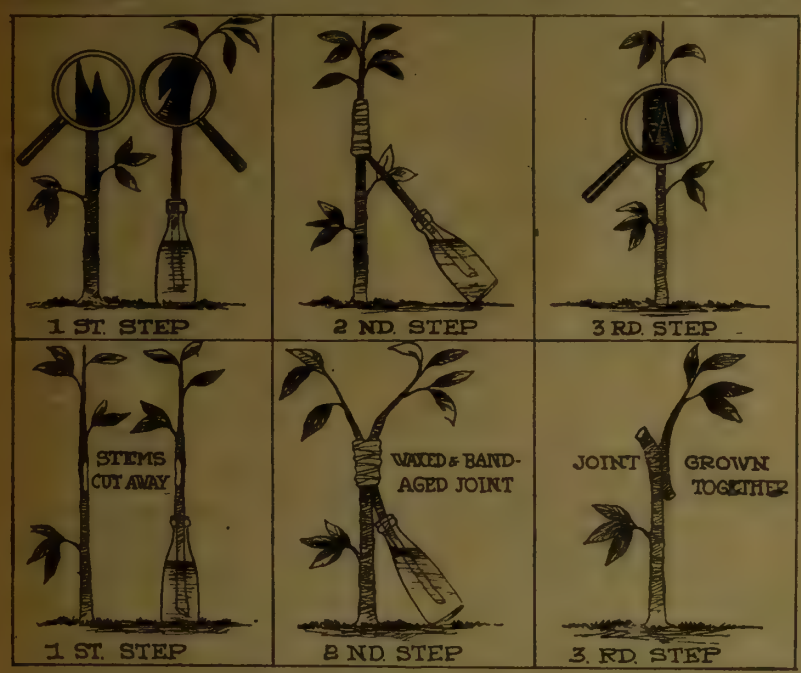
PATENT ATTORNEYS

PERCY S. WEBSTER, Savings Loan Building, Stockton, Calif. Long established organization. Send for free book on patents.

'Nurse Bottle' Grafting Method

E. O. E. KLIPPHAHN, an appreciative reader of ORCHARD and FARM from Grass Valley, sends a description of a unique method of grafting fruit trees. The special advantage claimed for this practice is that it makes grafting possible during the hottest of summer weather, while both stock and cion are in full leaf.



Klipphahn was led to experiment with this style of grafting by pondering over the statement made by Dr. Alexie Carroll of the Rockefeller Institute, that "Any animate tissue will live and grow independently after it has been amputated from the organism of which it was a part, provided all the necessary conditions are supplied artifically."

Instead of cutting the cion at the point of union, the twig is allowed to extend down several inches into a bottle of water, which supplies the needed moisture and keeps the leaves from wilting. In the case of small seedlings the bottle rests upon the ground; where larger trees are top-worked the bottle is supported with a cord or otherwise kept in the proper position.

The union is made in two ways: One consists of cutting away a portion of the bark and wood on both stock and cion and then tying the two flat surfaces together, waxing the joint to exclude air. The other, of cutting off the stock and fitting the end into a notch cut into the side of the cion. The accompanying illustrations make these processes clear.

Klipphahn prefers the latter method. He makes the following suggestions:

"If a narrow-mouthed bottle is used, the evaporation will be very small. The water, however, will become stagnant and should be replaced at least once a week with a fresh supply.

"To find out if the bottle is no longer needed, take it away and if the leaves do not begin to wilt in 20 minutes, the artificial water supply may be removed.

'The seedling should be 50 per cent larger than the cion, to obtain the best results. The bark at the joint should be matched as closely as possible."

Successful California Filbert Culture

(Continued from Page 2)

Pacific Coast nuts are superior to those imported, and that there is a market here for millions of pounds of coast-grown filberts.

Filberts are propagated by layering, a shoot of the last year's growth being bent down and covered with earth. Budding, grafting and rooting cuttings are unsatisfactory methods.

Filberts thrive best in a light loam with a subsoil which holds moisture well. Any soil that will grow a good crop of corn is suitable for filbert culture.

MOISTURE SUPPLY IMPORTANT

In southern localities a northerly exposure is preferable, but good air drainage is more important than direction of slope. Constant and sufficient moisture during the growing season is an essential of heavy production.

The redwood cutover lands of Humboldt and Mendocino Counties are well adapted to filberts. Ocean fogs are a benefit and limestone soils very acceptable.

Elevation is not an essential factor in filbert growing, as the tree fruits in the Sierra Nevada mountains at an altitude of 3500 feet and in the Sacramento valley at 85 feet above sea level.

On poor soils filberts should be planted 15 by 15 feet, or 18 by 18; on fertile soil, 20 by 20 feet; on very rich land, 25 by 25 feet. The roots of young filbert trees dry out quickly in transplanting and therefore the nursery stock should be well heeled in when received and kept moist until the trees are planted.

TREES MUST BE DISBUDDED

In order to save suckering, carefully dig out with the point of a knife all buds at the crown or below at the time of setting.

Before planting, it is a good idea to fill the bottom of the hole with top soil, to which has been added a pound of bone meal or a shovelful of well rotted manure. Set the trees so the crown will be a little above the ground, in order to facilitate suckering, which must be thoroughly done for several years. A mound of dirt should be placed about the crown until the tree is well established.

Head the young tree back 15 to 24 inches and shade the body with a tree protector, or two thin boards placed close to the trunk on the south side. This precaution is necessary to prevent sun scald and subsequent borer damage.

Thorough cultivation of the ordinary kind is essential.

BEST WAYS TO PRUNE

The system of pruning is similar to that practiced with peach trees. Three to five main branches only are allowed to grow and the center of the tree kept open. English growers place a hoop in the center of the young tree and tie the branches to this support. When the tree gets larger the branches sometimes are pulled down and tied to stakes, in order to encourage a spreading habit of growth.

Old wood is removed by pruning and new shoots grown to replace old twigs. An English filbert tree is a rod across, but no higher than a man's head. It is the writer's opinion that quite as good results may be obtained with a tree of more upright growth.

Pruning should be postponed until after the blooming period, in order to give all the catkins a chance to help in the pollinating, which is accomplished by the wind, rather than by insects.

BARCELONA BEST VARIETY

The Barcelona, best variety for the Pacific Coast, should be pollinated with 10 or 15 per cent of White Aveline, Nottingham, Daviana, Du Chilly and Halles. The pollen trees should be planted at regular intervals through out the orchard, or limbs of such varieties grafted onto every fourth Barcelona tree.

For garden or lawn growth, the Kentish Cob is recommended, as it is self fertile and the nuts are large and of fine quality. The Avelines are of the very highest quality. The purple-leafed Aveline, when trained to a single stem, makes a tree of very striking appearance.

GATHERING HOLLY BERRIES

It is unlawful in California to mutilate toyon brush; therefore care should be taken in gathering its red berries for interior decorations. Only the twigs should be cut, warns the State Forestry Department.

Farmer Legislation

(Continued from Page 3)

passed and signed. Other desirable ones were passed, but vetoed. All the undesirable ones were blocked.

EXPERTS AID COMMITTEE

When matters pertaining to the sheepmen were before committees we frequently called on the secretary of the Wool Growers, Mr. Wing, and the president, Mr. Spencer, and sometimes other sheepmen, who gave unsparingly of their time. To them a large part of the legislative progress for the sheep industry is due.

Much disappointment arose over the so-called fish and game bills, some of which were finally vetoed, but it is hoped that these will have better success another time. Altogether, the sheepmen made considerable legislative progress during the recent session.

There are two points regarding future legislative activities which I wish to touch briefly. First, I suggest that the State Department of Agriculture be placed under a Board of Commissioners, similar to the Board of University Regents. The cause for this suggestion is that during the past year our State Department of Agriculture, which has come to function so importantly to the farmers, has been rocked to its very foundation, because of changes in the State Administration.

This is not necessarily the fault of the new Administration, but is rather the fault of our political system, which places our director of agriculture at the mercy of political whims. If a Board of Commissioners could be placed in charge of this department, with members having long terms of 10 or 12 years, the department would be practically removed from political influence and could function efficiently and without interruption, year after year. It now seems probable that this plan will be presented to the people of California at the election next November.

REAPPORTIONMENT NEEDED

The other and final point is the necessity for a legislative reapportionment of the State which will permit the rural districts to retain control of one house of the Legislature. If the constitutional provisions of the Legislature had been lived up to at either of the last two sessions, based on the census figures of 1920, the control of both houses would have passed to the cities.

All of you know that many times it has been difficult and sometimes impossible to pass bills which the farmers thought were perfectly proper and in the interest of all the people. How much more difficult it would be if the control of both houses was held by the cities!

A constitutional amendment providing for a reapportionment which will retain for the rural people the control of one house of the Legislature will probably be presented at the election next November.

In 1920 there were 80,000 more people in the counties of San Francisco, Alameda and Los Angeles than in all of the remaining counties put together; therefore, it will be necessary to present a measure which is so eminently fair that it will attract not only the unanimous support of the rural districts, but a considerable vote within the cities. If such a measure is placed on the ballot it will be to the interest of every California farmer, not only to support it, but to work diligently for its adoption.

New Budding Method

J. L. CULBERTSON, manager of the Limoniera ranch at Santa Paula, is testing a new method of budding citrus trees, which C. C. Staunton, Ventura County farm adviser, thinks is a great improvement on the ordinary nursery practice.

Instead of cutting off the seedling when the bud is inserted, the operator only partly severs the stock and bends over the top. This prevents the usual shock to the root system, which results from removal of foliage, and enables the stock to supply the bud with the maximum amount of sap.

Lisbon lemons budded by the new method made a growth of six to eight feet, compared to 36 to 42 inches attained by trees propagated in the customary manner.

Culbertson is a strong advocate of long pruning and did not head back the young lemons by cutting off the tops. Some of the nurse-grown trees developed natural heads of upright shape, while the no-nurse trees started short, "cabbage heads" typical of average citrus trees. The latter are apt to have sprawly, droopy tops, the result of mistaken methods of nursery propagation and pruning, in the opinion of the Limoniera manager.

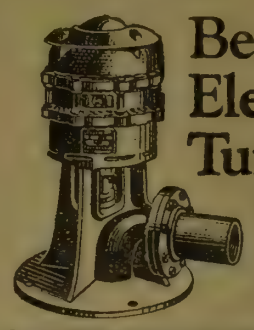
Sell Grapes Sweet

HAROLD L. POMEROY, Kern County Horticultural Commissioner, makes the following suggestions for improving the market for sweet grapes:

At the time the first Thompson Seedless grapes reach the Eastern markets they are not sweet and palatable; consequently buyers and consumers, after making one purchase, decide to leave them alone, waiting a week or longer before purchasing any more.

In the meantime, a large number of cars are started to the Eastern markets and with practically no sales in sight the market goes to pieces before active buying is resumed. If the legal sugar content were raised, the first grapes shipped East would be sweeter and more appetizing, they would be readily sold and the buying public clamor for more and make regular daily purchases in large quantities.

It has been ascertained from various shippers why the market became demoralized so early this past season, practically all replies being to the effect that the legal sugar standard is too low, that it should be raised from 17 to 19 or 20 per cent.



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Start Right in Rabbit Raising

How to Make a Real Success of Rabbit Culture, Either for Pleasure or Profit

By GEORGE GREEN
Secretary Southern California Rabbit Association

IN starting to raise rabbits there are several things to be considered before buying stock. First, the accommodation for housing and taking care of the animals. Take into consideration the fact that a few rabbits soon produce quite numerous young and that when the latter are about three months old the bucks will have to be separated from the does. A month later each rabbit, if kept for breeding, will require a separate hutch. Therefore, if you are going into the business on a large scale you will need much room.

GEORGE GREEN

The kind of rabbits to keep is a question to be settled by yourself. Go around to different breeders; see their stock and listen to what they say. By the time you have seen the various breeds, you will have made up your mind which kind will be most profitable and can be accommodated best in your rabbitry. There are about 24 different kinds of rabbits, although all of those breeds are not to be found in California.

How many rabbits can you take care of properly, giving due thought to the fact that you are "going into" rabbits to make money and at the same time keep on working at your regular vocation? All your attention to the stock must be given in the mornings before you leave home and in the evenings after return. If you have a lot of stock to care for, day by day, after you come home tired in the evening, you may soon get weary of the work and neglect the rabbits.

TWO CLASSES OF RABBITS

There are two classes of rabbits: Fancy and utility. The fancy rabbit is really the foundation of the business, and is kept for show purposes. The stock that does not quite come up to the ideal specimen for the showroom is sold to the producers of utility or meat animals.

There are quite a number of real fanciers who breed the very best stock and work out plans for the improvement of their breed or breeds and enter their best specimens at the various shows. If you visit the various fairs where these shows are held you will see what care and perseverance will do in bringing the various breeds to perfection.

There is a great deal of pleasure to be derived from this part of the industry and considerable profit. There are very few really perfect specimens in the rabbit world, although you will see many animals in the showroom that appear flawless.

The breeder who raises fancy rabbits gets more for individual specimens than the utility breeder, which is only fair, as he has perfected his stock and knows the young from his animals will breed true to color, shape and quality.

BREEDERS PRODUCE MEAT

A breeder can use his fancy stock for meat purposes himself, reserving the very best for show purposes. He knows that when his does produce a litter the young will be very even in size and all grow into good, strong rabbits, all ready for market at the same time. Fancy

rabbits do not have to work as hard as the meat stock; that is, they are not bred as often as those which must be grown to keep meat orders supplied. Therefore, the former can be kept in better condition and are a pleasure to show to friends and visitors.

Anyone who wants to keep rabbits for enjoyment and who has a business to attend to cannot do better than to grow a few real good specimens and give them fairly careful attention. His stock will yield a nice profit, besides supplying the finest kind of meat for the table at all times.

Keeping rabbits for meat only is quite another matter. If you expect to make a living at this business you will have to devote all your time to it. Quite a number of people are making a very good livelihood in this way, selling stock to the meat man who calls regularly as soon as fryers are available. The latter are sold, live weight, and must weigh about four pounds, which is twice as much as they will dress.

DEMAND FOR MEAT STOCK

I do not know whether rabbits can be sold elsewhere in this way, but at Los Angeles and for about 100 miles around you can sell all you can raise in this manner. Collectors for the various dealers never seem to get enough rabbits.

If you have never kept rabbits before do not start this kind of work with a lot of stock. Just "try your hand" with a few; say, about 12 does and two bucks. Start sometime before you are ready to devote all your time to the business. If there is a local rabbit association in your district, attend the meetings and join the organization. Ask questions. You will receive much help and useful information in this way.

Purchase stock from reliable breeders, who will also give you many useful hints.

Breed all your does and when the young arrive cut down the litters to six. If any of the does should have less than six you can increase them to that number from extra large litters. You may later bring up litters of seven to eight, but do not have more than six at first.

Keep the young with the does for eight weeks, then take the doe away from the young and breed her again right away, returning her to the hutch.

Do not take the young rabbits away from the doe. Let them stay in the hutch where they have been since they were born.

Sell off all the bucks unless there are any extra fine specimens that you wish to keep for show or breeding. Let the rest stay in the same hutch till they are three months old; then if any bucks are left take them away from the does.

KEEP DOES IN PAIRS

Put the does in pairs in nice, roomy hutches, and let them grow up there for your future meat producers. If they set to fighting you will have to give them separate hutches, but if you keep them where there are no bucks they can see they will usually live contented together till they are ready to breed, which is about seven months old.

In this way you will build up a good stock of does for future use and in the meantime you can be on the lookout for some good bucks to mate with these does. Provide one buck to eight does. There is no limit to the number of rabbits you can keep for meat, provided you take good care of them.

Do not spend a lot of money on elaborate buildings, hutches and stock, but build up the business as you go along. So many have started in the rabbit business in a large way with no experience, and have failed to make a success of it. What is worse, they have been giving the industry a bad name ever since, whereas if they had started on a small scale and asked a little advice from those who know rabbits and who are always willing to impart their knowledge to the beginner, they might have made a success of rabbit culture.

Molting White "Orps"

I THREW my White Orpington hens into the molt this year, commencing in June, by giving them only alfalfa pasture and a light, thin mash. They stopped laying for a short time the last of June and July.

I am getting three times the eggs this year that I did last year, with the same number of hens. I am greatly pleased with the result and expect my hens to continue to lay through the winter.

I have good, well-ventilated sleeping quarters, with plenty of litter to scatch for their food, some six inches deep, and keep the birds locked up in the hen houses until the frost is off the ground.

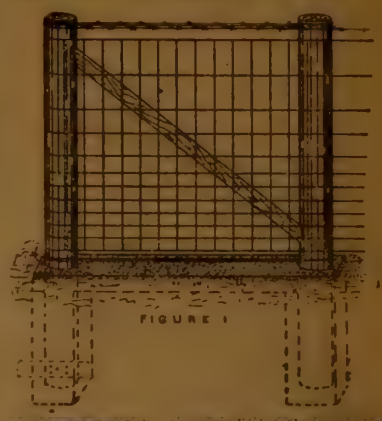
I had White Leghorns that produced 200 eggs each, pen record, but I found I could make more with White Orpingtons, so disposed of all my Leghorns.—MABEL G. SMITH.

End Post Bracing

WIRE fences are good just as long as they are stretched tight. But most wire fences sag shamefully after the first year. The strain of so many wires pulling against the end posts overcomes the resistance and pulls them over enough to slacken the fence.

The drawing show two ways of setting wire fence end posts in concrete.

Figure 1 is a solid setting of each post separately in three feet of concrete, with the addition of a slab of

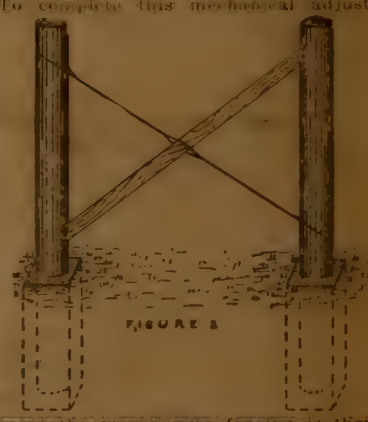


concrete laid in a trench in the ground reaching from one post to the other. There is a diagonal timber brace reaching from a notch near the ground of the second post to a similar notch near the top of the first post.

This is a good brace, but it has a tendency to lift the end post when the fence pulls hard, so I always use a crosspiece of wood spiked into the lower end of the post and embedded in concrete so solid that an elephant couldn't pull it up.

There also is a four-strand, twisted wire brace reaching horizontally from one post to the other just above the concrete. This wire tie prevents the diagonal wooden brace from breaking the concrete.

The barb wire at the top is doubled back a couple of times to make a similar tie at the top of the posts, so that both posts may take the strain. To complete this mechanical adjust-



ment the woven wire fencing is thoroughly well stapled into the second post with extra long staples.

Posts to be set in concrete should be coated with hot creosote to preserve the wood, and there should be a ring of tar or thick paint around the post at the surface of the concrete to keep the water out.

Figure 2 shows the common way of bracing the end post of a wire fence when concrete is used. But this setting is little better than to plant the posts in the post holes with a few stones pounded in along with the earth. The bracing is well started, but it is only half done.

H. A. SHEARER.

Paper Mulching Plants Increases Yield

SO successful has been the paper mulching of pineappleplants in Hawaii that last year growers used a quarter of a million dollars' worth of paper for this purpose. The paper is mixed with asphalt and is made in strips three feet wide, sufficient to cover the space between two rows of plants. If laid end to end the paper used annually by Hawaiian planters would reach 4261 miles.

Florida tobacco growers began using paper mulch in 1922 and claim that it increases the yield one-half. California tomato growers report yield increases, due to paper mulching, of 55 to 168 per cent. Louisiana and California strawberry growers who used paper mulch say their berries were thereby made 50 per cent larger and the yield increased 25 to 75 per cent.

Cantaloupe growers in the Imperial Valley and those who raise bush fruits are experimenting with this new method. A Los Angeles paper company is shipping mulch paper to numerous vegetable and berry growers, who are using the material for experimental mulching.

"Paper mulching promotes plant growth chiefly by improving soil conditions with respect to temperature and moisture," explains Charles F. Eckart, inventor of the process, who has been styled the "Burbank of Hawaii."

"It also checks the growth of weeds, protects the soil from the compacting action of rains, reduces the leaching of soluble plant foods, lessens the requirements for soil stirring implements and, therefore, the damage which they often do to the root system and to some of the functioning leaves.

"It increases the layer of staple or top soil for the accommodation of the principal feeding roots of the plants by allowing the roots to approach nearer the surface, increases the thickness of the soil stratum in which the bacterial population operates and aids in other ways."

"Just What Cows Need To Increase Milk Yield"

Dairy experts say that an increase of only 10% in milk yield will double the net profit in the average dairy. How important it is then to get from every cow the last ounce of milk of which she is capable.

The milk-making functions of the cow—her digestive and general organs—are the key to the milk yield. Sluggish organs mean a low yield, plus a tendency to disease.

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John Peters, Meservey, Iowa says: "One of my new milch cows was giving about ten quarts to a milking, when she suddenly fell off to less than half that amount. I gave her the Kow-Kare treatment for six days and it brought her back to her full flow, and she is now better than ever. I gave some of the medicine to my other cows and every one of them improved. Kow-Kare is just what cows need. I shall tell my neighbors what a fine cow medicine this is."

C. P. Lanterman, Dexter, N. H., writes us: "I have used Kow-Kare for three or four years and can recommend it to all having cows. With this alone I have cured all ailments that cows are subject to, and as a milk producer it has no equal."

Thousands of dairymen write us of the wonderful results of the Kow-Kare treatment for such cow diseases as Barreness, Abortion, Retained Afterbirth, Scours, Bunches, Milk Fever, Lost Appetite. Its benefits are so prompt and sure that those who try Kow-Kare always keep it on hand.

As a general conditioner and aid to greater milk yield the usual dose is one tablespoonful twice a day, one week in each month—at a cost of one cent a day per cow. Our free book, "The Home Cow Doctor," tells how to add to your milk income through the aid of Kow-Kare.

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Office Worker Now Producing Hatching Eggs

By O. H. BARNHILL

IS IT possible for the city man, without poultry experience, to earn a good living in the chicken business?

Thousands of weary office workers anxiously are seeking an answer to that question. None are more worried over the probable success of such a venture than was C. W. Phelps, whom eleven years of draftsmanship work had left a nervous wreck.

In addition to drawing plans, Phelps was required to make out the cutting orders for thousands of tons of structural steel for big office buildings, where slight errors would entail large losses. The strain was more than he could stand, finally getting his health goat.

Fortunately, this draftsman for years had been dabbling in the chicken business, partly because he liked feathered things and partly because he needed the money his hen hobby yielded. This side line of poultry had been enlarged gradually, until the feathered flock numbered more than 800 birds.

"Stop right there," an irate reader is apt to exclaim. "How can a man fill an office position in the city and conduct a chicken business away out in the country at one and the same time?"

What's the matter with the wife lending a helping hand? Country women care for poultry, as a matter of course—why should not their city sisters do the same?

"Why not, indeed?" answers Mrs. Phelps, a capable woman whose grit and industry are equal of her husband's. She, too, regained her health in the poultry yard, while helping rehabilitate the family fortune.

"But it meant hard work and lots of it," admitted Phelps. "We used to operate a hatchery, in connection with egg production. By the time we had built our flock up to 1500 hens, the baby chick business made the running of our poultry plant almost a continuous performance, entailing much night work.

"Finally we decided to concentrate our efforts on the production of fine hatching eggs and let the other fellow operate the incubator. In this age of specialization, it doesn't pay to spread one's labor over too great a variety of activities."

STARTS WITH ORPINGTONS

Phelps bought his first birds sixteen years ago, paying $25 for three White Orpingtons, which at that time were much favored by poultrymen. He specialized in breeding stock, obtaining good prices for fancy birds. His place near Pasadena soon proved too small for his expanding side line; therefore in 1910 he moved to the San Fernando Valley.

At this time the valley was mostly planted to beans and barley, but Phelps located upon a ten-acre orchard tract owned by a non-resident, taking care of the place in return for the use of ground needed for chickens. After awhile he was able to buy his present five-acre farm near Van Nuys.

Most of the land is in peach trees, which afford fine shade for the chickens and bear large quantities of valuable fruit. A heavy yielding patch of alfalfa, together with barley grown under the fruit trees, supplies the necessary green feed for the poultry.

CHANGES TO WHITE LEGHORNS

Shortly after changing his location, Phelps realized that the San Fernando Valley was no place for a chicken fancier, because most of the poultrymen there are in the commercial egg business. He therefore traded his "Orps" for White Leghorns, the standard egg breed.

Although hatcheries usually pay only 10 to 15 cents a dozen above the market price for eggs, they give a premium of 30 to 50 cents for those laid by Phelps' hens, because of the extra fine chicks which they produce. Careful culling, breeding and feeding methods account for the high quality of his eggs.

The two breeding houses are sixteen feet wide by eighty-four feet long, with eighteen-foot partitions. Between the sets of rooms are six-foot halls for nests, which are arranged on the walls on either side. This arrangement makes it possible to gather eggs without disturbing the chickens. A door in the north end of the hall provides the roosting rooms with indirect ventilation.

LARGE BINS SAVE LABOR

The mash bins are quite large, in order to obviate frequent refilling. They are on the south side of the sheds, with platforms two feet above the ground, affording a dry, clean place for the birds to stand while feeding.

The space above the bins is closed against rain with board-covered frames, which tilt out to admit air and sunlight when the weather is favorable. Planer shavings are used for floor litter and nest material.

During the summer season the yards are plowed up every month and planted to barley, which furnishes much green feed and exercise to scratching Biddies and crowing Chanticleers. This plan also keeps the yard clean.

Additional succulent forage is fed in troughs under the fence, which renders it unnecessary to enter the yards at green feeding time. Barley is cut during the winter with a large, light chain-drive lawn mower, to which a canvass hopper is attached. After each "round" the removable hopper is dumped into a small hand wagon.

CUTS BARLEY FREQUENTLY

This method permits the barley to grow all winter, whereas if it were allowed to grow tall enough to cut with a scythe, only two cuttings could be made, after which the grain would die. When finely chopped alfalfa is fed, a small mesh wire screen is lowered in front of the trough, to prevent the hens from scratching out the feed.

Phelps' chickens are remarkably healthy. Whenever they show signs of sickness he administers a disinfectant made by dissolving a half pound of copperas and one-half ounce of sulphuric acid in a gallon of water. One tablespoonful of this mixture is put in each pint of drinking water. This medicine is given only occasionally.

The fowls on the Phelps' ranch now number about 3000, including 300 roosters. The latter consume $400 worth of feed annually, which partly accounts for the fancy price which hatching eggs command. Another item of extra expense is the separating of blood lines. Male birds are not used with their direct progeny, nor with hens of the same parentage as their own.

The system of keeping the families separate is to cross diagonal pens, part of which hold 250 birds and the remainder 450. The two main sheds are located side by side, with an alley between and the pens on the outside. One rooster is used with ten hens, twenty-five to forty-five male birds being required for each pen.

"Yes, the roosters do a good deal of fighting when they first are penned together," admitted Phelps. "But after they find out who's boss, there isn't much trouble. Seldom are any roosters killed in fighting, although quite a few eyes are picked out.

Roosters are discarded after being used two seasons, while the best hens are retained four years. Birds, as well as eggs, are carefully and severely culled, a pen of 450 hens being reduced to 150 in four years, this process of elimination providing for the survival of the fittest.

Possibly the reader is wondering if the man who escaped from an office and is now corralled in a chicken pen didn't jump from a frying pan into the fire. How, you ask, can one man take care of five acres of land and 3000 chickens, keeping the latter supplied with all the green feed they can eat?

An efficient little tracklaying tractor helps solve the labor problem. "By the us of a trailer," explains Phelps, "the mash boxes can be filled and the chicken houses emptied of droppings and soiled shavings in record time, with little hand labor. My feed boxes are sufficiently large to hold fifty sacks of mash—two tons—which means that not much time is needed to keep them filled.

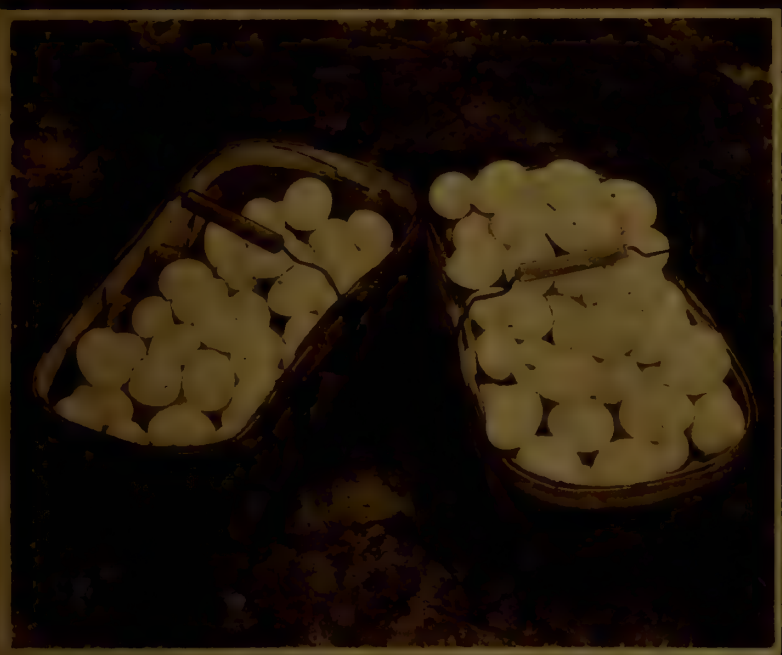
"My tractor is a small track layer, which renders possible short turns around trees and buildings. With this machine I plow and pulverize the ground in the yards once a month during the greater portion of the year."

Phelps is a great believer in labor saving machinery, of which he has a complete line.

Now for the profits—the best thing about the poultry business, unless it is the opportunity to regain lost health: Phelps and his wife each "feel like a million dollars," although their joint bank account is somewhat less than that figure.

By selling two-thirds of his eggs at fancy prices to a hatchery, Phelps figures that he nets $1.50 to $2 per hen. He has bought a fine, large automobile and values his place, including stock and equipment, at $20,000.

All of which suggests a favorable reply to the question propounded at the beginning of this story.



Sample of the fine hatching eggs produced by Phelps. Only the very best specimens, which are fertile and from heavy laying hens, are sold for breeding purposes.

This view of one of the laying houses shows the large outside mash boxes, which require filling only at long intervals. A tractor is used for this purpose.

Phelps is a great believer in modern labor-saving machinery. He is shown here with an efficient outfit for disinfecting chicken houses.

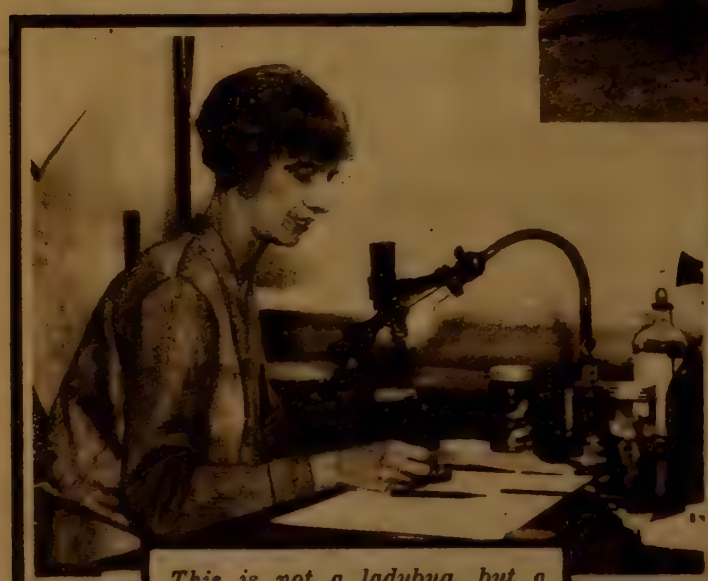
Agricultural Advancement Pictorially Portrayed

This picture was taken in a mushroom mine, 500 feet below the surface, where there is no danger of finding poisonous toadstools. Louis Baslie and son are picking the daily crop, which is growing 200 feet from one of the shafts in an abandoned copper mine.

Hachiya and two ordinary persimmons

The late Joseph Sexton of Goleta (Santa Barbara County), who did much to advance California horticulture, particularly in avocado growing.

C. Reynolds, Van Nuys walnut grower, is taking no frost chances this year. Corn stalks grown between the rows, although tall enough to make an Iowa farmer turn green with envy, had to piece out with gunny sacks to reach the tops of the young trees, about which they were bound for protection. In their third year the trees are expected to be able to take care of themselves.



This is not a ladybug, but a "bug lady," Miss Eleanor Armstrong, Uncle Sam's insect authority at Washington.

Grand champion wether shown by the University of California at the Pacific International.

Interesting example of hillside terrace tree planting near Owensmouth (Los Angeles County). Intricate engineering problems are involved in laying out such a tract, in order to handle the irrigating water.